IMPACT OF SEVERITY OF VASCULAR CALCIFICATION ON THE CLINICAL OUTCOMES FOLLOWING ENDOVASCULAR REVASCULARIZATION IN CHRONIC LIMB THREATENING ISCHEMIA (CLTI): A PROSPECTIVE, OBSERVATIONAL STUDY

By

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Dissertation submitted to the National Board of Examinations, New Delhi.

In partial fulfillment of the requirements for the degree of

DOCTORATE OF NATIONAL BOARD (DrNB)

In

PERIPHERAL VASCULAR SURGERY

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CONTENTS

LIST OF ABBREVATIONS

ABI – Ankle Brachial Index

ALI – Acute Limb Ischemia

AKI – Acute Kidney Injury

AKA – Above Knee Amputation

ACT – Activated Clotting Time

BKA – Below Knee Amputation

CLI – Critical Limb Ischemia

CLTI – Chronic Limb Threatening Ischemia

CTA - Computer Tomography Angiography

CKD – Chronic Kidney Disease

CKD-MBD – Chronic Kidney Disease-Mineral and Bone Disorder

CAD – Coronary Artery Disease

CVD – Cerebro-Vascular Disease

CTO – Chronic Total Occlusion

DM – Diabetes Mellitus

DSA – Digital Subtraction Angiography

EVT – Endo-Vascular Treatment/ Therapy

GLASS – Global Limb Anatomic Staging System

GACI – Generalized Arterial Calcification of Infancy

HTN – Hypertension

IHD – Ischemic Heart Disease

IVUS – Intra-Vascular Ultrasound

IAC – Intimal Arterial Calcification

LLAC – Lower Limb Arterial Calcification

LLL – Late Lumen Loss

LDL – Low Density Lipoprotein

MALE – Major Adverse Limb Events

MACE – Major Adverse Cardiac Events

MRA – Magnetic Resonance Angiography

MI – Myocardial Infarction/ Ischemia

MAC – Medial Arterial Calcification

OFDI – Optical Frequency Domain Imaging

PVD – Peripheral Vascular Disease

PAD – Peripheral Arterial Disease

PVR – Pulse Volume Recording

PACSS – Peripheral Arterial Calcification Scoring System

PARC – Peripheral Academic Research Consortium

PTA – Percutaneous Transluminal Angiography

PA – Popliteal Artery

SFA – Superficial Femoral Artery

TASC – Trans Atlantic Inter Society Consensus

TBI – Toe Brachial Index

TMA – Trans-Metatarsal Amputation

VC – Vascular Calcification

VSMC – Vascular Smooth Muscle Cells

VAC – Vacuum Assisted Closure

WIfI – Wound, Ischemia and Foot Infection

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Abstract

1. ABSTRACT

OBJECTIVES: In this study, we investigate whether the severity of lesion calcification assessed by the peripheral artery calcification scoring system (PACSS) was associated with clinical outcomes after endovascular therapy (EVT) and report the 1-year outcomes of the endovascular treatment of infrainguinal occlusive disease, focusing on the importance of calcification on limb salvage and patency, and the factors associated with these outcomes at a single center.

METHODS: A prospective analysis was conducted of 211 patients, presenting with chronic limb threatening ischemia (CLTI) category IV, V and VI who underwent endovascular therapy for de novo infrainguinal occlusive disease between August 2022 to February 2023 in the Department of Vascular and Endovascular Surgery, Jain Institute of Vascular Sciences (JIVAS), Bhagwan Mahaveer Jain Hospital, Bengaluru. The patients were prospectively classified using the PACSS classification (grades 0-4: no visible calcification of the target lesion, unilateral wall calcification <5cm, unilateral calcification ≥5 cm, bilateral wall calcification < 5cm and bilateral calcification ≥5cm, respectively). The main outcome was primary patency, while the secondary outcome measures were major adverse limb events [MALE: any intervention (repeat EVT or surgical revision) or major (above ankle) amputation] and major adverse cardiac events [MACE: cerebrovascular accident, myocardial infarction, and death]. Kaplan Meier curves were plotted to analyze the primary patency, MALE and MACE. Cox proportional hazards analysis was used to explore whether the PACSS classification was an independent predictor of clinical outcomes.

RESULTS: The distribution of PACSS grade was 0 in 50.7%, grade 1 in 12.8%, grade 2 in 8.5%, grade 3 in 10.5% and grade 4 in 17.5%. The 1-year primary patency rates were noted to be 91.7%, 100%, 81.6%, 95.2% and 85.5% respectively while the estimated limb salvage rates

at 1 year for patients belonging to PACSS 0, 1, 2, 3, 4 were noted to be 92.3%, 88.5%, 73.3%, 79.8% and 82.6% respectively. Further, the overall survival rate at 1 year for patients with PACSS 0, 1, 2, 3, 4 were noted to be 97.2%, 96.3%, 94.1%, 95.2% and 97.05% respectively. None of the covariables were associated with increased incidence of loss of primary patency, MALE or MACE as per univariate Cox analysis. The occurrence of major adverse limb events (MALE) was found to be greater in patients with significant calcification (PACSS ≥2) compared to those with minimal calcification (PACSS <2) (p value < 0.05).

CONCLUSION: In this study, intense calcification (PACSS ≥ 2) was associated with higher incidence of major adverse limb events (MALE – reintervention and major amputation). However, when evaluated independently, none of the PACSS grade was associated with statistically significant poorer outcomes.

KEYWORDS:

Vascular calcification, lower limb arterial calcification (LLAC), calcium scoring system, peripheral arterial calcification scoring system (PACSS), endovascular therapy

Introduction

2. INTRODUCTION

Arterial calcification can develop in almost any vascular bed and often occurs in conjunction with atherosclerosis [1]. Lower limb arterial calcification (LLAC) has been regarded as a potential driver of peripheral vascular disease (PVD) and has been associated with increased cardiovascular morbidity and mortality [1,2]. Additionally, LLAC has been regarded as a more reliable predictor of major adverse limb events (MALE) compared to the combined ankle-brachial index (ABI) and traditional cardiovascular risk factors when assessed collectively [3,4]. Several non-invasive imaging techniques, including computed tomographic (CT) and magnetic resonance (MR) imaging, duplex ultrasonography, measurement of pulse wave velocity, echocardiography, planar radiographs, and indirectly, the ankle-brachial index (ABI) are available for the detection of carotid, renal, and peripheral calcification [5]. Quantification of LLAC or peripheral arterial calcification (PAC) has been predominantly based on digital subtraction angiography (DSA) and Computed Tomography (CT) scans, which offer a comprehensive view of calcification in the vessel wall [1].

CT calcium scoring has historically been utilized to assess asymptomatic patients with intermediate cardiac risk to determine the necessity for more invasive procedures such as coronary angiography. However, its relevance has diminished, as it does not provide meaningful insights for low-risk patients regarding the need for intervention, and for high-risk patients, as they eventually need an angiogram. The concept of CT calcium scoring has also been applied to peripheral arteries to quantify the calcium deposition in these arteries, which can then be used as a technical tool to guide the choice of procedure for revascularization and give an estimate of its technical success, patency, and amputation free survival. However, the use of CT scan to detect vascular calcification has been linked to increased exposure to ionizing radiation.

Various calcium scoring systems based on high intensity fluoroscopy and DSA are being

recently used in clinical trials which assess the degree of vessel wall calcium and the length of the vascular calcification (VC) relative to the length of target atherosclerotic lesion, to provide an angiographic-derived calcium classification scheme [5], which can then be utilized to correlate the severity of VC. However, there are little data available on the accuracy and reliability of these calcium scoring systems.

Endovascular treatment (EVT) of heavily calcified lesions remains a technical challenge and presence of extensive vascular calcification (VC) can adversely affect the clinical outcomes following these interventions [5,6]. In the United States, most of the Investigational Device Exemption endovascular device protocols exclude patients with "severe calcification" as presence of calcification relates to increased occurrence of adverse events like dissection, vessel perforation and atheroembolism [5].

Vascular calcification has severe clinical consequences and is considered an accurate predictor of future adverse cardiovascular events, including myocardial infarction and stroke. Vascular calcification was considered a passive phenomenon characterized by the accumulation of calcium and phosphate in the arteries and heart valves. However, recent research indicates that it is a highly regulated, cell-mediated process akin to the formation of bone. By understanding the molecular pathways and genetic circuitry responsible for the pathological mineralization process novel drug targets may be identified and exploited to combat and reduce the detrimental effects of vascular calcification on human health.

Presence of calcification in the femoral-popliteal and infra-popliteal segments have been shown to be associated with increased amputation and decreased survival [7]. There is a consensus that vessel calcification can adversely affect clinical outcomes following vascular interventions [8,9]. The influence of severity of vessel calcification on patency has not been systemically assessed, due to lack of availability of scoring system for vessel calcification in peripheral interventions.

Hence, we need to evaluate the relationship between vascular calcification and the clinical outcomes after endovascular therapy (EVT), both local like technical success, primary patency, wound healing, limb salvage and amputation free survival and systemic ones like major adverse cardiovascular events (MACE).

In the present study, patients with peripheral arterial disease (PAD) undergoing lower limb endovascular revascularization were evaluated based on a novel peripheral artery calcification scoring system (PACSS) for presence and severity of peripheral vascular calcification which was then used to evaluate the role of calcification on the local and systemic outcomes following endovascular therapy for de novo infrainguinal (femoropopliteal and infrapopliteal) lesions.

Review of Literature

3. REVIEW OF LITERATURE

3.1 ARTERIAL CALCIFICATION - BACKGROUND

Arterial calcification was previously viewed as an inevitable, passive, and degenerative process that occurred at the end stages of atherosclerosis [10]. However, several recent studies have demonstrated that calcification of arteries is a complex and regulated process, which may occur in conjunction with atherosclerosis or in an isolated form that is commonly associated with diabetes and renal failure [11,12]. Arterial calcification can be viewed as a distinct inflammatory arteriopathy, much like atherosclerosis and aneurysms, with its own contribution to cardiovascular morbidity and mortality [13].

Chronic kidney disease (CKD) and diabetes mellitus (DM) are primary contributors to vascular calcification (VC). In these conditions, there is a buildup of calcium (Ca++) and phosphate (P) within the arteries, leading to mineral deposits in either the intimal or medial layers of the vascular wall [14-17]. Calcium plays a crucial role in numerous metabolic processes, such as the thrombosis cascade, heart rate regulation, contractility, neuronal function, and the endocrine system, while also paradoxically contributing to vascular calcification. Although most of the calcium is stored in bones and teeth, it is primarily obtained through dietary sources, with absorption rates dependent on dietary intake. Consequently, elevated levels of calcium ions occur only when dietary intake consistently exceeds recommended levels or in pathological conditions that impair storage. Additionally, calcium can accumulate in various organs, including the spleen, liver, kidneys, and the circulatory system, where it may deposit in the arterial intima and media, potentially leading to obstructive atherosclerosis [5].

Vascular calcification (VC) has been acknowledged, researched, and documented for many centuries. Nevertheless, even with extensive investigation over the years, the optimal treatment

approaches for VC remain ambiguous. This uncertainty is especially relevant as the field of endovascular medicine strives to thoroughly clarify and establish the best treatment strategies to tackle this complex clinical issue [5]. Calcification of vessels reduces their elasticity, affecting hemodynamic parameters of the cardiovascular system. The development of arterial hypertension, cardiac hypertrophy, ischemic heart disease or peripheral arterial disease significantly increases mortality in patients over 60 years of age. Vascular calcification is an active and complex process that involves numerous mechanisms responsible for calcium depositions in arterial walls. They lead to increase in arterial stiffness and in pulse wave velocity, which in turn increases cardiovascular disease morbidity and mortality [14].

3.2 MECHANISM OF VASCULAR CALCIFICATION

Vascular calcification is a pathologic response to toxic stimuli involving metabolic substances and/or inflammatory cells [5]. Traditionally, vascular calcification (VC) was viewed as a passive phenomenon, occurring when calcium (Ca++) and phosphate (P) ions surpassed their solubility limits in tissue fluid, leading to the precipitation and accumulation of hydroxyapatite crystals. However, contemporary perspectives have evolved, recognizing VC as a dynamic and actively regulated intracellular molecular process. This process involves the differentiation of macrophages and vascular smooth muscle cells (VSMCs) into osteoclast-like cells, akin to the mechanisms observed in bone formation [14,15,18,19].

The underlying pathophysiological mechanisms resulting in VC can be broadly described as: (1) elevation in serum Ca^{++} and P levels, (2) the induction of osteogenesis, (3) the inadequate inhibition of the mineralization process, and (4) the migration and differentiation of macrophages and VSMCs into osteoclast-like cells [14-16,18]. Changes in serum calcium and phosphate concentrations, along with oxidative stress induced by locally produced hydrogen peroxide (H2O2), facilitate the transformation of vascular smooth muscle cells (VSMCs) in

the vascular wall into an osteogenic phenotype. These changes are also linked to a notable reduction in natural VSMC calcification inhibitors, including matrix Gla protein, which is a calcium-binding protein related to bone development, pyrophosphate, and the inducible inhibitor osteopontin, as well as circulating inhibitors like fetuin-A [18]. A potential genetic role in medial VC has been proposed whereby gene mutations that regulate VSMC extracellular matrix phosphate production and protein promoters of VC have been reported [20]. Regardless of the mechanisms involved, the ultimate result of VC is the formation of calcified deposits of hydroxyapatite crystals within the tissues that initiate the calcification process. Figure 1 demonstrates the various mechanisms that lead to vascular calcification.

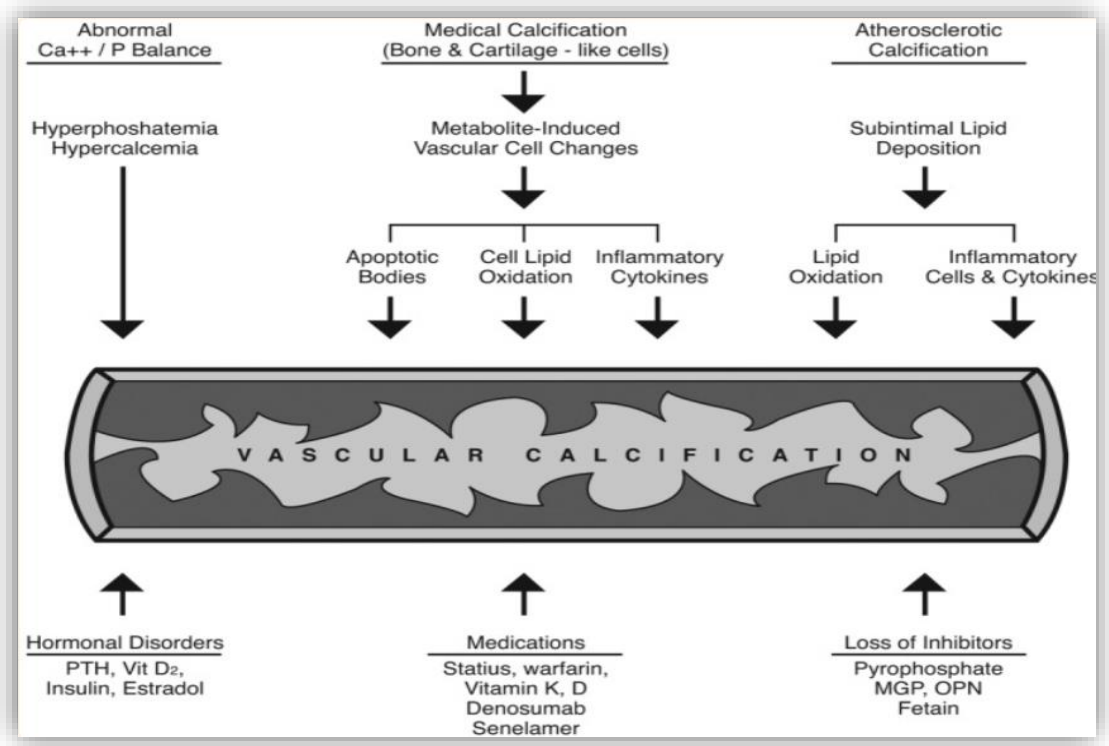


FIGURE 1: Schematic diagram depicting multiple mechanisms leading to vascular calcification [5]

3.3 HISTOLOGICAL FEATURES OF LOWER LIMB ARTERIAL CALCIFICATION (LLAC)

The arterial wall consists of three distinct layers, arranged from the innermost to the outermost: the intima, media, and adventitia. Vascular calcification (VC) occurs due to the buildup of dispersed minerals within the vascular system. Based on the positioning of these mineral deposits, VC can be categorized into intimal and medial calcification (Monckeberg's Sclerosis). [21]. Both forms are calcification are independent disease states driven by distinct pathophysiological mechanisms.

Intimal calcification is linked to atherosclerotic plaques and is believed to arise from the accumulation of modified lipids, the presence of pro-inflammatory cytokines, and apoptosis within the plaque, which promotes the differentiation of osteogenic cells. The potential purpose of intimal calcification may be to isolate and halt the advancement of abnormal cellular processes, thereby safeguarding the surrounding healthy intima [18]. However, stenotic intimal lesions can obstruct blood flow, resulting in diminished organ perfusion and ischemia.

In contrast, medial calcification is more prevalent in the lower abdominal area and is associated with peripheral artery disease (PAD) [22-25]. This condition stems from the osteogenic differentiation of vascular smooth muscle cells (VSMCs) in the medial layer of the vessel wall [26]. The pathophysiology is the phenotypic shift of VSMCs from a contractile to an osteochondrogenic phenotype. The phenotypic shift of VSMCs is typified by the absence of contractile markers and increased expression of bone-related genes: bone sialoprotein, bone morphogenetic protein, osteocalcin, transcription factors, Cbfa1/Runx2, Sox9 and Msh homeobox 2 [27,28]. Human peripheral arteries with medial calcification were shown to have elevated levels of osteo/chondrogenic markers [29]. It is widely recognized that Runx2 serves as a major regulator mediating this phenotypic transition, not only by activating bone gene expression but also by inhibiting myocardium, which governs the expression of VSMCs markers [30]. Calcium accumulation initially appears as an amorphous mineral deposit, which then undergoes progressive remodeling, eventually transforming into mature bone. While

medial calcification typically does not cause luminal obstruction, the resulting decrease in arterial wall elasticity and compliance may contribute to the development of atherosclerosis, reduced perfusion, and ultimately lead to coronary artery disease (CAD) and PAD.

Intimal calcifications frequently present as thick, patchy, and discontinuous clusters, predominantly affecting large arteries. In contrast, medial calcifications present as thin, circular, and continuous lesions and commonly seen in peripheral medium and small-sized arteries (Figure 2). The intimal calcification can be differentiated from medial calcification as depicted in Table 1.

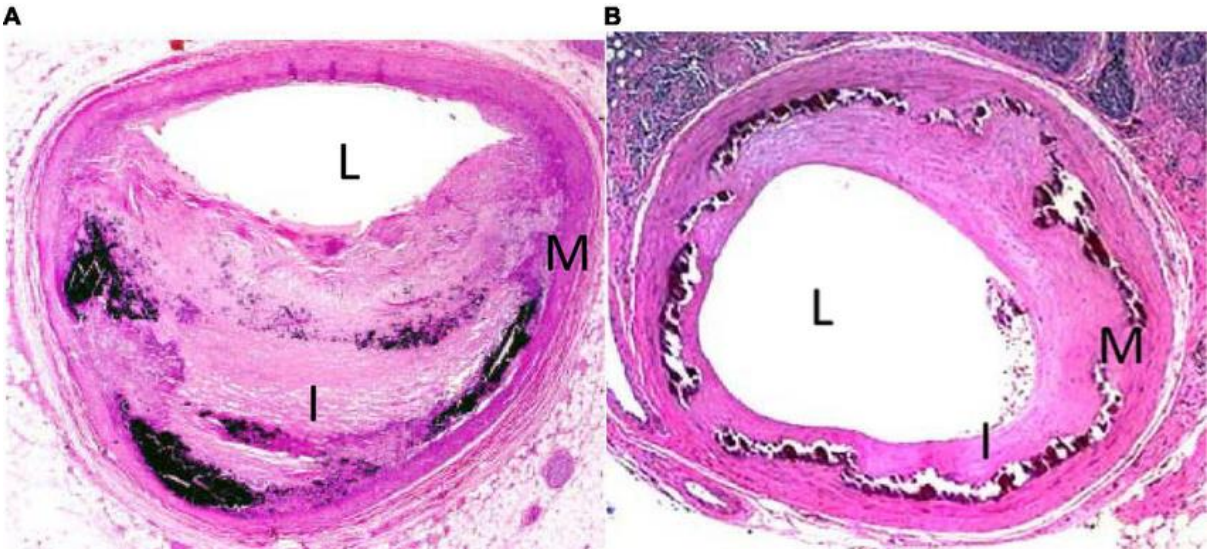


FIGURE 2: H&E stain of tibial arteries from patient with intimal **(A)** and medial **(B)** calcification. L denotes lumen, I denote intima, M denotes media [31]

TABLE 1: Characteristics of intimal and medial calcification

INTIMAL CALCIFICATION	MEDIAL CALCIFICATION
Associated with atherosclerosis and traditional cardiovascular risk factors.	Associated with diabetes, chronic kidney disease and metabolic dysfunction.
Characterized by subintimal lipid deposition and macrophages.	Characterized by elastin layer disruption and calcification.
Can be associated with inflammatory cell infiltrate and bone formation within atherosclerotic plaque.	Associated with osteogenic transformation of medial smooth muscle cells. Bone formation less common.
Appears as patchy or spotty areas of calcification on the luminal side of internal elastic lamina.	Appears as smooth, continuous areas of calcification, typically seen as parallel lines or "railroad" tracks on plain x-rays.
Commonly affect coronary, carotid, and larger arteries.	More commonly seen in peripheral small and medium-sized arteries.
Advanced form leads to vessel stenosis or occlusion.	Advanced form associated with increased arterial stiffness.

3.4 EPIDEMIOLOGY AND PREVALENCE OF VASCULAR CALCIFICATION

Medial arterial calcification (MAC) and intimal arterial calcification (IAC) represent distinct pathophysiologies that correlate with traditional cardiovascular risk factors [1].

Aging is a major cause of MAC [32] and, from age 20–90 years, its incidence may increase by 30% [33]. Calcification increases exponentially with age, with more than two thirds of patients over 70 years old presenting with calcification involving all vascular beds [34]. Other than increasing age, MAC is also linked to diabetes and chronic kidney disease (CKD) [1]. Diabetes and CKD are considered inflammatory conditions. Multiple overlapping mechanisms by which diabetes could result in arterial calcification have been proposed which include: inflammation, hyperglycemia, advanced glycation end products, circulation of osteoprogenitor cells, and reduced levels of matrix gamma carboxy glutamic acid protein [1]. Additionally, metabolic disorders in diabetes and CKD lead to vascular mineralization. High serum phosphate levels not only facilitate the precipitation of hydroxyapatite crystals but also modulate critical signaling pathways central to MAC pathophysiology: the phenotypic shift of VSMCs to osteoblast-like cells, VSMCs apoptosis, extracellular matrix remodeling, and the suppression of monocyte/macrophage differentiation into osteoclast-like cells [35,36]. Inflammatory disorders such as rheumatoid arthritis have also been associated with MAC formation. This is thought to occur secondary to chronic inflammation, as elevated IL-6 levels are associated with osteogenic differentiation. The presence of MAC in patients with rheumatoid arthritis has also been shown to be a risk factor for worse all-cause mortality [31]. The role of specific genotypes in the development medial calcification has recently been highlighted and include conditions such as Pseudoxanthoma elasticum (mutation in ABCC6 gene), Generalized arterial calcification of infancy (GACI) (mutation in ENPP1 gene) and symptomatic arterial and joint calcification (mutation involving NT5E gene) – all of which are characterized by calcification and disruption of the media that can lead to stenosis or rupture [31].

In contrast, intimal arterial calcification (IAC) demonstrated positive correlations with smoking and dyslipidemia [37,38]. Nicotine found in tobacco promotes vascular calcification, and its mechanisms involve the hyperactivation of inflammatory responses, oxidative stress,

autophagy, increased cell apoptosis, extracellular matrix degradation, and disruption of endothelial function [39-41]. LDL causes the formation of atherosclerosis through various mechanisms, including the upregulation of inflammatory cytokines and adhesion molecules on vascular endothelial cells, increased transport of oxPLs, inhibition of nitric oxide synthesis, resulting in vascular remodeling, and promotion of smooth muscle cell proliferation and foam cell formation [42].

3.5 HAEMODYNAMIC EFFECT OF LOWER LIMB ARTERIAL CALCIFICATION:

Intimal calcification is linked to atherosclerotic luminal stenosis, which plays a crucial role in the development of territorial hypoperfusion. Clinical and pathological studies of both intracranial and coronary arteries have revealed a significant relationship between calcium burden and occlusive disease [43-45]. In the lower extremities, two studies utilizing CTA explored the connection between calcium burden and the degree of lumen stenosis. Zettervall et al. discovered that lower limb arterial calcification (LLAC) was associated with the severity of ischemia in patients with peripheral artery disease (PAD) and exhibited a moderate correlation with the extent of occlusive disease. However, this correlation weakened when focusing solely on patients with critical limb-threatening ischemia (CLTI) [2]. Additionally, Yan et al. noted that the LLAC in the aortoiliac artery was relatively low, potentially due to the larger diameter of the iliac artery, which may render it less susceptible to the effects of calcium accumulation in the vessel wall [46].

It is commonly believed that medial calcification (MAC) is confined to the media and does not contribute to luminal stenosis [47]. Nevertheless, the buildup of calcification in the media layer can result in vascular deformation and the protrusion of calcified plaques into the lumen. Furthermore, medial calcification may induce subendothelial hyperplasia, which can lead to

nonatheromatous intimal thickening and ultimately causing luminal stenosis [48,49] A significant relationship has been identified between advanced MAC and significant stenosis of the metatarsal artery in both diabetic and nondiabetic limbs [50]. In smaller vessels, which are particularly affected by MAC, this can result in severe implications for the lumen cross-sectional area, potentially leading to the pruning of pedal end arteries and resulting in adverse effects on tissue perfusion [51].

Recent studies have confirmed a predictive role for MAC on limb outcomes, and several investigators have shown an independent association between MAC and the severity of PAD as well as the risk of major amputation [2,3,52]. Traditional tests for PAD such as the ankle-brachial index may be inaccurate in patients with calcified arteries, making it difficult to assess the true severity of ischemia using standard measures. In a study involving 116 patients with symptomatic PAD, an increasing calcification scores correlated with the extent of ischemia, and this relationship was maintained after adjustment for cardiovascular risk factors and the extent of occlusive disease [2].

Lower extremity calcification scores also correlate with the presence of foot ulceration in the setting of PAD. In a study involving 162 patients with diabetes, those with foot ulcers were more likely to have a higher tibial calcification score, and this relationship persisted after adjustment for cardiovascular risk factors and the peripheral artery occlusion index. These findings suggest that medial calcification contributes to decreased pedal perfusion in a manner that is independent of atherosclerotic burden, and possibly via mechanisms related to alterations in blood vessel structure [31]. Tibial artery calcification serves as an important prognostic indicator for the severity of peripheral artery disease (PAD) and associated adverse limb outcomes. A study involving 229 patients with symptomatic PAD assessed the relationship between tibial artery calcification, limb ischemia severity, and the likelihood of major amputation [2]. The findings revealed that the tibial artery calcification score significantly

correlated with the initial severity of limb ischemia, with elevated scores linked to an increased risk of major amputation. Notably, these scores proved to be more reliable predictors of amputation than the ankle-brachial index (ABI).

3.6 DETECTION OF LOWER LIMB ARTERIAL CALCIFICATION

Vascular calcification can be detected through various imaging techniques. Non-invasive imaging techniques, include X-ray, computed tomography (CT) imaging, magnetic resonance imaging (MRI), and ultrasound. In 1903, Mönckeberg first described medial arterial calcification (MAC) in radiography, where it appears linear and contiguous along the vessel edge, resembling rail tracks. In contrast, intimal arterial calcification (IAC) usually appears as irregular, spotty or discrete plaque [31]. CT is highly sensitive methods to assess the degree and extent of VC. MRI is deemed unsuitable for evaluation of calcification as its sensitivity for calcification is lower. However recent advances in MRI can accurately identify plaque components, such as lipids, thrombus, and fibrous tissue. Both imaging modalities use contrast agents (iodinated for computed tomography and gadolinium-based for MR), which are associated with potential nephrotoxicity, and CT exposes patients to ionizing radiation.

Vascular imaging techniques based on ultrasound enable the detection of vascular calcification and the differentiation between MAC and atherosclerosis lesions. MAC lesions appear as distinct echogenic granules located in the abluminal layers of the arterial walls on ultrasound imaging [48]. Intravascular imaging techniques, such as intravascular ultrasound (IVUS) or optical frequency domain imaging (OFDI) allow differentiation between the intimal and medial calcifications. On IVUS, MAC lesions present as hyperechoic areas located within the media. These lesions typically don not exhibit acoustic shadowing due to the presence of fibrotic tissue. Conversely, calcification in the intima often leads to acoustic shadowing [48]. However, both IVUS and OFDI have limitations in identifying MAC in overlapped intimal calcification

or when the line between the intima and media is unclear [53]. Moreover, due to the invasiveness and relatively high cost, it is used rarely in clinical practice.

CT angiography (CTA) and digital subtraction angiography (DSA) are widely recognized methods for quantifying and characterizing lower limb arterial calcification (LLAC). The evaluation techniques for LLAC can be categorized into two main types: qualitative visual assessments and quantitative approaches, such as the Agatston score and calcium volume measurement. Quantitative techniques are known for their reproducibility and objectivity, often utilizing specialized software. The Agatston score (Figure 3) is a well-established quantitative metric for assessing coronary arteries, calculated by multiplying the highest attenuation value's weighted density by the area of calcification [54]. This semi-automated scoring system is derived from unenhanced low-dose CT scans, which are commonly performed on patients undergoing cardiac evaluations. The Agatston score facilitates early risk stratification, as individuals with scores exceeding 160 are at a heightened risk for major adverse cardiac events (MACE). [55]

Maximum HU	Density factor	Total calcium score	CAD grade
<130	0	0	No CAD
130 to 199	1	1 to 10	Minimal
200 to 299	2	11 to 100	Mild
300 to 399	3	101 to 400	Moderate
≥400	4	>400	Severe

FIGURE 3: Agatston Score for CAD Grading

On the other hand, qualitative visual grading systems evaluate three main factors: morphology, location, and extent of calcification through visual inspection [1]. The most used visual score is the peripheral artery calcification scoring system (PACSS). The scoring was first proposed by

Rocha-Singh KJ et al. and could be evaluated only by angiography [5]. PACSS highlights the pathologic location of calcification (intima, media, combined) along with the length of the segment affected. Qualitative visual scores are quick and simple but with some observers subjective. The PACSS evaluates both medial and intimal calcification at the lesion site, utilizing high-intensity fluoroscopy and digital subtraction angiography (DSA) in the anteroposterior view (Figure 4) and classifies them into 5 PACSS grades according to its distribution and length: Grade 0 - no visible calcification at the target lesion site; Grade 1 - unilateral wall calcification < 5cm; Grade 2 – unilateral wall calcification ≥ 5cm; Grade 3 – bilateral wall calcification < 5cm; Grade 4 – bilateral wall calcification ≥ 5cm.

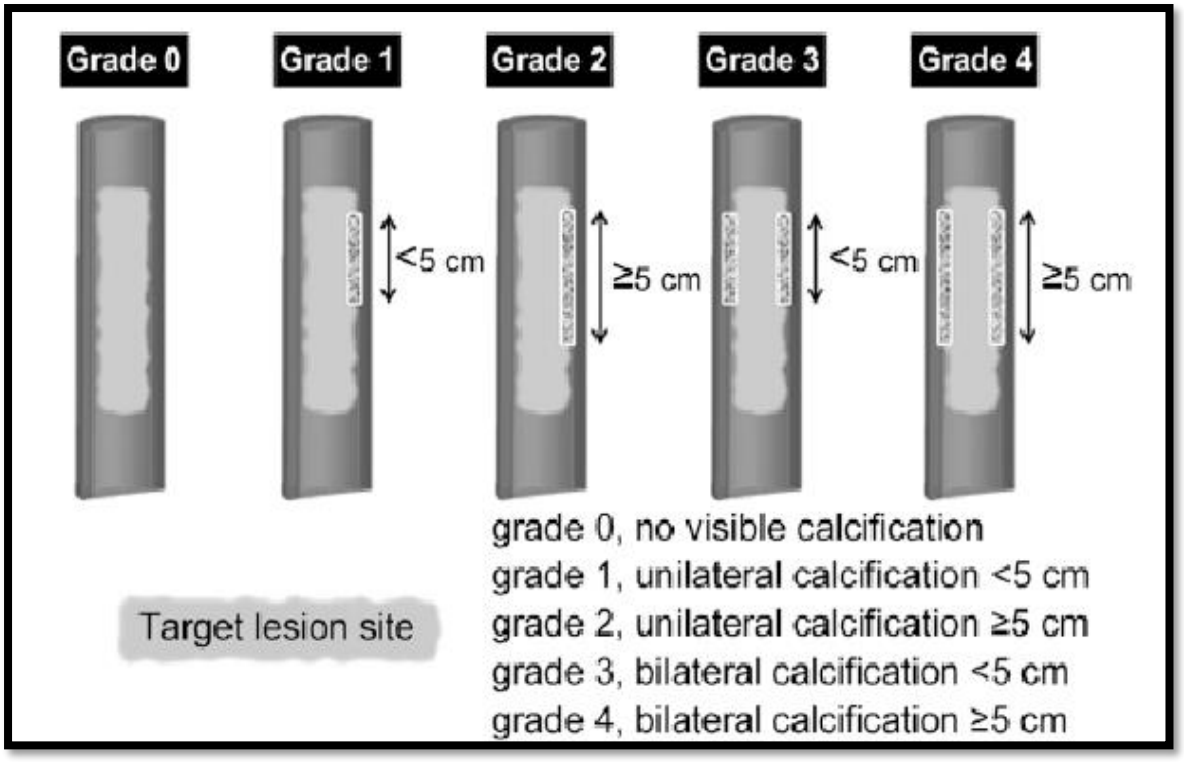


FIGURE 4: The Schema of the Peripheral Artery Calcium Scoring System (PACSS) [57]

Apart from PACSS, other peripheral arterial calcium scoring systems have been developed to formalize assessment of calcium severity which includes the Peripheral Academic Research Consortium (PARC) scoring system and the Fanelli scoring system [56]. The PACSS and

PARC scoring systems are the most utilized angiography-based systems in clinical trials. Both these systems classify severity based on whether calcium is unilateral or bilateral, with bilateral calcium indicating more severe calcification. The Fanelli system incorporates cross-sectional imaging data from computed tomography angiography (CTA) and offers an alternative to purely angiographic methods. Unlike the other two angiography-based scoring systems where the calcium length threshold has been kept at ≥ 5cm, in case of Fanelli system the threshold for calcium length is ≥ 3cm. There is no consensus on the best method and limited data exists regarding how well these systems perform at differentiating the severity of calcium [56]. There are little data directly comparing the performance of scoring systems and currently no data on their reliability.

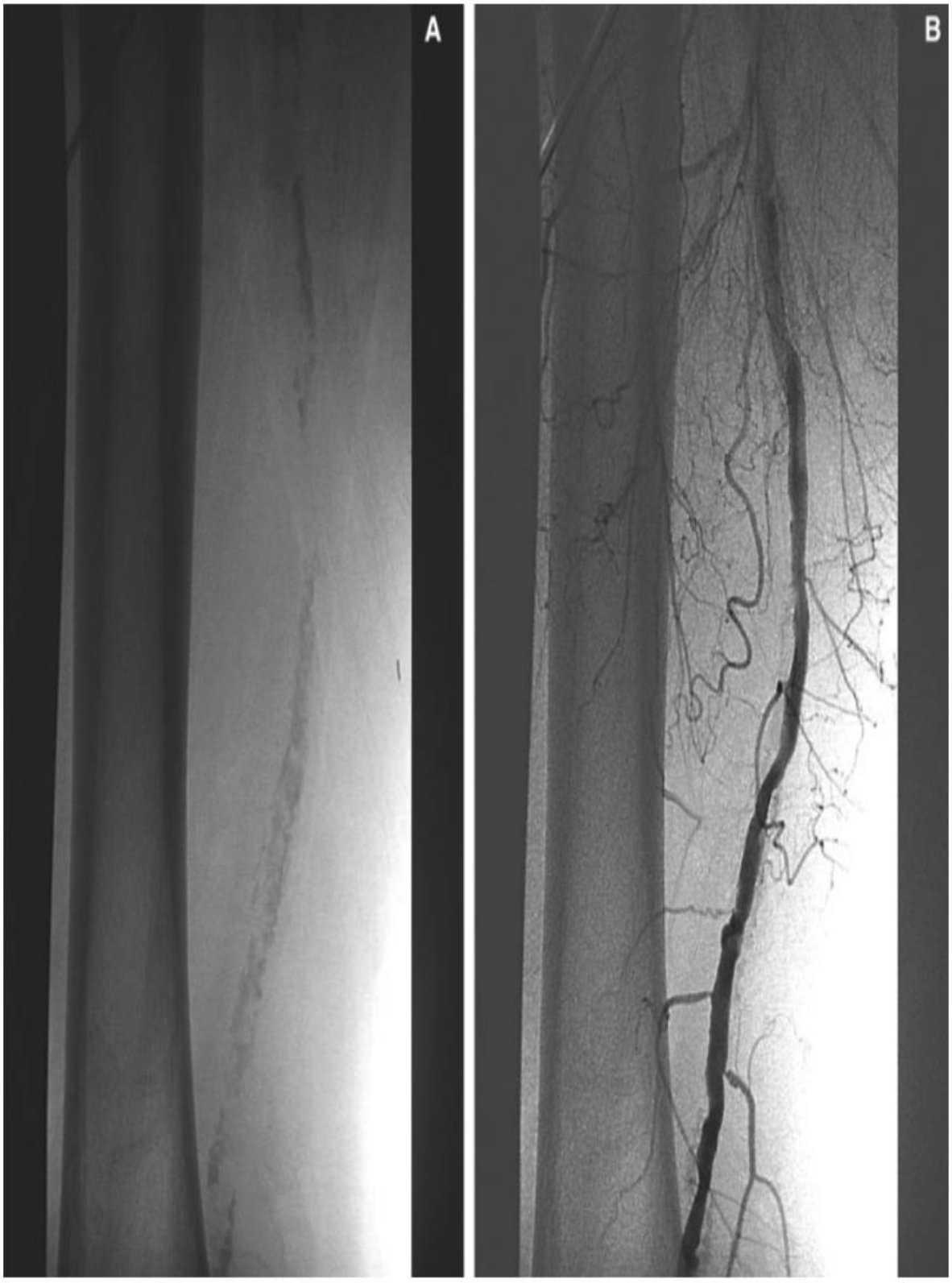


FIGURE 5: The fluoroscopic (panel A) and digital subtraction angiographic (panel B) appearance of severe calcification involving the SFA [5]

3.7 PREVENTION AND MANAGEMENT

Intimal vascular calcification is linked to atherosclerosis, making the primary therapeutic objective the prevention of cardiovascular events by managing or eliminating risk factors which includes hypercholesterolemia, hypertension, diabetes, smoking, obesity, and a lack of physical activity. In patients with the metabolic syndrome, diabetes, and CKD, in whom media calcification is significantly more prevalent, treatment of VC is focused on the management of bone and mineral metabolism disorder. This can be achieved with oral phosphate binders, active vitamin D analogs and Ca^{++} mimetics.

a) Phosphate Binders:

Calcium-based P binders are commonly used to treat hyperphosphatemia. A notable interaction has been identified between these medications and bone metabolism, which exacerbates the calcium burden in patients experiencing hypercalcemia or severe vascular calcification. Therefore, the use of calcium-free phosphate binders (e.g., sevelamer) is advised **[12,58]**. Sevelamer produces a significant decrease in serum Ca^{++} levels without altering serum P levels, and the decrease in Ca^{++} levels has been suggested as the mechanism for the lower rates of VC.

b) Vitamin D Analogues and Calcium Mimetics:

Currently, there have been no clinical studies assessing the impact of vitamin D supplementation on vascular calcification (VC). However, research conducted on mice with chronic kidney disease (CKD) has shown that the use of vitamin D receptor agonists is linked to a notable decrease in aortic calcification **[59]**. The protective effect is likely due to the up-regulation of klotho and the anti-calcification factor osteopontin or through a reduced osteoblastic gene expression in the aorta **[59,60]**. In patients with CKD, vitamin D therapy decreases serum PTH levels and significantly reduces the incidence of cardiovascular events

and improves survival [5]. Cinacalcet, a synthetic G-protein coupled receptor that controls Ca^{++} homeostasis by regulating the release of PTH, results in fewer hospitalizations for cardiovascular complications compared with placebo [61]. Cinacalcet, in combination with low-dose vitamin D, also attenuates coronary and aortic calcification in hemodialysis patients [62].

c) Intervention:

Treatment of PAD includes endovascular revascularization and open surgical operations. The available data show that LLAC limits the success of peripheral arterial revascularization [1]. The presence of severe VC within a chronic total occlusion (CTO) presents a significant challenge to endovascular intervention; severe calcification at the CTO entry point, within the CTO core and/or medial calcification along its length may make the penetration of hydrophilic guidewires, passage of balloon catheters and CTO crossing devices and sub-intimal re-entry devices difficult. The severe medial calcium may make the sub-intimal passage of the device difficult or the penetration of the nitinol re-entry needle through the calcified media and/or intima and into the vessel lumen impossible. This situation may require the operator to seek a more distal, less calcified re-entry point, thereby functionally extending the length of the arterial segment that requires endovascular treatment.

The absence of a standardized and validated peripheral artery calcium scoring system has not diminished researchers' enthusiasm for assessing endovascular devices aimed at tackling this challenging issue, even though the published outcomes indicate varied results. Balloon angioplasty of “severely” calcified lesions is limited by early elastic recoil and poor acute and long-term outcomes. Similarly, the high compressive forces applied against slotted tube femoropopliteal nitinol stents by rigid calcified plaques results in incomplete and/or eccentric stent expansion, a residual percent diameter stenosis frequently >30% which is, in turn, linked to inferior patency outcomes when compared to fully expanded stents [63].

The Supera® Stent features a distinctive closed cell interwoven nitinol design that offers four times greater resistance to compression and enhances the potential for optimal stent expansion in cases of severely calcified lesions. An observational registry study demonstrated that this innovative stent design achieved better vessel lumen preservation, especially in severely calcified lesions, compared to conventional nitinol stent designs [64]. Importance of "heavy" SFA calcification and its impact on long-term effectiveness of new evolving technologies, specifically drug coated balloons has been investigated by Fanelli et al., who described the impact of increasing degrees of SFA calcification on 12-month primary patency and late lumen loss (LLL) after the use of drug eluting balloon technology in 60 Rutherford Class 2–4 patients [65].

Extractional atherectomy, orbital atherectomy, laser atherectomy, rotational aspiration atherectomy and rotational atherectomy have evaluated device efficacy in treating VC with varying degrees of procedural and near-term success [5]. However, there have been no robust, prospective, independently core lab adjudicated evaluation of device related acute and/or 30-day MAEs and 12-month target lesion patency after treating severe VC.

3.8 CLINICAL CHALLENGES ASSOCIATED WITH LOWER LIMB ARTERIAL CALCIFICATION (LLAC) AND REVIEW OF WORLD LITERATURE

LLAC is commonly observed in patients with PAD, and it has been linked to the severity of PAD symptoms [2]. An increasing focus among researchers on the clinical importance of LLAC stems from evidence suggesting that significant calcification is independently associated with major amputation and mortality rates. Methods for evaluating LLAC are not yet unified, and different studies use different measurement modes. Guzman et al. first used Agatston score to assess calcification in the tibial artery [3]. In patients with PAD, the highest tibial arterial

calcification scores were linked to worsening levels of limb ischemia and high-risk populations for amputation. Building on this scoring method, Chowdhury et al. evaluated LLAC and found that higher calcification scores were an independent predictor for cardiovascular events and all-cause mortality [66].

In a study involving patients with femoropopliteal artery occlusions, Itoga et al. found that the presence of 100% calcification on preoperative CT scans was a significant predictor of technical failure during endovascular revascularization procedures [67]. The analysis of tibial artery occlusions is challenging due to the small caliber of these vessels. To address this, Kang et al. [4] employed a semiquantitative analysis of CTA to assess the severity of calcification in tibial arteries, concluding that extensive calcification is likewise a predictor of technical failure in this region. The success rate of revascularization tends to be diminished in patients with significant calcification, and any improvements achieved are frequently temporary, resulting in a subsequent loss of lumen over time. The reasons for increased late lumen loss in severely calcified lesions are as follows - a) the biological efficacy of drug-eluting balloon treatment relies on adequate drug transfer and accumulation in the target artery. However, the presence of annular calcification in the arterial wall may be an impermeable barrier for the drug, thus diminishing efficacy of the therapy and bare metal stent use was associated with better patency outcomes [68,69] b) Secondly, annular calcification reduces vascular compliance which may lead to subacute vascular recoil, triggering increased late lumen loss.

LLAC not only acts as an indicator for the success rates of revascularization procedures and the likelihood of restenosis but also influences the prognosis following these therapies, affecting functional outcomes and post-intervention mortality. Research by Megale et al. demonstrated that LLAC scores are associated with a heightened risk of mortality, irrespective of the revascularization technique employed [70]. To better assess and predict limb-related outcomes, various clinical scoring systems have been developed. Huynh et al. established a

scoring system focusing on calcification morphology, circumference, and length in the common iliac artery, found that incorporation of this score into the Vascular Quality Initiative mortality prediction model improved risk stratification for patients who were initially classified as lower-risk group risk for mortality [71]. A study conducted by Liu et al. utilized foot x-rays to create a simple scoring system aimed at evaluating pedal artery calcification in patients with chronic limb-threatening ischemia (CLTI) who were undergoing infrainguinal revascularization. The findings indicated that elevated pedal calcification scores were associated with an increased risk of major amputation [72].

A retrospective analysis was conducted by Okuno S et al., [57] for 394 patients with intermittent claudication who underwent successful EVT for de novo SFA lesions. The patients were retrospectively categorized using the PACSS classification (grades 0–4). The main outcome evaluated was primary patency, while the secondary outcome measures were mortality and major adverse limb events [MALE: any intervention (repeat EVT or surgical revision) or major (above ankle) amputation]. The success rate of uncoated balloon percutaneous transluminal angioplasty (PTA) was approximately 20%, primarily observed in noncalcified lesions. In contrast, the success rate for lesions exhibiting significant calcification was notably lower, at just 8.3%. These findings underscore the challenges associated with using uncoated balloon PTA as a standalone treatment for severely calcified lesions. Further it was noted that PACSS 4 classification was associated with poorer patency post revascularization, higher MALE, and mortality rates. A separate investigation conducted by de Athayde Soares R et al. [73] aimed to evaluate the long-term results of endovascular treatment for femoropopliteal occlusive disease, highlighted the significance of calcification, revealing that a calcification grade greater than 2 adversely impacts both primary patency and the potential for limb salvage.

The relationship between severity of calcification and clinical outcomes following endovascular therapy for femoropopliteal lesions was analyzed retrospectively in 677 lesions

noted in 495 patients who underwent EVT for de novo calcified femoropopliteal lesions. [74] The presence of dense arterial calcification was termed as “black rock” (BR) and was defined as calcification which is 1 cm or more in length, occupies more than half of the vessel diameter, and appears darker than the body of the femur on angiography. The authors noted that primary patency at 2 years was significantly lower in the BR (+) group than in the BR (−) group (48% vs. 75%, p = .0007). Multivariate analysis revealed that the presence of BR [hazard ratio (HR) = 2.23, 95% confidence interval (CI); 1.48–3.38, p = .0001], lesion length (HR = 1.03, 95%CI; 1.00–1.06, p = .0244), and no scaffold use (HR = 1.58, 95%CI; 1.06–2.36, p = .0246) were predictors of restenosis. They concluded that the presence of BR (black rock) was independently associated with clinical outcomes after EVT for de novo calcified femoropopliteal lesions. [74]

Aim & Objectives

4. AIM AND OBJECTIVES

4.1 AIM:

Use of peripheral artery calcification severity score (PACSS) to evaluate the severity of lower limb arterial calcification and its impact on clinical outcomes following endovascular revascularization for infrainguinal lesions (femoropopliteal and infrapopliteal segments) in patients with chronic limb threatening ischemia (CLTI).

4.2 OBJECTIVES:

a) Primary End Point: To measure the primary patency, defined as the treated vessel remaining patent without restenosis (defined as >50% decrease in post intervention luminal diameter seen on noninvasive imaging) stratified as per PACSS classification.

b) Secondary End Point: To measure major adverse cardiac events (MACE) including death and major adverse limb events (MALE) stratified according to the PACSS classification.

- MALE was any intervention (repeat endovascular therapy or surgical revision) or major (above ankle) amputation.

- MACE was defined as cerebrovascular accident, myocardial infarction, and death.

Materials & Methods

5. MATERIALS AND METHODS

5.1 STUDY AREA

A single center, prospective, observational, and longitudinal study conducted in the Department of Vascular & Endovascular Surgery, Bhagwan Mahaveer Jain Hospital, Bangalore.

5.2 STUDY POPULATION

All patients presenting with clinical features suggestive of chronic limb threatening ischemia (CLTI) with documented infrainguinal lesion on radiological imaging and planned for pure endovascular intervention have been considered for the study.

5.3 STUDY DESIGN

A single center, prospective, observational, and longitudinal study.

5.4 SAMPLE SIZE

$$n = \frac{Z^2\alpha\ p\ (1\text{-}p)}{e^2}$$

Where,

- n is sample size
- Zα at 95% Confidence Interval = 1.96
- p = 60%

(50% to 90% of patients with occlusive disease in India undergo endovascular intervention) [75]

- e (allowable error) = 7%

- **CALCULATED SAMPLE SIZE IS 188**

5.5 STUDY PERIOD

Patients were enrolled from 1st August 2022 to 28th February 2023 and were follow up prospectively at 1, 3, 6 and 12 months till February 2024.

5.6 INCLUSION CRITERIA

a) Age more than 18 years

b) Patients with chronic limb threatening ischemia (CLTI) – corresponding to Rutherford category 4, 5 and 6 who underwent purely endovascular infrainguinal revascularization during the study period.

c) Patients giving consent to participate in the study.

5.7 EXCLUSION CRITERIA

a) Patients presenting with chronic limb ischemia (CLI) – corresponding to Rutherford category 1,2 and 3.

b) Patients with CLTI secondary to aorto-iliac artery involvement alone or in combination with infrainguinal disease.

c) Patients who have previously undergone revascularization in the index limb previously.

c) Patients undergoing open surgical intervention/ hybrid revascularization procedures.

d) Patients presenting with acute limb ischemia (ALI).

5.8 METHODOLOGY

a) Patient Enrolment:

Patients presenting to the outpatient department of Vascular and Endovascular Surgery in Jain Institute of Vascular Sciences (JIVAS), Bhagwan Mahaveer Jain Hospital, Bangalore who meet the eligibility criteria and planned for surgery will be subject to standard pre-operative workup. Demographic data of patients were recorded with history and physical examination findings preoperatively in the form on chief complaints, personal history of smoking, tobacco, and alcohol, if any. They were assessed for medical risk factors like diabetes mellitus (DM), hypertension (HTN), ischemic heart disease (IHD)/ coronary artery disease (CAD), chronic kidney disease (CKD), cerebrovascular disease (CVD) and others. In all patients general and local examinations were carried out with careful documentation of primary wound status/ presence of digital gangrene, vascular status of both lower limbs along with ankle brachial index (ABI), toe brachial index (TBI) and pulse volume recordings (PVR). Preoperative imaging was based on clinical findings and was performed in the form of arterial duplex ultrasound, CT angiography or MR angiography of the lower limbs.

b) Laboratory Analysis:

Routine blood investigations which included hematocrit, renal function test, liver function test, fasting lipid profile, coagulation profile, chest x ray, ECG, 2D echocardiogram and glycosylated hemoglobin (HbA1c) was recorded for all patients after enrollment in study.

c) Medical Management:

Patients planned for endovascular intervention (angioplasty-stenting) received oral N-acetyl cysteine 600mg orally TID for one day prior to procedure. All DM patients who were on oral

hypoglycemic agents were switched over to regular insulin and strict glycemic control was ensured pre-operatively. Patient were started on IV hydration with 0.9% NaCl at 1ml/kg/ hour for 12 hours pre-procedure and 12 hours post-procedure. Sodium bicarbonate infusion was also administered post procedure for 12 hours. All patients received 300mg loading dose of clopidogrel approximately 12 hours prior to the endovascular intervention. Prophylactic IV antibiotics (2^{nd} generation cephalosporins) were administered prior to the procedure. However, patients with active wound infections were initiated on IV 3^{rd} generation cephalosporins and lincosamide (clindamycin) antibiotics which were continued till culture sensitivity report of the wound swab is obtained.

d) Primary Wound Procedures:

All patients presenting with grossly infected wounds/ ulcers or wet gangrene of the digits underwent wound debridement or amputation of digits (as required) prior to undergoing revascularization. However, patients who did not have any active evidence of gross contamination of the wounds underwent primary wound procedure along with revascularization in the same sitting. Post debridement/ toe amputation procedures, all patients received daily change of dressing with hydrocolloids.

e) Endovascular Intervention – Infrainguinal Angioplasty:

Most of the procedures were carried out under regional anesthesia with monitored anesthesia care (MAC) unless the patient opted for general anesthesia. All cases were done by consultant vascular surgeons with >15 years' experience in open vascular and endovascular revascularization. In majority of the cases, access was through ipsilateral antegrade common femoral artery (CFA). However, contralateral retrograde common femoral artery (CFA) access has also been obtained for patients with proximal superficial femoral artery lesions. Usually 6

Fr sheaths were deployed (7Fr sheaths used in patients with contralateral retrograde CFA access).

The preprocedural angiograms were examined to stratify the de novo infrainguinal lesions. The grade of calcification of the femoropopliteal arteries was defined with the proposed peripheral arterial calcium-scoring system (PACSS) [5]. This score describes the intimal and medial vessel wall calcification at the target lesion site, assessed with high intensity fluoroscopy and digital subtraction angiography in the antero-posterior projection. There are five grades: grade 0, no visible calcium at the target lesion site; grade 1, unilateral calcification of <5 cm at the target lesion site (figure 6); grade 2, unilateral calcification of ≥5 cm at the target lesion site (figure 7); grade 3, bilateral calcification of <5 cm at the target lesion site (figure 8) and grade 4, bilateral calcification of ≥5 cm at the target lesion site (figure 9). The grading of calcification was determined based on the extent of calcification in the vessel wall within the target lesion site. In patients with multi-level infrainguinal lesion (lesions involving the SFA/ PA/ Tibial Vessels), the vessel with the highest grade of calcification based on PACSS was considered. Further, in patients with lesions involving >1 tibial vessel, the primary infrapopliteal artery target for achieving effective revascularization (TAP – Target Artery Pathway) was evaluated to determine the grade of calcification.

An intra-arterial bolus of 5000 units heparin 5000 units was administered followed by 1000 units for every passing hour. Non-ionic media Iohexol (Omipaque) or CO2 (in patients with CKD/ AKI/ Elevated creatinine) was used as contrast media for DSA and findings were documented. A 0.035-, 0.018-, or 0.014-inch guidewire along with support catheter was delivered across the lesion (additional retrograde tibial access was obtained to cross the lesions as and when required). Non-ionic media Iohexol (Omipaque) or CO2 (in patients with CKD/ AKI/ Elevated creatinine) was used as contrast media for imaging. After successful wire crossing, angioplasty was performed with an optimally sized balloon. The lesion

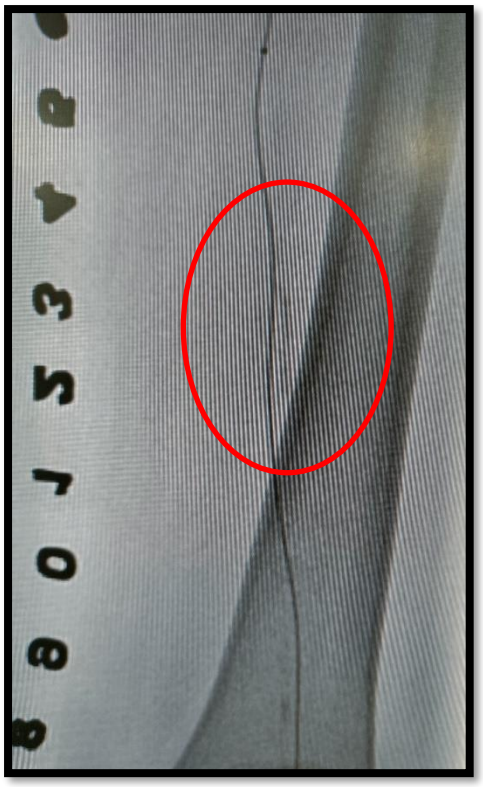


FIGURE 6: PACSS Grade I

FIGURE 7: PACSS Grade II

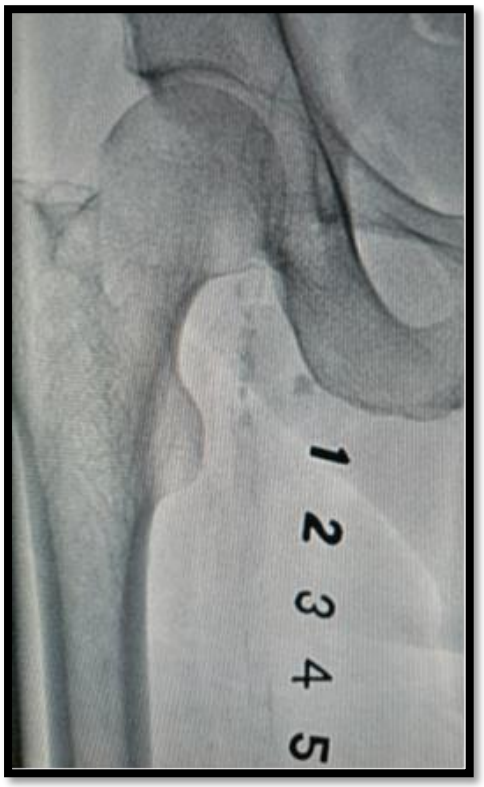


FIGURE 8: PACSS Grade III

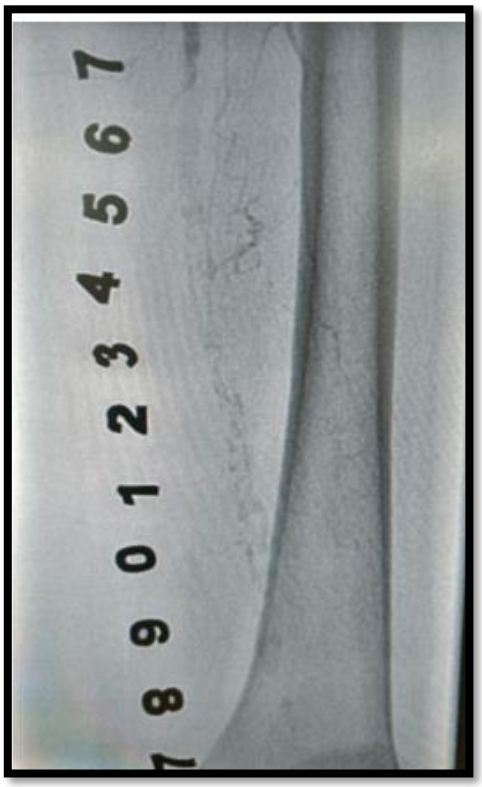


FIGURE 9: PACSS Grade IV

commonly was dilated for 2 minutes; stent implantation was performed if the lesion had a residual mean pressure gradient >10 mm Hg, residual stenosis >30%, and/or flow-limiting dissection. The selection of stents and balloons was at the operator's discretion. The stent size was chosen visually to be 1 to 2 mm larger than the reference vessel diameter.

Post procedure, the sheath was removed once the activated clotting time (ACT) drifted to less than 180 seconds and manual compression was applied for a duration of 15 minutes followed by application of compression bolster over the access site. Patient was shifted to recovery room and monitored for any hemodynamic instability. The post procedure pulses/ doppler signal status was noted and the PVR/ ABI documented on the 1st postoperative day. Any other significant perioperative events in the form of morbidity (ACS/ CIN/ Puncture Site Bleeding, etc.) and mortality were also recorded.

f) Follow Up Procedures:

All patients were counselled about the life style modifications regarding the foot wear and foot care and were discharged with culture specific oral antibiotics along with dual antiplatelets for 3 months which was converted to single antiplatelet at 4th month. They were regularly followed up at 1, 3, 6 and 12 months. Depending upon the wound status, they were either dressed with hydrocolloids or vacuum assisted closure (VAC) device was used. In the follow up period, toe amputations/ debridement/ placement of split skin graft (SSG) was done as necessary for wound healing.

All enrolled patients had a thorough clinical examination and PVR/ ABI surveillance at 1,3,6 and 12 months. The duplex ultrasound was performed if there was a worsening in their symptoms with an increase in one category in the Rutherford scale, decrease in ABI > 0.15 from the maximum post procedural level (or reduction in amplitude of waveforms in case of

non-compressible ABI/ TBI) or clinical worsening of the tissue loss. The duplex ultrasound was performed by an experienced sonologist.

Lost To Follow Up (LFU): Any patient who did not come for a follow up visit at 1^{st}/ 3^{rd}/ 6^{th} month and thereafter, were considered to be lost to follow up – these set of patients could not be evaluated for loss of patency/ restenosis based on ABI/ PVR and duplex scan. However, attempts were made for telephonic conversation with patients who did not follow up at the prescribed time duration as mentioned in the protocol and efforts were made to document wound status, MACE and MALE in patients who were lost to follow up through this telephonic conversation.

5.9 STATISTICAL METHODS

Collected data was recorded in the Study Performa, and was entered into MS Excel worksheet and analyzed. All data were entered in Microsoft Excel Office 2019. Data were expressed as the mean ± standard deviation for continuous variables or as counts (percentages) for dichotomous variables. Continuous variables were examined using an unpaired t test. Categorical variables were compared using the chi-square test or Fischer's exact test to analyze the significance of difference between frequency distribution of the data. p value < 0.05 was considered as statistically significant.

Survival curves for estimated limb salvage, patency, and survival rates were constructed with the Kaplan– Meier method. Cox regression was used in the univariate and multivariable analyses

All analyses were performed using SPSS software (version 30.0.0.0 (172); IBM Corporation, Somers, NY, USA)

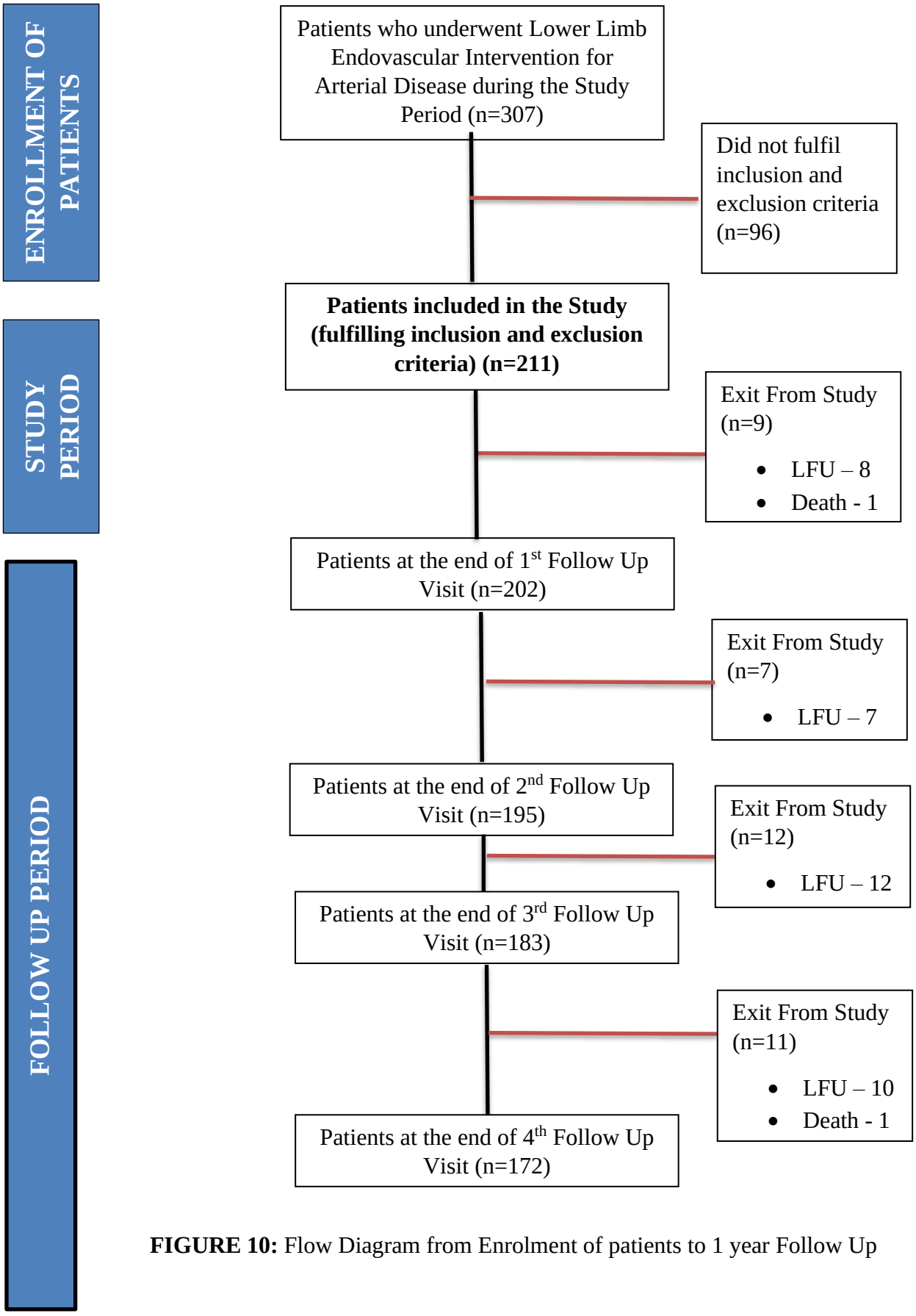


FIGURE 10: Flow Diagram from Enrolment of patients to 1 year Follow Up

Results

6. OBSERVATIONS AND RESULT ANALYSIS

A total of 211 patients satisfied the study criteria in this prospective, observational, and longitudinal study. Baseline and patient characteristics were included for all 211 patients included in the study population. A total of 8 patients were lost to follow up prior to the 1st month follow up – these patients were excluded from the follow up results which comprised of primary patency, restenosis, and major amputation (major adverse limb events – MALE) and major adverse cardiac events (MACE).

The contents of each table are explained during discussion. Graphs are made to portray the relation existing among data wherever necessary.

6.1 AGE DISTRIBUTION –

TABLE 2: DISTRIBUTION OF PATIENTS BASED ON AGE

Age Distribution (years)	Total Patients (n)	Percentage (%)
≤40	4	1.9
41-50	8	3.8
51-60	40	18.9
61-70	76	36.1
71-80	63	29.8
81-90	17	8.1
91-100	3	1.4
TOTAL	211	100

The mean age of the entire study population was noted to be 67.1 ± 10.3 years.

Further, majority of the patients belonged to the age group 61-70.

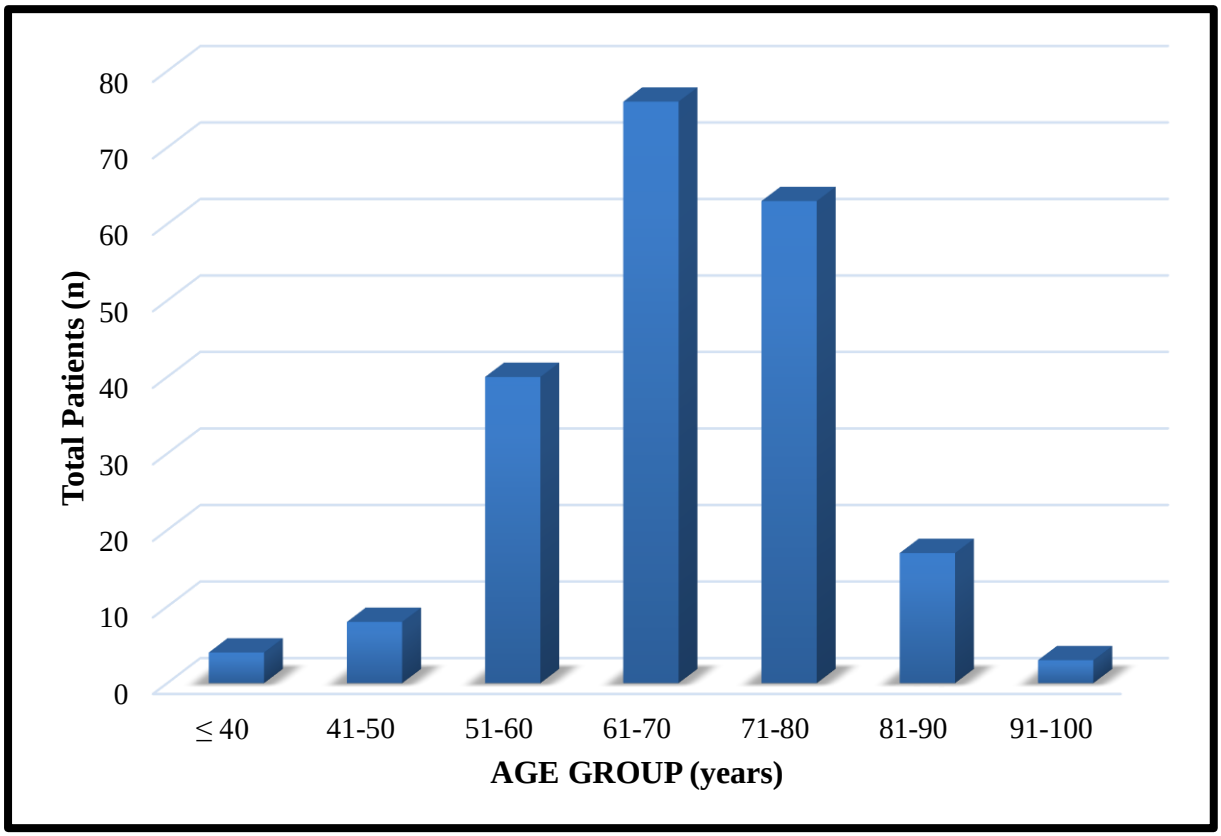


CHART 1: AGE DISTRIBUTION IN TOTAL POPULATION

6.2 GENDER DISTRIBUTION –

Of the total 211 patients, 79.6% (168) were males while 20.4% (43) were females.

TABLE 3: DISTRIBUTION OF PATIENTS BASED ON GENDER

Gender	Total Patients (n)	Percentage (%)
Male	168	79.6
Female	43	20.4
TOTAL	211	100

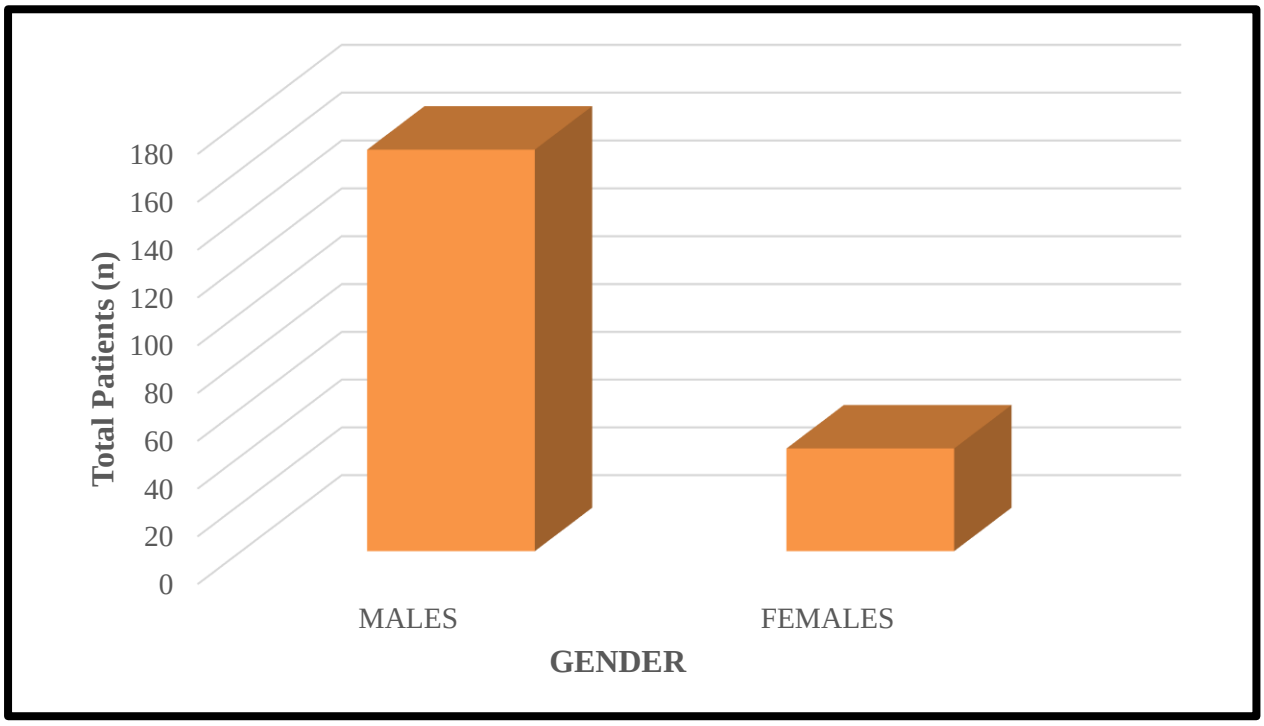


CHART 2: GENDER DISTRIBUTION IN TOTAL POPULATION

6.3 COMORBIDITIES –

The most common comorbidity noted was diabetes mellitus which was present in a total of 201 (95.3%) patients. Othe common comorbidities in the study group included hypertension, ischemic heart disease (IHD) and chronic kidney disease (CKD)

TABLE 4: DISTRIBUTION OF PATIENTS BASED ON COMORBIDITIES

Comorbidities	Total Patients (n)	Percentage (%)
Diabetes Mellitus	201	95.3
Hypertension	137	64.9
Ischaemic Heart Disease (IHD)	84	39.8
Chronic Kidney Disease (CKD)/ AKI	48	22.7
Hypothyroidism	9	4.3
COPD/ Asthma	6	2.8
CVA (Stoke)	15	7.1
Chronic Liver Disease (CLD)	3	1.5
Rheumatoid Arthritis	2	0.9

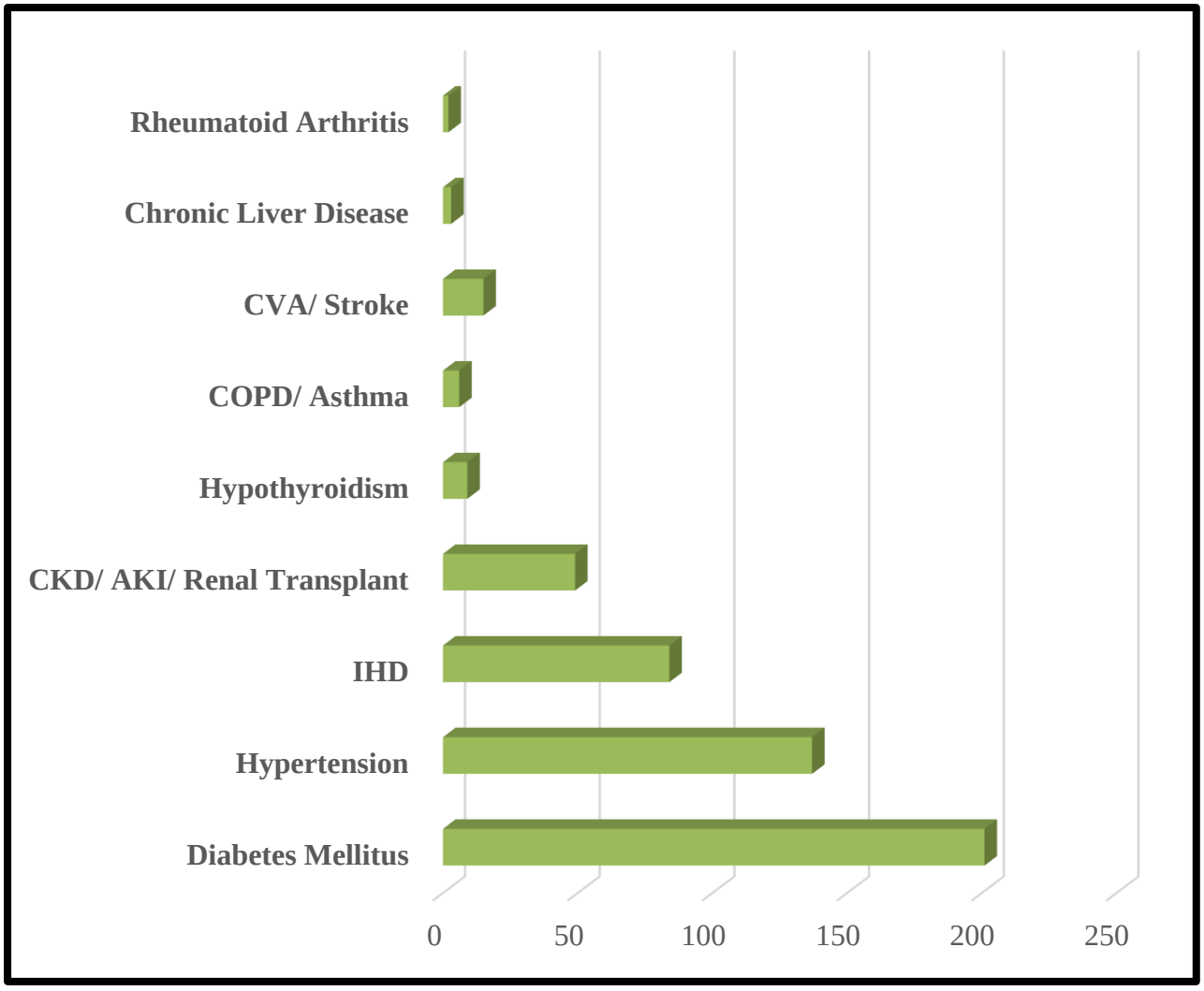


CHART 3: DISTRIBUTION OF COMORBIDITIES IN TOTAL STUDY POPULATION

6.4 WIfI STAGING OF WOUND –

The wounds of all patients presenting with Rutherford Category V and Category VI CLTI were evaluated and classified as per WIfI staging

TABLE 5: DISTRIBUTION OF PATIENTS BASED OF WIfI STAGING OF WOUND

WIfI Staging of Wound	Total Patients (n)	Percentage (%)
WIfI Stage 1	3	1.5
WIfI Stage 2	21	9.9
WIfI Stage 3	63	29.8
WIfI Stage 4	124	58.8
TOTAL	211	100

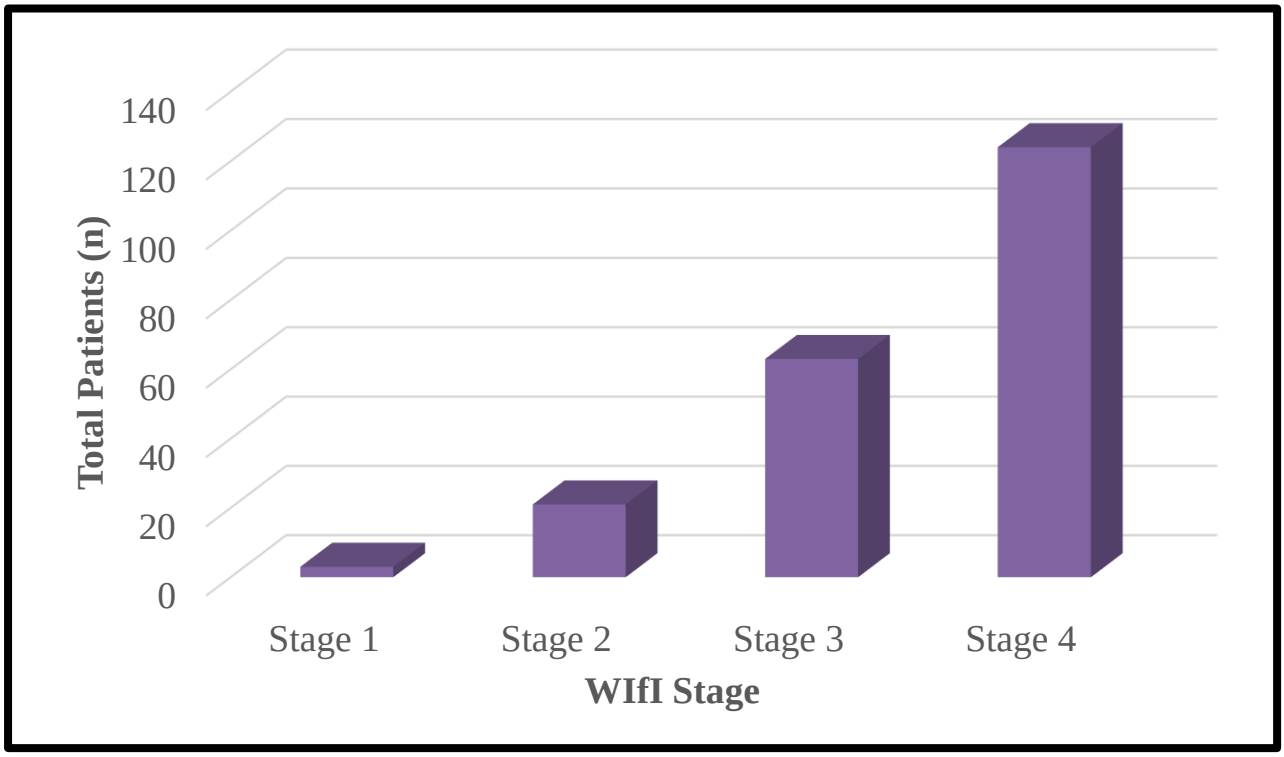


CHART4: DISTRIBUTION OF PATIENT BASED ON WIfI STAGING OF WOUND

6.5 LOWER LIMB INVOLVEMENT –

The most common lower limb involved with CLTI in our study group was noted to be left lower limb – 106 patients accounting for 50.4% of the study population.

TABLE 6: DISTRIBUTION OF PATIENTS BASED ON LOWER LIMB INVOLVEMENT

Lower Limb Involved	Total Patients (n)	Percentage (%)
Left	106	50.4
Right	105	49.6
TOTAL	211	100

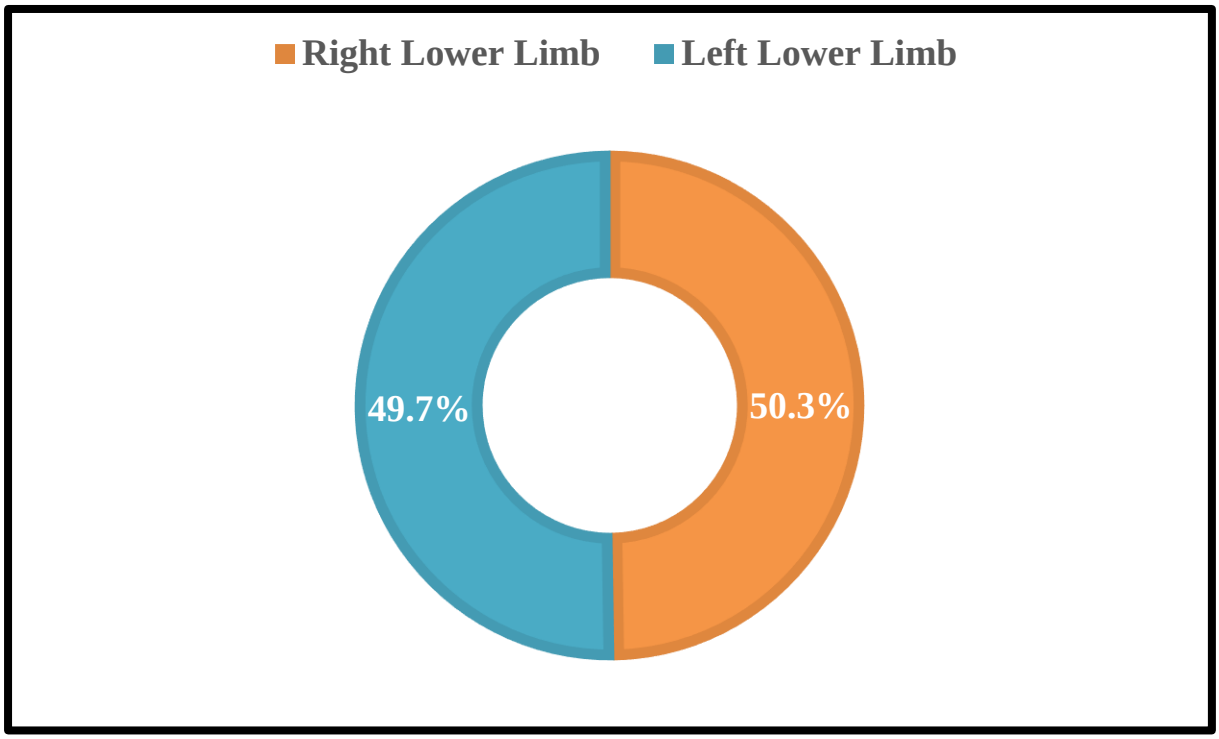


CHART 5: DISTRIBUTION OF PATIENTS BASED ON LOWER LIMB INVOLVED

6.6 SMOKING HISTORY

One of the most common risk factors associated with development of peripheral Arterial Disease – Smoking/ Consumption of Tobacco was noted in 96 patients totally, all of whom were males.

TABLE 7: PRESENCE OF SMOKING/ TOBACCO CONSUMPTION

Presence of Smoking/ Tobacco Consumption History	Total Patients (n)	Percentage (%)
YES	96	45.5
NO	115	54.5
TOTAL	211	100

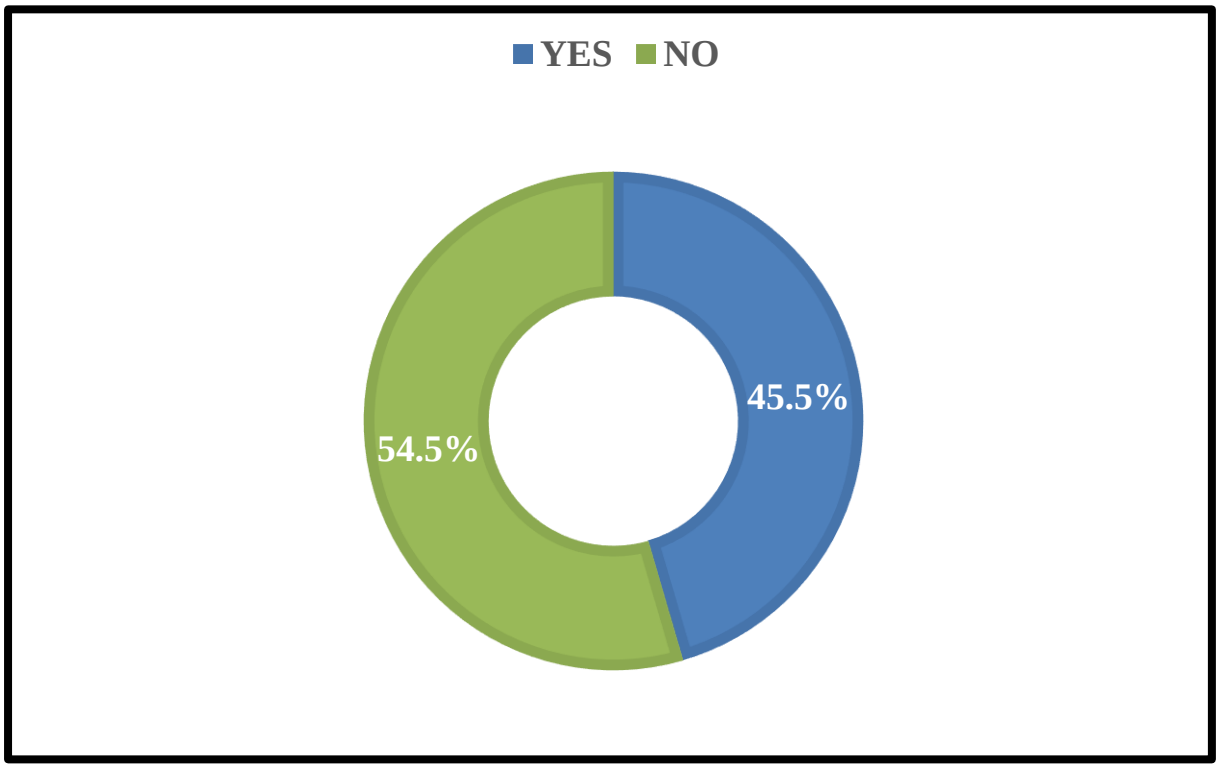


CHART 6: DISTRIBUTION OF PATIENTS BASED ON HISTORY OF SMOKING/ TOBACCO CONSUMPTION

6.7 RUTHERFORD CATEORY OF CLTI

Based on clinical presentation, patients in the study group have been classified into Rutherford Category IV/ V/ VI with majority of the patients belonging to Rutherford Category v (73.5%)

TABLE 8: DISTRIBUTION OF PATIENTS BASED ON RUTHERFORD CATEGORY OF CLTI

Rutherford Category	Total Patients (n)	Percentage (%)
Category IV	4	1.9
Category V	155	73.5
Category VI	52	24.6
TOTAL	211	100

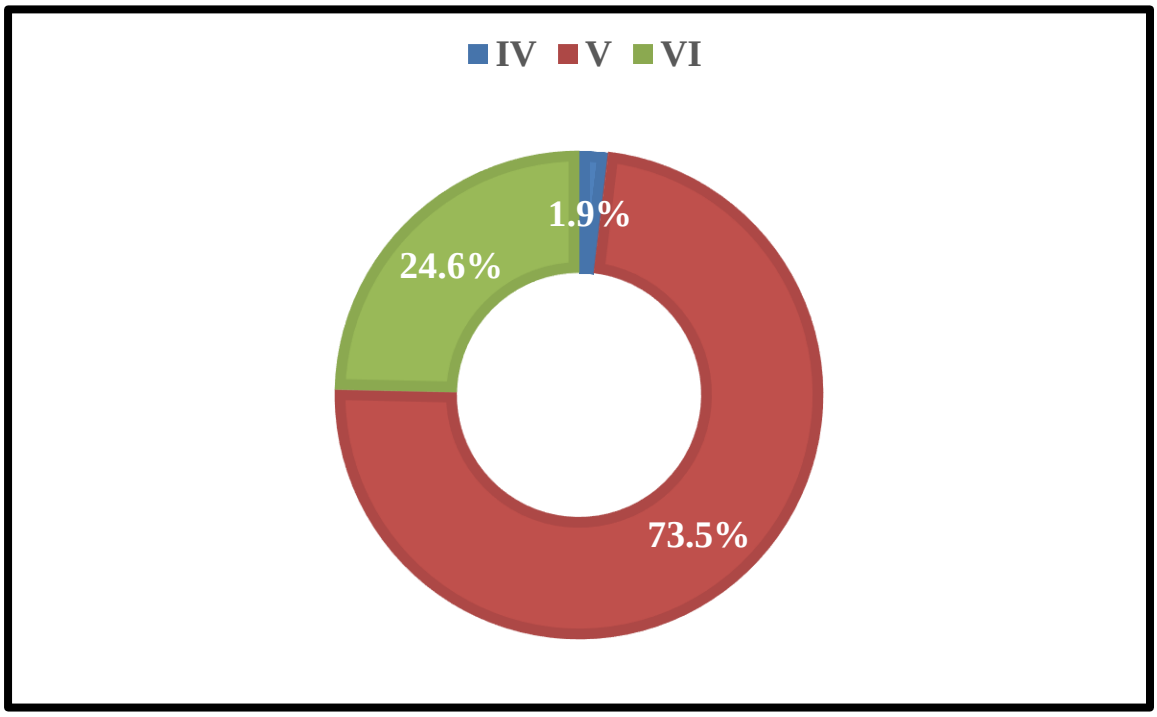


CHART 7: DISTRIBUTION BASED ON RUTHERFORD CATEGORY OF CLTI

6.8 GLASS STAGING OF LESIONS

Based on DSA, lesions in the Femoropopliteal (FP) and Infrapopliteal (IP) segment were documented based on which the GLASS staging was derived. Majority of the patients in the study group belonged to GLASS stage II (59.7%).

TABLE 9: DISTRIBUTION OF PATIENTS BASED ON GLASS STAGING OF LESIONS ON DSA

GLASS Stage	Total Patients (n)	Percentage (%)
Stage I	52	31.7
Stage II	126	59.7
Stage III	33	5
TOTAL	211	100

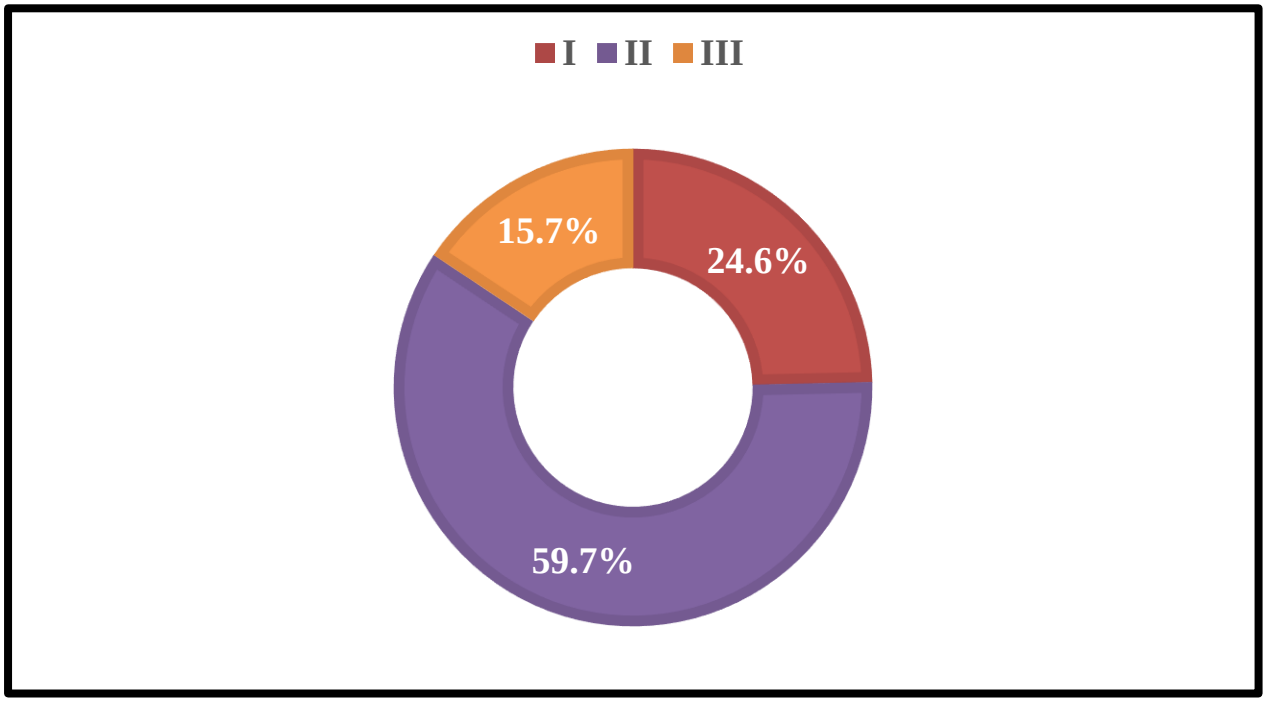


CHART 8: DISTRIBUTION BASED ON GLASS STAGING

6.9 PACSS CLASSIFICATION BASED ON FLUOROSCOPY

Based on the PACSS classification, presence of calcification and its severity was graded on fluoroscopic and DSA images prior to endovascular intervention. Calcification within the diseased segment of the arterial tree was taken into consideration. In case of multi-level diseased segments, the highest PACSS was taken into consideration.

TABLE 10: DISTRIBUTION OF PATIENTS BASED ON PACSS CLASSIFICATION ON DSA

PACSS Grade	Total Patients (n)	Percentage (%)
Grade 0	107	50.7
Grade 1	27	12.8
Grade 2	18	8.5
Grade 3	22	10.5
Grade 4	37	17.5
TOTAL	211	100

Nearly half of the patients were noted to have calcification within the diseased segment of the arterial tree with majority of the patients having calcification involving bilateral wall calcification measuring >5cm (Grade 4).

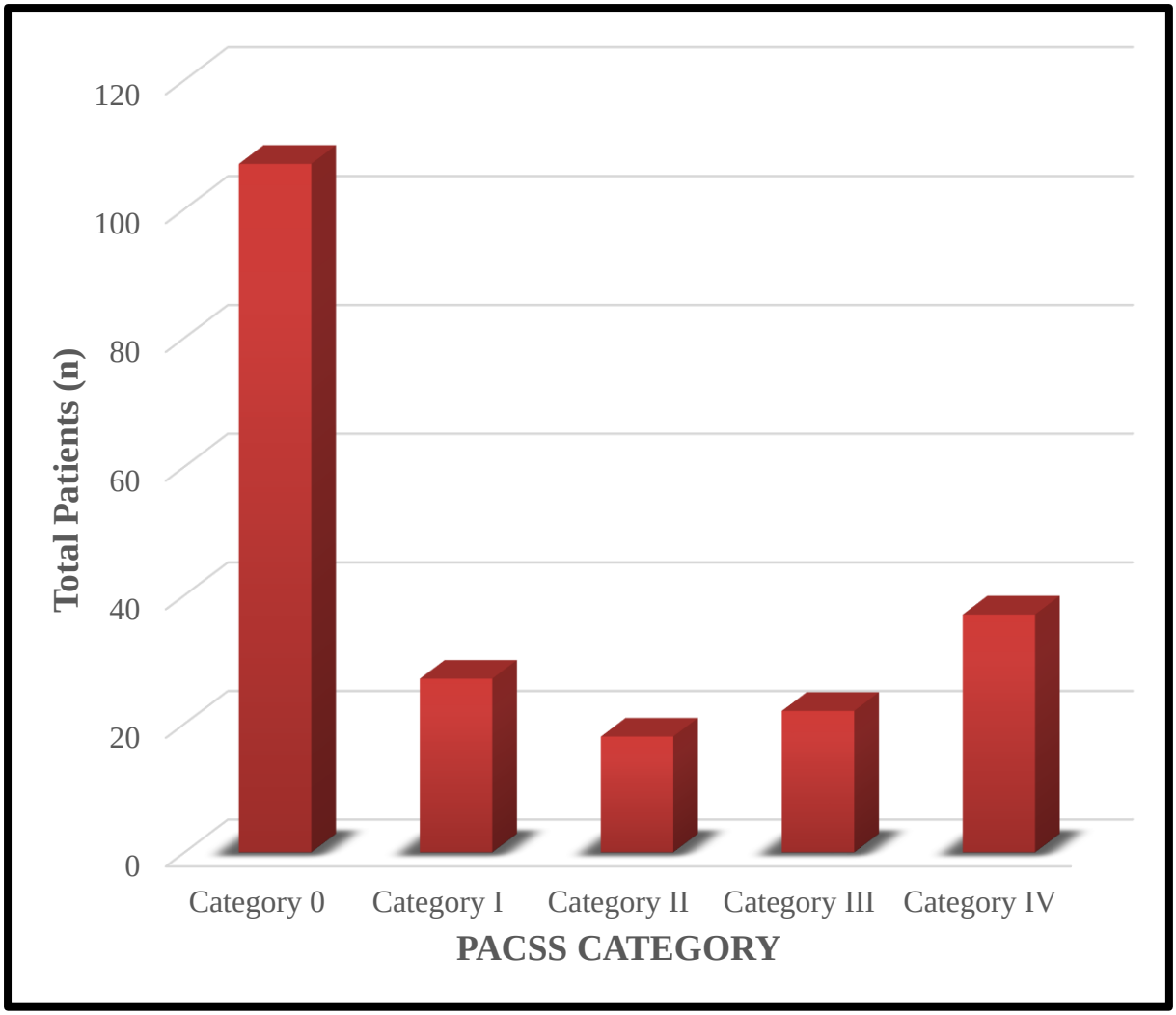


CHART 9: DISTRIBUTION OF PATIENTS BASED ON PACSS CLASSIFICATION

6.10 LOCATION OF LESION IN THE ARTERIAL TREE

Majority of the patients presented with purely infrapopliteal lesions (53.1%) with 33.6% patients in the study population noted to have multilevel infrainguinal disease.

TABLE 11: DISTRIBUTION OF PATIENT BASED ON LOCATION OF THE LESION

Location of Lesion	Total Patients (n)	Percentage (%)
SFA/ PA Segment	28	13.3
Infrapopliteal Segment	112	53.1
Multilevel Infrainguinal Disease	71	33.6
TOTAL	211	100

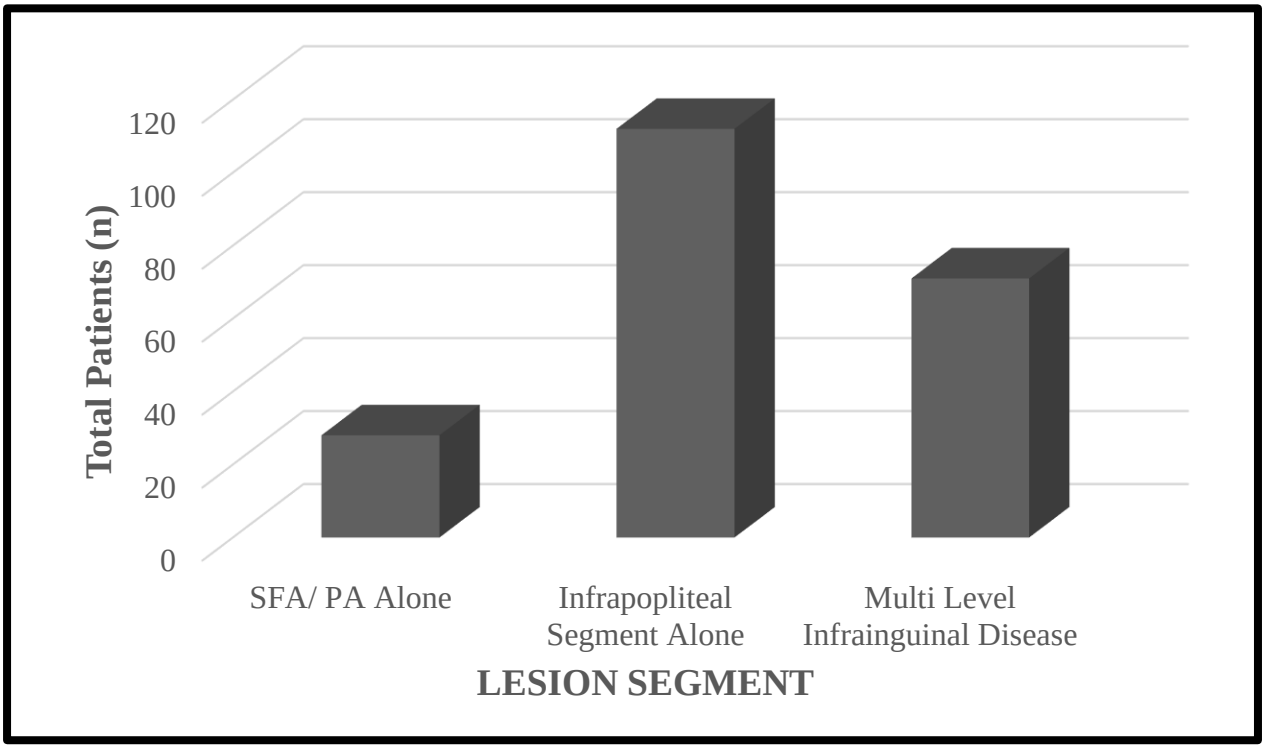


CHART 10: DISTRIBUTION OF PATIENTS BASED ON LOCATION OF LESION

6.11 PRIMARY WOUND PROCEDURE

Patients with Rutherford Category V/ VI, underwent wound procedures, wither prior to or along with endovascular intervention, which included – wound debridement, single or multiple toe amputation or Transmetatarsal amputation.

TABLE 12: DISTRIBUTION OF PATIENTS BASED ON PRIMARY WOUND PROCEDURES

Primary Wound Procedure	Total Patients (n)	Percentage (%)
No Debridement	12	5.7
Wound Debridement	103	48.8
Single Toe Amputation	52	24.6
Multiple Toe Amputation	19	9.1
Transmetatarsal Amputation (TMA)	25	11.8
TOTAL	211	100

Nearly half the patients underwent wound debridement involving the digits/ foot or leg.

Around 12 patients did not require any form of primary wound procedure.

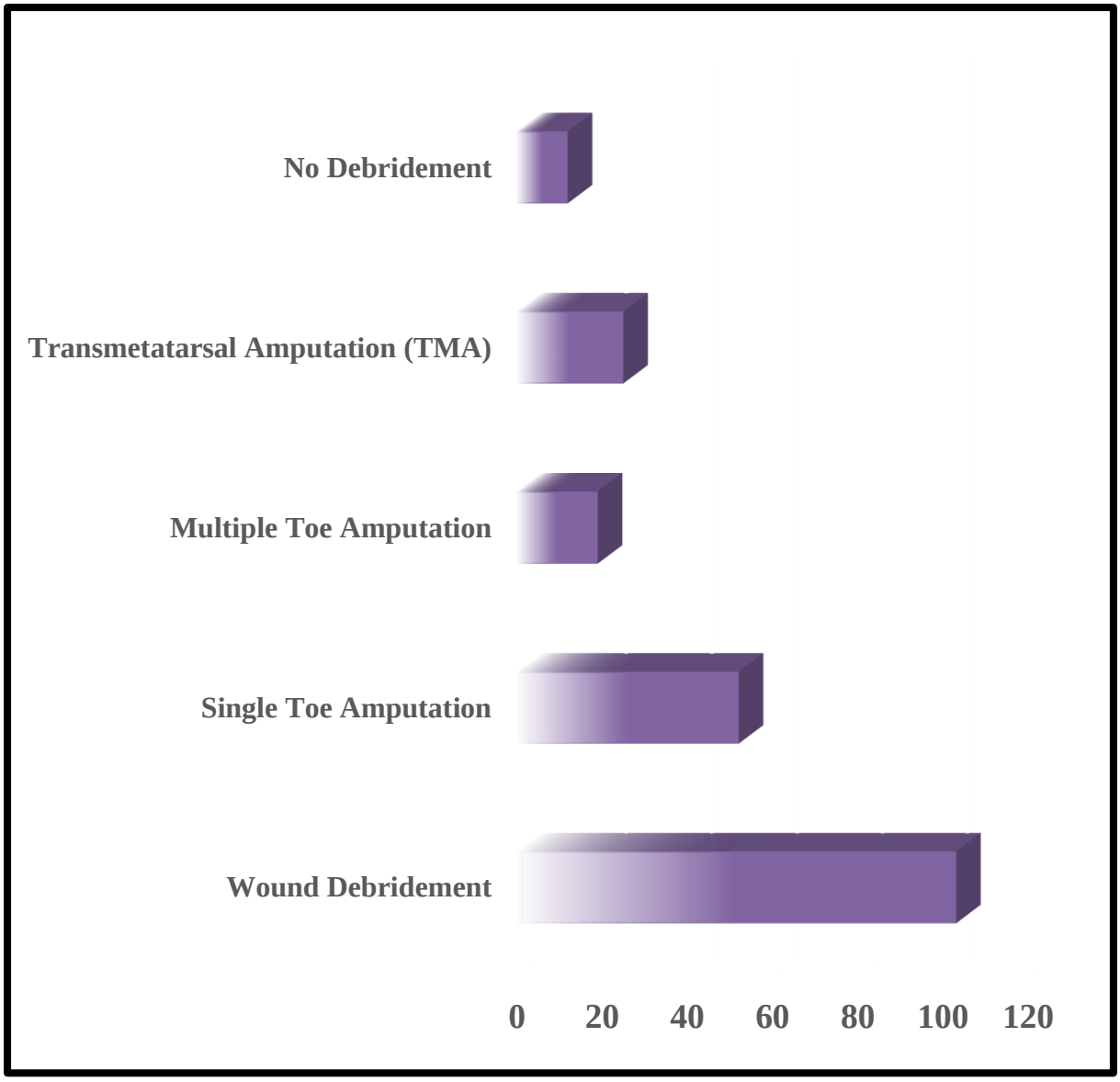


CHART 11: DISTRIBUTION OF PATIENTS BASED ON PRIMARY WOUND PROCEDURE

FOLLOW UP PERIOD

Total patients included in the study population – 211 (baseline patient characteristics and intraoperative data collected for these patients).

Patients lost to follow up at the end of 1 month – 8 (no follow up data with respect to wound status/ MALE and MACE)

Total patients lost to follow up by the end of 1 year – 37

Patients who completed follow up till 1 year - 174

Out of the 37 patients who were lost to follow-up, 8 did not have any clinical examination, ABI/TBI documentation, or telephonic communication recorded. The other 29 patients participated in telephonic conversations, during which information about their wound status and details concerning MALE and MACE was collected. Due to the infeasibility of conducting clinical examinations and documenting ABI, data on primary patency could not be gathered.

Primary patency determined for 174 patients who completed the 1 year follow up (after excluding 37 patients).

MALE and MACE was determined for 203 patients (based on clinical examination and telephonic conversation), after excluding the 8 patients who were lost to follow up from the 1st month itself.

6.12 TIME TAKEN FOR WOUND TO HEAL

Post procedure, all patients were advised to undergo daily change of dressing or undergo VAC therapy which each cycle lasting for 5 days. Wounds were examined in the Foot Clinic and any additional procedure like re-debridement/ additional toe amputations were performed based on status of the wound. Total time taken for the wound to heal was documented during the 1st/ 3rd/ 6th and 12th month follow up.

8 patients were lost to follow up at the end of 1st month – no data was available for the patients. Hence wound healing was noted for the remaining 203 patients.

Out of the 203 patients included in this study, **168 patients were noted to have complete resolution of their wounds on clinical examination with majority of the wounds completely healing between 3rd and 6th month post endovascular intervention**. Among remaining 35 patients – 4 patients had no wound at presentation, 18 underwent major amputation (BKA/ AKA), 2 patients died before the end 1 year follow up and remaining 11 patients were still noted to have healing wounds – the patency of the revascularized segment of these patients could not be assessed as these patients did not come for clinical follow up and only telephonic conversation was possible.

TABLE 13: DISTRIBUTION OF PATIENTS BASED ON TIME TAKEN FOR WOUND TO HEAL

Time Taken for Wound to Heal	Total Patients (n)	Percentage (%)
Within 1st Month	6	3.5
Between 1st and 3rd Month	52	30.9
Between 3rd and 6th Month	78	46.5
Between 6th and 12th Month	32	19.1
TOTAL	168	82.6

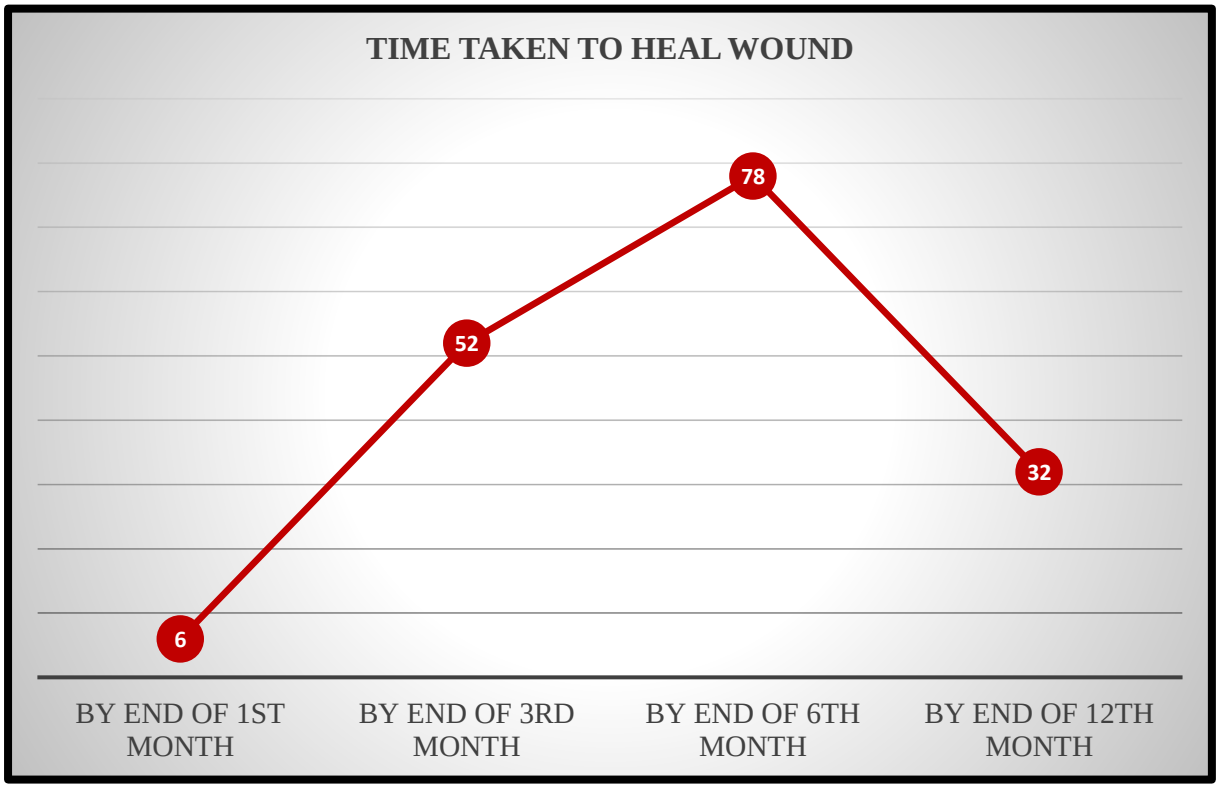


CHART 12: DISTRIBUTION OF PATIENTS BASED ON TIME TAKEN FOR COMPLETE HEALING OF THE WOUND

6.13 LOSS OF PRIMARY PATENCY

A total of 174 patients underwent either clinical examination during follow up to look for worsening of the wound status and ABI/ TBI/ PVR was performed to look for any significant drop (>0.15).

Primary patency could not be assessed for remaining 37 patients as they could not be followed up clinically in the OPD or through telephonic conversation.

TABLE 14: DISTRIBUTION OF PATIENTS BASED ON LOSS OF PRIMARY PATENCY

Loss of Primary Patency	Population (n)	Percentage (%)
YES	18	10.3
NO	156	89.7
TOTAL	174	100

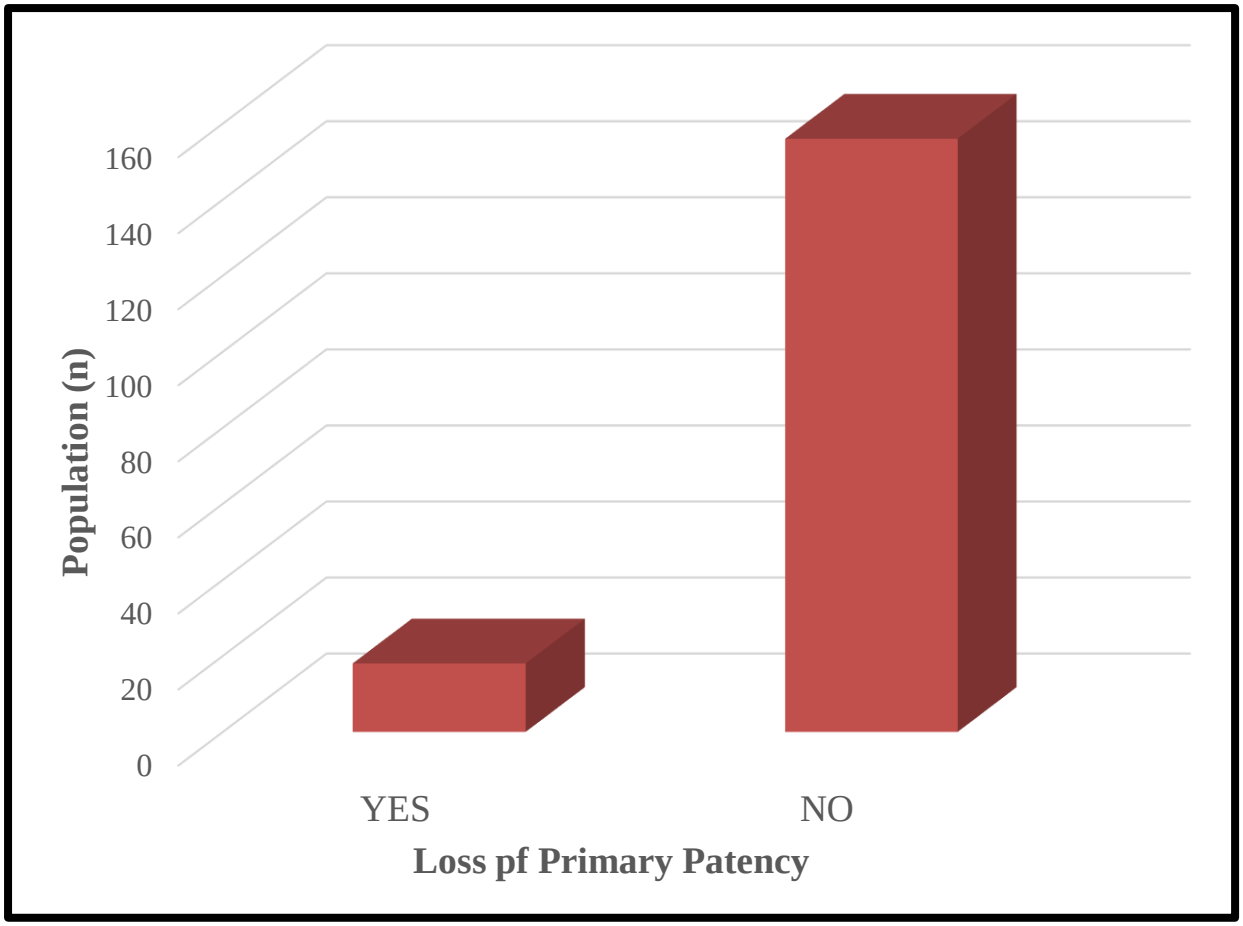


CHART 13: DISTRIBUTION OF PATIENTS BASED ON LOSS OF PRIMARY PATENCY

6.14 MAJOR ADVERSE LIMB EVENTS (MALE)

Major Adverse Limb Events (MALE) is described as either major amputation of the revascularized limb (BKA/ AKA) and/or reintervention on the revascularized segment.

Among the 18 patients who developed restenosis, 7 patients required revascularization, and further 18 patients underwent major amputation during the 1 year follow up. Overall, a total of **25 patients experienced MALE** (out of a total of 203 who had clinical follow up or telephonic conversation).

TABLE 15: DISTRIBUTION OF PATIENTS BASED ON MALE

Major Adverse Limb Events	Total Patients (n)	Percentage (%)
Reintervention for Restenosis	7	3.5
Below Knee Amputation (BKA)	14	6.9
Above Knee Amputation (AKA)	4	1.9
TOTAL	25	12.3

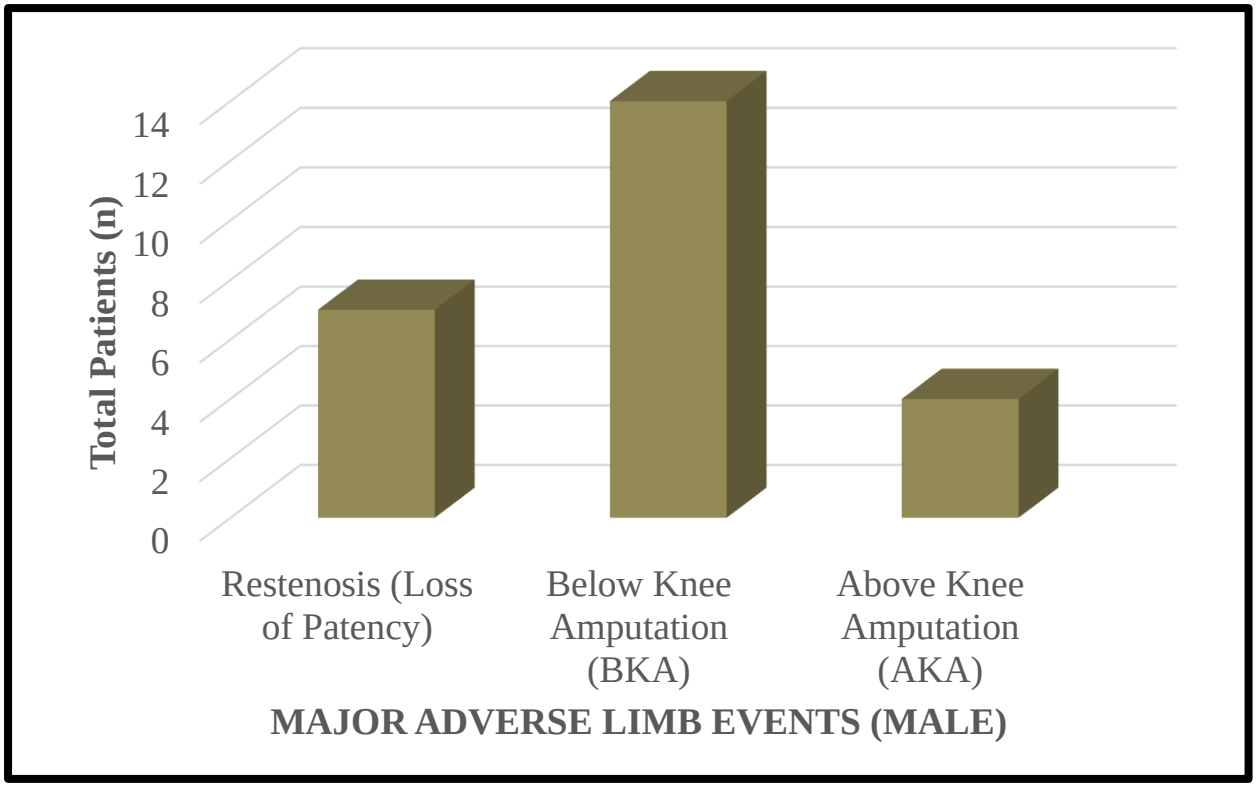


CHART 14: DISTRIBUTION OF PATIENTS BASED ON MAJOR ADVERSE LIMB EVENTS (MALE)

6.15 MAJOR ADVERSE CARDIOVASCULAR EVENTS (MACE)/ DEATH

Major Adverse Cardiovascular Events (MACE) refers to any cerebrovascular accident (CVA), myocardial infarction (MI) or death.

One of the patients had in hospital MI following which she died after 10 days. None of the patients developed CVA during the follow up period.

TABLE 16: DISTRIBUTION OF PATIENTS BASED ON MACE

Major Adverse Cardiac Events	Total Patients (n)	Percentage (%)
Myocardial Infarction (MI)	5	2.5
Cerebrovascular Accident (CVA)	0	0
Death	2	0.9
TOTAL	7	3.4

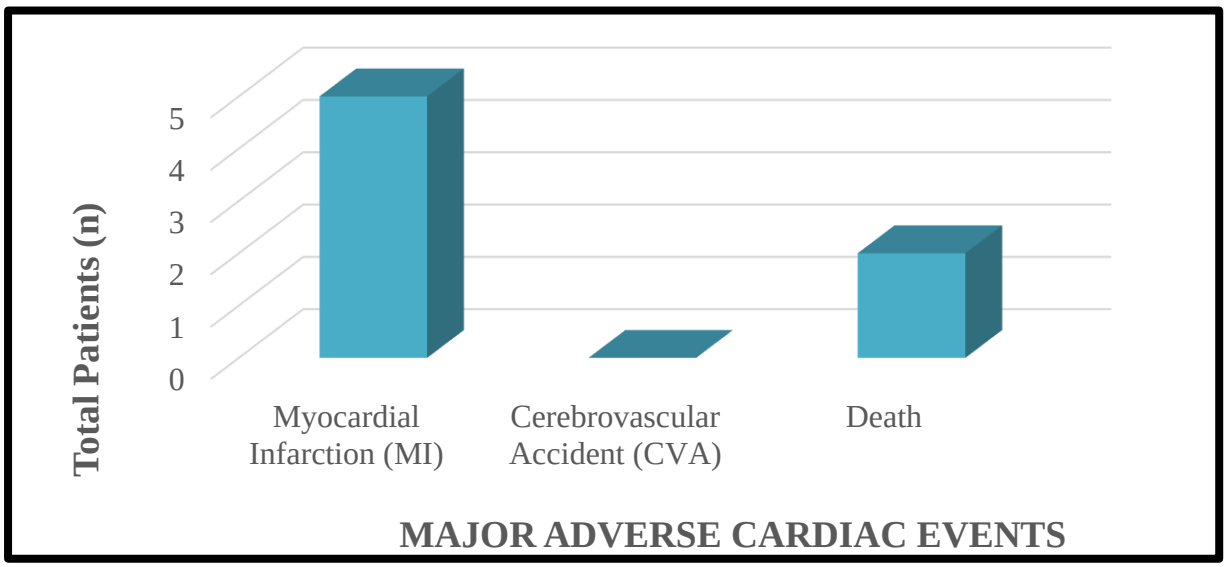


CHART 15: DISTRIBUTION OF PATIENTS BASED ON MAJOR ADVERSE CARDIAC EVENTS (MACE)

6.16 PATIENTS LOST TO FOLLOW UP

Out of the 211 patients enrolled in the study, a total of 8 patients were lost to follow up by the end of 1st month post intervention.

A total of 36 patients were lost during varying periods of the study. 8 patients who were lost in the 1st month of follow up did not have any telephonic conversation as well – hence no data regarding their patency; MALE and MACE is available. The remaining 28 patients had telephonic conversation (no clinical examination or ABI measurement was possible) wherein details regarding wound status was gathered.

Majority of patients who were lost to clinical follow up in the later time period were those who had their wounds completely healed during the previous follow ups. Only 11 patients in the lost to follow up group still had non-healing wound at the end of 1 year (as per telephonic conversation).

TABLE 17: PATIENTS LOST TO FOLLOW UP DURING THE STUDY PERIOD

Major Adverse Limb Events	Total Patients (within the time interval)
By end of 1st Month	8
By end of 3rd Month	15
By end of 6th Month	27
By end of 12th Month	37

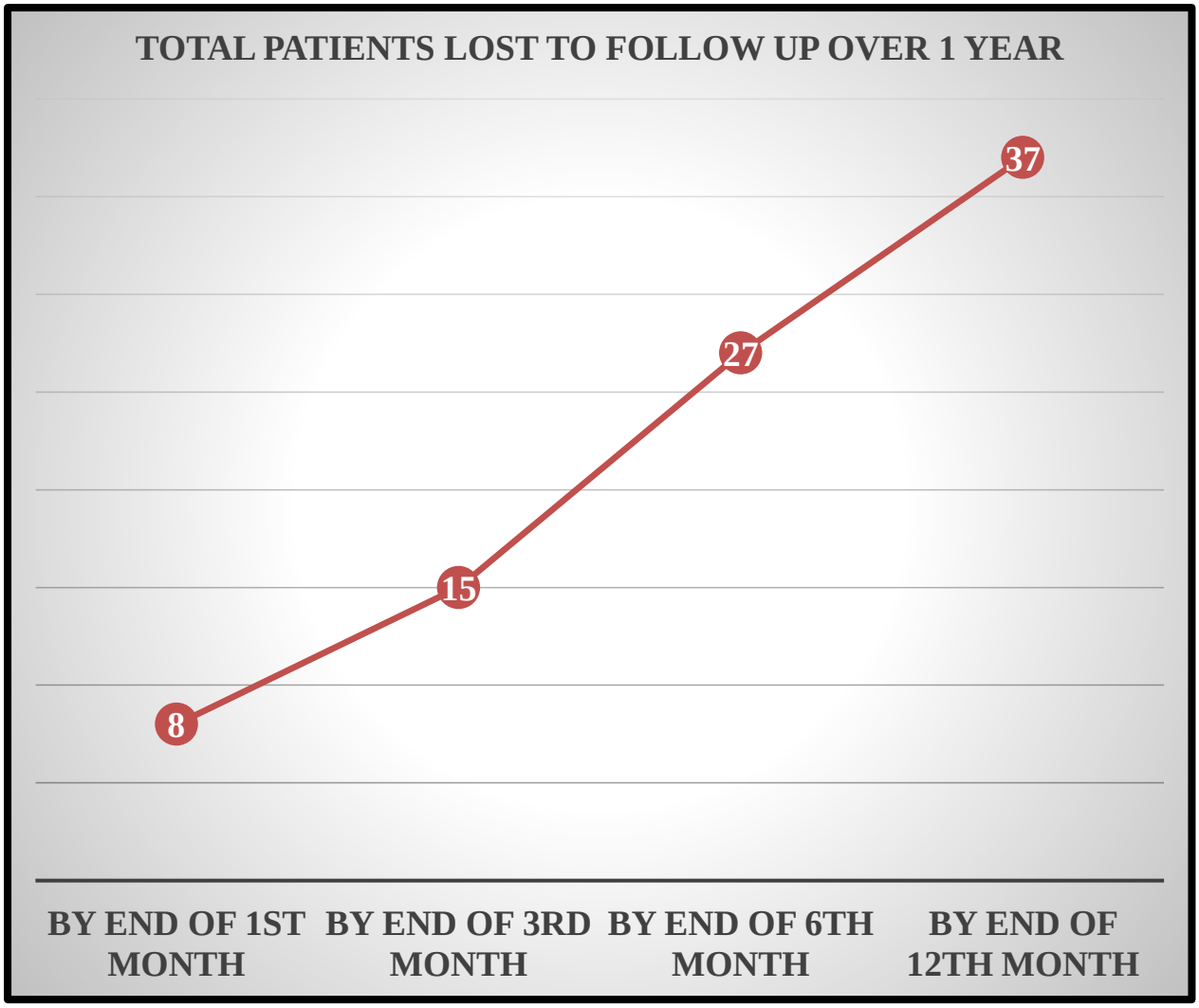


CHART 16: CHART DEPICTING PATIENTS WHO WERE LOST TO FOLLOW UP

TABLE 18: GENERAL PATIENT CHARACTERISTICS OF ENTIRE STUDY POPULATION (n=211)

Variable	Value
1. Mean Age (years)	67.1±10.3
2. Gender	
Males	168 (79.6%)
Females	43 (20.4%)
3. Comorbidities	
Diabetes Mellitus	201 (95.3%)
Hypertension	137 (64.9%)
Ischemic Heart Disease (IHD)	84 (39.8%)
Chronic Kidney Disease (Elevated Creatinine)	48 (22.7%)
4. Tobacco Use	96 (45.5%)

TABLE 19: PERIOPERATIVE DATA OF ENTIRE STUDY POPULATION (n=211)

Variable	Value
1. Rutherford Category	
Category IV	4 (1.9%)
Category V	155 (73.5%)
Category VI	52 (24.6%)
2. Lower Limb Involved	
Right	105 (49.7%)
Left	106 (50.3%)
3. WIfI Stage	
Stage 1	3 (1.5%)
Stage 2	21 (9.9%)
Stage 3	63 (29.9%)
Stage 4	124 (58.7%)

TABLE 20: ENDOVASCULAR PROCEDURE DATA OF ENTIRE STUDY POPULATION (n=211)

Variable	Value
1. GLASS Stage	
Stage 1	52 (24.6%)
Stage 2	126 (59.7%)
Stage 3	33 (15.7%)
2. PACSS Category	
Category 0	107 (50.7%)
Category I	27 (12.8%)
Category II	18 (8.5%)
Category III	22 (10.4%)
Category IV	37 (17.6%)
3. Location of Lesion	
SFA/ PA Alone	28 (13.3%)
Infrapopliteal Segment Alone	112 (53.1%)
Multi-Level Infrainguinal Disease	71 (33.6%)
4. Type of Intervention	
Balloon Angioplasty	169 (80.1%)
Bare Metal Stent (FP Segment Alone)	42 (19.9%)
5. Technical Success	
Yes	199 (94.3%)
Partial Success	12 (5.7)
No	NIL

A total of 211 patients with infrainguinal disease classified as CLTI Rutherford categories IV, V, and VI who underwent endovascular intervention were included in this study after applying the specified inclusion and exclusion criteria. The average age of the study population was 67.1±10.3 years, with majority of patients falling within the 61-70 years age range. The general characteristics of the patients included in the study are detailed in Tables 18, 19, and 20. A significant proportion of the patients presenting with CLTI were male, accounting for 79.6%. Approximately 95% of the patients had diabetes mellitus, making it the most prevalent comorbidity, followed by hypertension at 64.9% and ischemic heart disease (IHD) at 39.8%. Additionally, around 22.7% of the patients were found to have chronic kidney disease. Tobacco use or smoking was reported in 45.5% of the patients, predominantly among males.

Revascularization was indicated for all patients (100%) due to chronic limb threatening ischemia (CLTI), with category V representing the largest group at 73.5%. Treatment was nearly evenly distributed between the right and left lower limbs, with 49.7% and 50.3% respectively. Clinical assessments revealed that most patients had wounds classified as WIfI stage 4 (58.7%), followed by stage 3 (29.9%). Nearly 95% of the patients (199) required either wound debridement of the foot/ leg (48.8%) or amputation in the form of single toe (24.6%)/ multiple toe (9.1%) or transmetatarsal amputation (11.8%).

During the endovascular procedure, digital subtraction angiography (DSA) findings were used to apply the global limb anatomic staging system (GLASS), which separately evaluated the femoropopliteal and infrapopliteal segments according to the severity of stenosis. The predominant GLASS stage observed in this study cohort was stage 2, accounting for 59.7%, followed by stage 1 at 24.6%.

In our classification of calcification observed in the arteriographic lesions according to the PACSS system, we found that most patients received a PACSS calcification score of grade 0,

representing 50.7%. This indicates that nearly half of the study population exhibited no visible calcification in the stenotic lesions. Among the remaining patients, PACSS grade IV was the most frequently observed, comprising 17.6%, followed by PACSS grade I at 12.8%.

Endovascular procedures targeting only the femoropopliteal segment were conducted in 13.3% of the patients, while isolated angioplasty of the infrapopliteal tibial vessels was performed in 53.1%. The remaining patients underwent multilevel interventions that included both femoropopliteal and infrapopliteal treatments, representing 33.6% of the total. Among the 99 patients who received treatment for the femoropopliteal segment (including isolated SFA/PA and multilevel infrainguinal disease), self-expandable nitinol stents were utilized in 42 patients (42.4%), which corresponds to 19.9% of the overall study population. There were no instances of stent fractures during the follow-up period. Partial technical failure, defined as the inability to address all stenotic segments or to correct some lesions within the TAP, was observed in 12 patients (5.7%), while the remaining 94.3% achieved complete technical success.

After the intervention, follow-up assessments were conducted at 1, 3, 6, and 12 months to evaluate wound healing, along with measurements of Ankle-Brachial Index (ABI) and Pulse Volume Recording (PVR). By the end of the first month, eight patients had been lost to follow-up, and by the 12-month mark, a total of 37 patients were no longer participating in clinical follow-up. Most patients who were lost to follow-up had achieved complete wound healing.

Follow up was done taken into consideration 203 patients in total who had completed at-least 1 clinical follow up.

Most patients (n=78) experienced complete wound healing between the 3rd and 6th month, while 52 patients exhibited complete healing within the 1st to 3rd month. Throughout the follow-up period, 10.3% of patients (18/174) developed restenosis in the revascularized area. Of these, 5 patients presented with only claudication and were treated conservatively, while the

other 13 either underwent revascularization of the reoccluded segment or major amputation (BKA/ AKA) depending on the condition of their wounds.

Over the course of 365 days of follow-up, 14 below knee amputation (6.9%) and 4 above knee amputations (1.9%) were performed among the 203 patients. Additionally, 7 patients (3.5%) required reintervention due to ischemic wounds resulting from restenosis. A total of 7 patients experienced major adverse cardiac events (MACE), comprising 5 individuals with acute coronary syndrome and 2 patients who succumbed to death (1 patient had ACS followed by death after 10 days).

Out of the 211 patients, 8 patients were lost to follow up from the 1st month itself – hence no data with respect to the wound healing/ patency/ MALE/ MACE was available for these 8 patients.

Table 20, 21 and 22 takes into consideration the data obtained from the 203 patients who had at least 1 clinical follow up in the OPD after the endovascular intervention.

Comparison between different grades of PACSS; high (≥2) and low (<2) calcification group; patients with restenosis and no restenosis post primary endovascular intervention has been enlisted bin Table 20, 21 and 22. Comparison has been based on following characteristics:

- Age (years)
- Gender
- Comorbidities
- Tobacco Consumption/ Smoking
- CLTI Rutherford Category
- WIfI Stage of Wound
- GLASS Stage of Fem-pop lesions
- Grade of PACSS

- Technical Success
- MALE
- MACE/ Death

TABLE 21: COMPARATIVE DATA AMONG DIFFERENT GRADES OF CALCIFICATION (n=203)

VARIABLE	PACSS 0 (n=107)	PACSS I (n=25)	PACSS II (n=15)	PACSS III (n=22)	PACSS IV (n=34)	p Value
a) Age (years)	64.8±10.95	67.4±9.37	66.1±6.93	67.9±10.92	71.2±6.84	**0.0270**
b) Males	83	21	14	17	26	0.6351
c) Comorbidities						
Diabetes Mellitus	100	24	15	21	33	0.7884
Hypertension	64	15	9	19	24	0.1631
Ischemic Heart Disease	36	10	8	9	16	0.4688
CKD/ Elevated Creatinine	19	3	3	8	11	0.1139
d) Tobacco Use	46	11	8	12	17	0.8066
e) Rutherford Category						0.7201
Category IV	3	0	0	0	0	
Category V	79	17	11	17	29	
Category VI	25	8	4	5	5	
f) WIfI Stage						**0.0498**
Stage 1	2	1	0	0	0	
Stage 2	16	2	0	1	1	
Stage 3	30	3	8	5	16	
Stage 4	59	19	7	16	17	
g) GLASS Stage						**0.0177**
Stage I	31	3	3	7	5	
Stage II	65	15	12	11	18	
Stage III	11	7	0	4	11	
h) Technical Success	103	24	14	21	30	0.4874
i) Restenosis	9	0	3	1	5	0.1524
j) MALE	8	3	4	4	6	0.1480
k) MACE/ Death	3	1	1	1	1	0.9477

TABLE 22: COMPARATIVE DATA BETWEEN PATIENTS WITH HIGH AND LOW CALCIFICATION SEVERITY (n=203)

VARIABLE	LOW CALCIFIATION (n = 132)	HIGH CALCIFICATION (n = 71)	p Value
a) Age (years)	65.3±10.68	69.1±8.48	**0.005394**
b) Males	104	57	0.8021
c) Comorbidities			
Diabetes Mellitus	124	69	0.3084
Hypertension	79	52	0.0571
Ischemic Heart Disease	46	33	0.1533
CKD/ Elevated Creatinine	22	22	**0.0182**
d) Tobacco Use	57	37	0.2236
e) Rutherford Category			0.6433
Category IV	3	0	
Category V	96	57	
Category VI	33	14	
f) WIfI Stage			**0.0259**
Stage 1	3	0	
Stage 2	18	2	
Stage 3	33	29	
Stage 4	78	40	
g) GLASS Stage			0.3557
Stage I	34	15	
Stage II	80	41	
Stage III	18	15	
h) Technical Success	127	65	0.1616
i) Restenosis	9	9	0.1614
j) MALE	11	14	**0.0185**
k) MACE/ Death	4	3	0.6563

TABLE 23: COMPARATIVE DATA BETWEEN PATIENTS WITH RESTENOSIS AND NO RESTENOSIS (n=174)

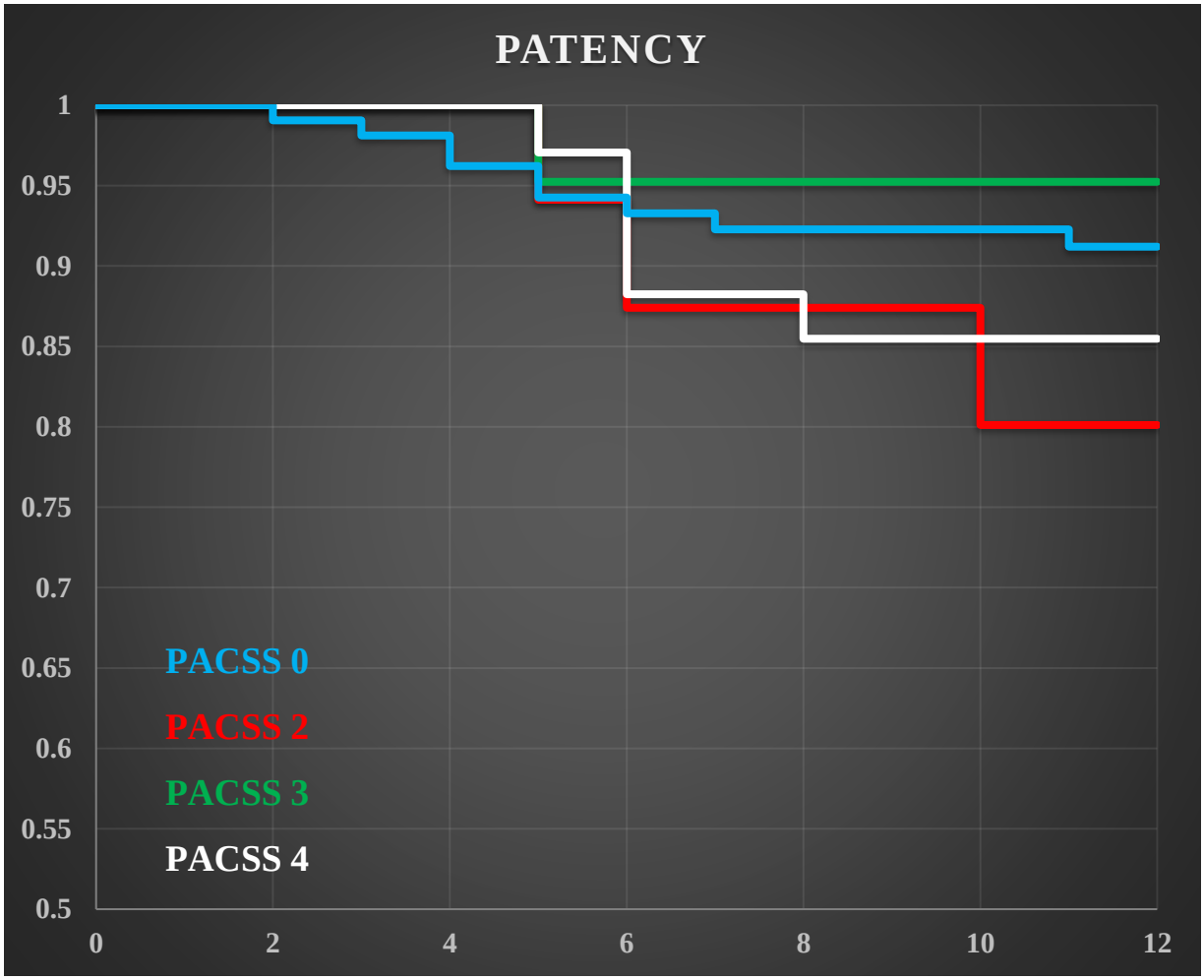
VARIABLE	TOTAL (n=174)	NO RESTENOSIS (-) (n=156)	RESTENOSIS (+) (n=18)	p VALUE
a) Age (years)	65.9±10.23	66.1±10.41	65.1±8.65	0.7262
b) Males	139	129	10	**0.0065**
c) Comorbidities				
Diabetes Mellitus	165	149	16	0.2295
Hypertension	107	96	11	0.9718
Ischemic Heart Disease	66	56	10	0.1036
CKD/ Elevated Creatinine	38	36	2	0.2446
d) Tobacco Use	85	79	6	0.1642
e) Rutherford Category				0.8665
Category IV	2	2	0	
Category V	130	116	14	
Category VI	42	38	4	
f) WIfI Stage				0.3544
Stage 1	3	3	0	
Stage 2	18	15	3	
Stage 3	55	47	8	
Stage 4	98	91	7	
g) GLASS Stage				0.7667
Stage I	41	38	3	
Stage II	106	94	12	
Stage III	27	24	3	
h) Technical Success	165	175	17	0.9785
i) BKA/ AKA	18	12	6	**0.00013**
j) MACE/ Death	7	6	1	0.6077

The analysis of baseline patient and lesion characteristics across various grades of PACSS, as presented in Table 21, revealed that patients classified as PACSS IV had a significantly higher average age (71.2±6.94 years, $p < 0.05$) compared to those in other PACSS grades. However, there were no notable differences in gender distribution, comorbidities, tobacco use, or Rutherford category of CLTI among the different PACSS grades. Additionally, patients in PACSS grade 4 exhibited wounds with more advanced WIfI stages (3 and 4) ($p < 0.05$) and encountered more complex endovascular lesions in the FP and IP segments on DSA ($p < 0.05$). A statistically significant difference was not observed among the various grades of calcification concerning restenosis, major adverse cardiovascular events (MACE), and major adverse limb events (MALE).

Patients were categorized into low and high calcification groups based on PACSS grading (Table 22). The low calcification group included those with PACSS grades 0 and 1, whereas the high calcification group consisted of patients with PACSS grades 2, 3, and 4. The average age was significantly higher in the high calcification group (p value < 0.01). Additionally, renal dysfunction was observed more frequently in patients with high calcification compared to those with low calcification (p value < 0.05). A greater proportion of patients in the high calcification group were found to be at an advanced WIfI stage (p value < 0.05). Furthermore, the occurrence of MALE was significantly higher in the high calcification group relative to the low calcification group (p value < 0.05), while no significant difference was found for MACE (p value > 0.05).

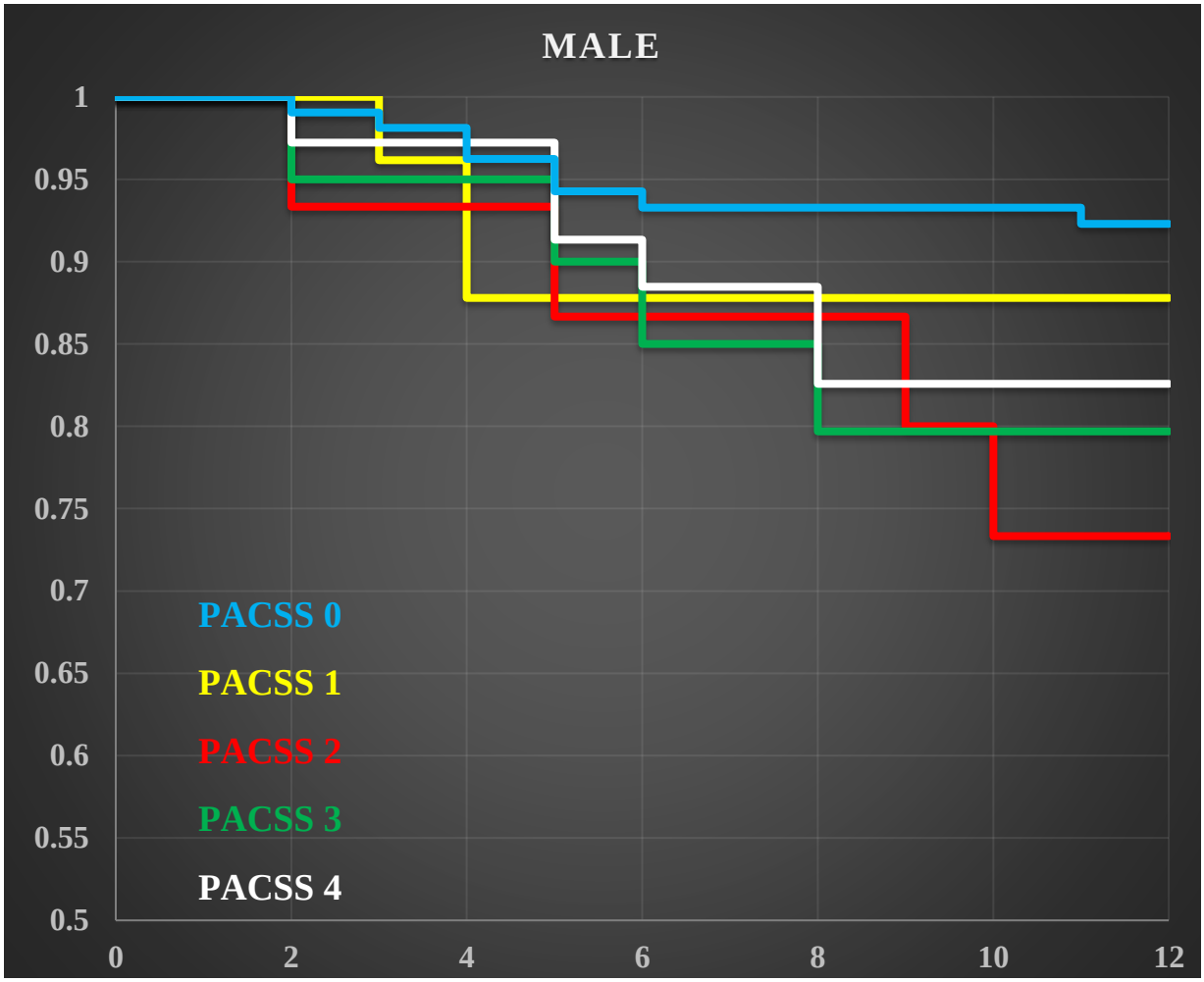
Finally on analyzing the various factors between patients who experienced restenosis following primary revascularization and those who did not (Table 23), it was found that the rate of major amputations (both BKA and AKA) was significantly elevated in patients with restenosis, with a p-value of less than 0.01

CHART 17: KAPLAN MEIER ANALYSIS FOR PRIMARY PATENCY (COMPARISON BETWEEN PACSS GRADE)



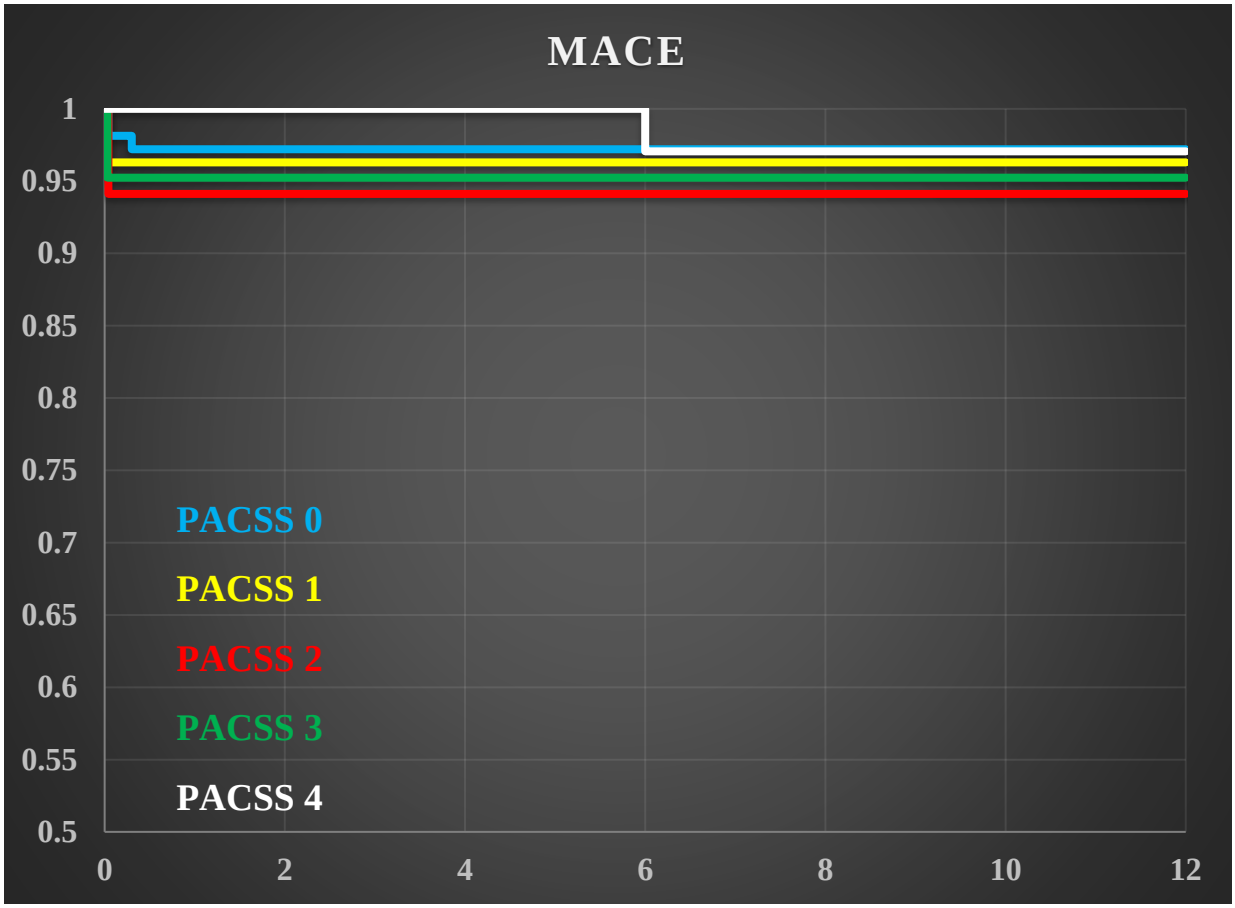
Number of Patients at Risk					
INTERVAL	**0**	**1-30**	**31-90**	**91-180**	**181-365**
PACSS 0	107	107	105	98	85
PACSS 2	18	18	15	15	12
PACSS 3	22	22	21	21	18
PACSS 4	37	37	34	33	28

CHART 18: KAPLAN MEIER ANALYSIS FOR MAJOR ADVERSE LIMB EVENTS (MALE) (COMPARISON BETWEEN PACSS GRADE)



Number of Patients at Risk					
INTERVAL	**0**	**1-30**	**31-90**	**91-180**	**181-365**
PACSS 0	107	107	105	98	85
PACSS 1	27	27	25	23	20
PACSS 2	18	18	15	14	13
PACSS 3	22	22	21	20	16
PACSS 4	37	37	34	32	28

CHART 19: KAPLAN MEIER ANALYSIS FOR MAJOR ADVERSE CARDIAC EVENTS (MACE) – INCLUDING DEATH (COMPARISON BETWEEN PACSS GRADES)



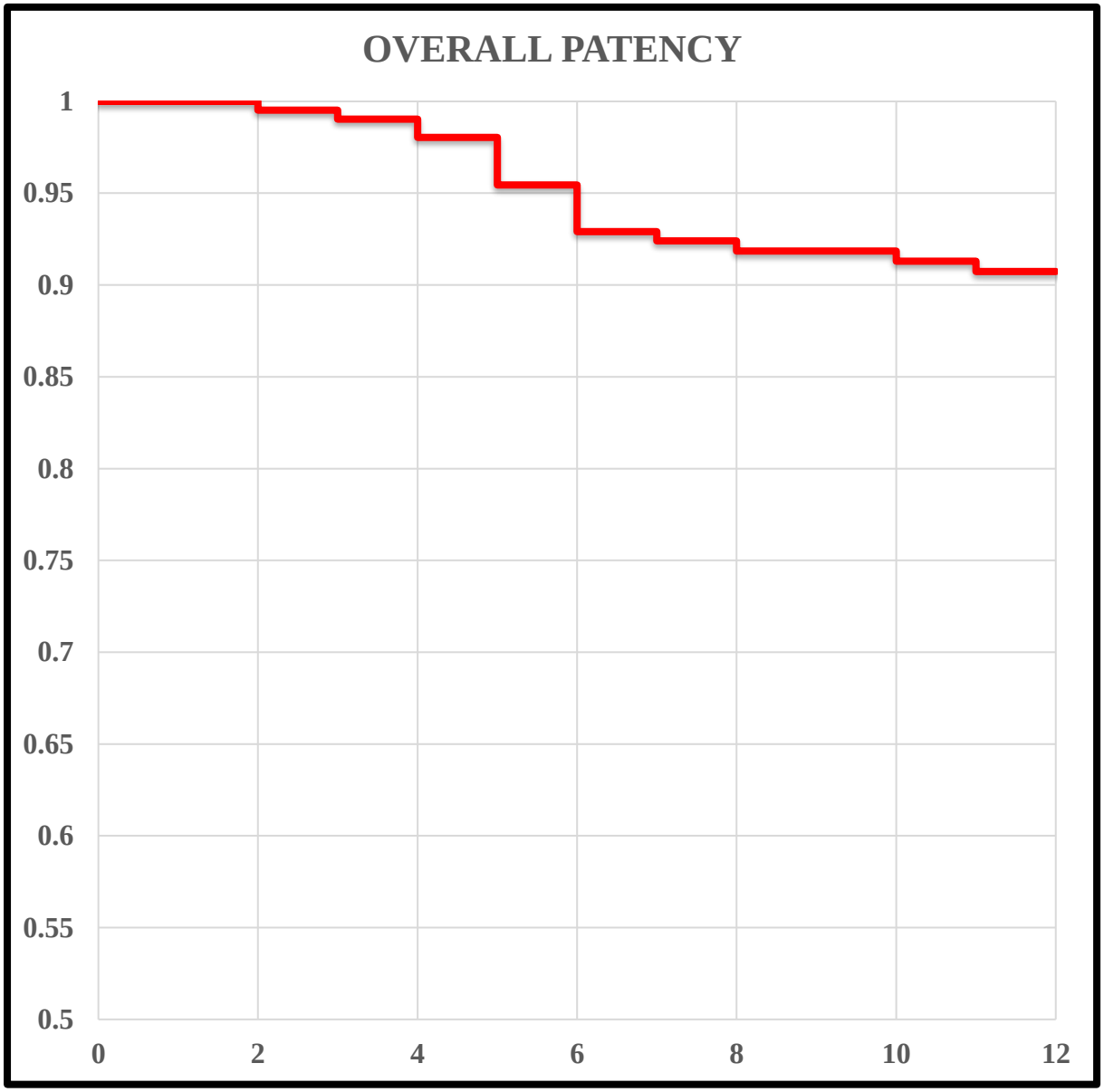
Number of Patients at Risk						
INTERVAL	**0**	**0-1**	**1-30**	**31-90**	**91-180**	**181-365**
PACSS 0	107	107	104	104	99	90
PACSS 1	27	27	26	24	23	22
PACSS 2	18	18	17	15	15	15
PACSS 3	22	22	21	21	21	19
PACSS 4	37	37	37	34	33	31

Primary patency at 1 year for patients belonging to PACSS 0, 1, 2, 3, 4 were noted to be 91.7%, 100%, 81.6%, 95.2% and 85.5% respectively.

The estimated limb salvage rates at 1 year for patients belonging to PACSS 0, 1, 2, 3, 4 were noted to be 92.3%, 88.5%, 73.3%, 79.8% and 82.6% respectively.

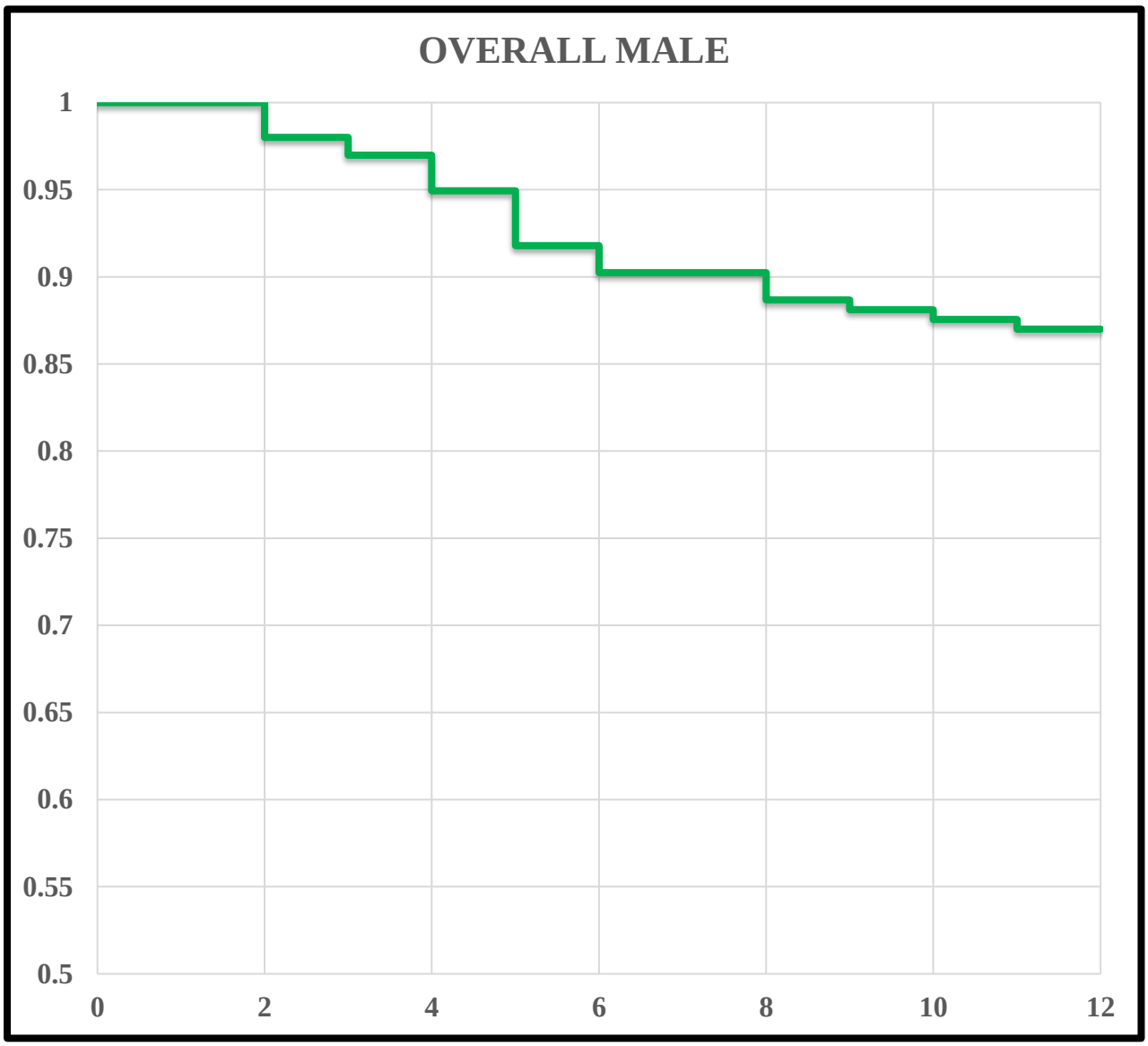
The overall MACE at 1 year for patients with PACSS 0, 1, 2, 3, 4 were noted to be 97.2%, 96.3%, 94.1%, 95.2% and 97.05% respectively.

CHART 20: KAPLAN MEIER ANALYSIS FOR OVERALL PATENCY



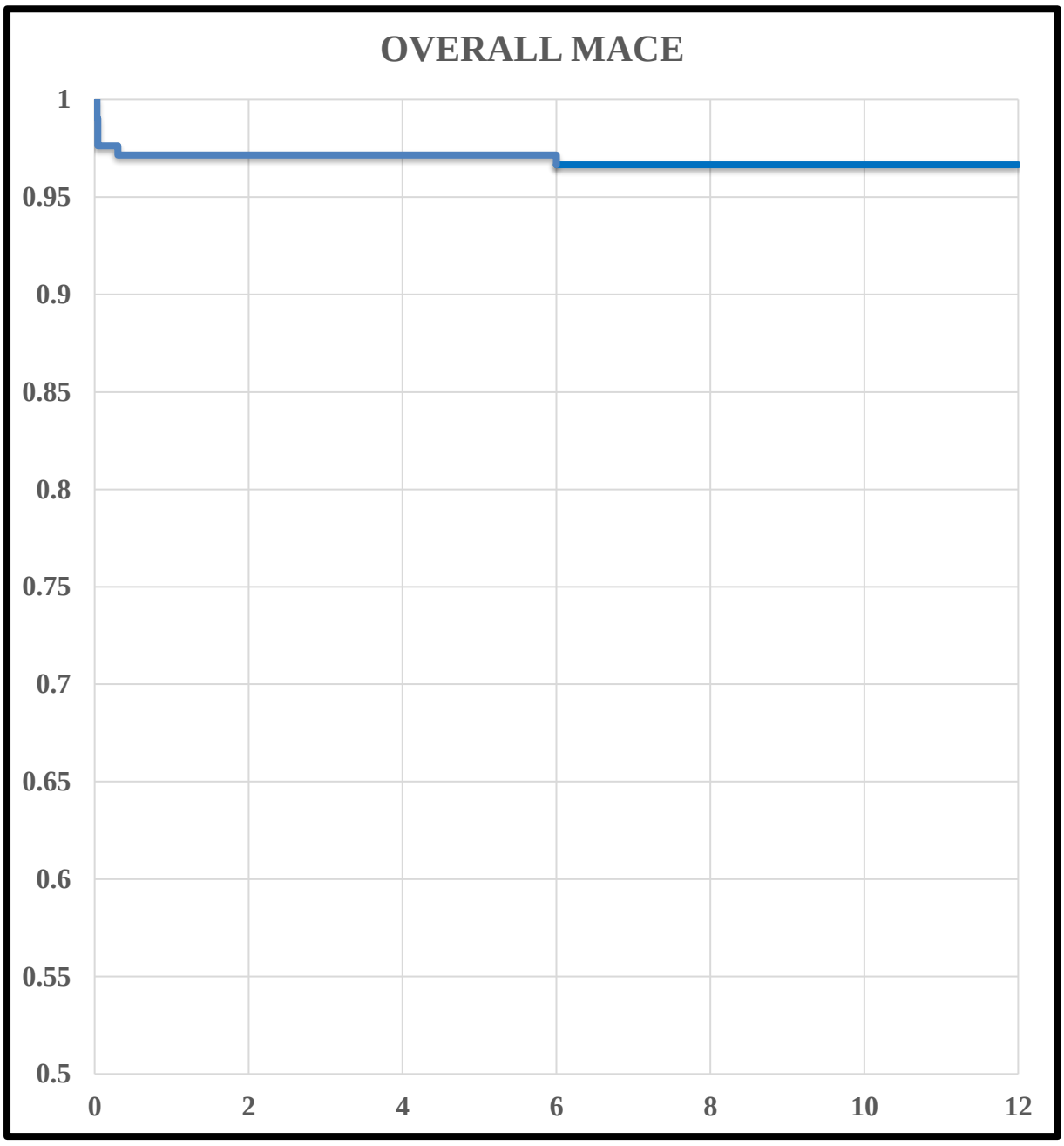
The overall primary patency at the end of 365 days was noted to be 90.7%

CHART 21: KAPLAN MEIER ANALYSIS FOR OVERALL MAJOR ADVERSE LIMB EVENTS (MALE)



The estimated limb salvage rate at the end of 365 days as per Kaplan Meier analysis was noted to be 87%

CHART 22: KAPLAN MEIER ANALYSIS FOR OVERALL MAJOR ADVERSE CARDIAC EVENTS (MACE) – INCLUDIBG DEATH



The estimated overall MACE at the end of 365 days as per Kaplan Meier analysis was noted to be 96.7%

TABLE 24: COX REGRESSION ANALYSIS OF FACTORS ASSOCIATED WITH PRIMARY PATENCY

VARIABLE	B	HR	95.0% CI		p value
DM	-1.118	.327	.067	1.589	.166
HTN	-.146	.864	.319	2.341	.774
IHD	.900	2.459	.906	6.676	.077
CKD±HD	-.978	.376	.080	1.764	.215
WIfI Stage	-.333	.717	.398	1.293	.269
Smoking	-.626	.535	.195	1.469	.225
CLTI Category	-.070	.932	.320	2.719	.898
GLASS Stage	.234	1.264	.569	2.807	.565
PACSS Category	-.262	.770	.368	1.609	.486
Calcification Severity	1.518	4.561	.449	46.348	.200

Based on univariate Cox Regression Analysis, none of the covariates (including PACSS Category/ Calcification Severity/ Chronic Kidney Disease) were associated with primary patency of the vessel.

TABLE 25: COX REGRESSION ANALYSIS OF FACTORS ASSOCIATED WITH MAJOR ADVERSE LIMB EVENTS (MALE)

VARIABLE	B	HR	95.0% CI		p value
DM	12.295	218675.129	.000	.	.976
HTN	-.873	.418	.183	.952	.038
IHD	.391	1.479	.643	3.404	.357
CKD±HD	.124	1.132	.417	3.070	.808
WIfI Stage	.112	1.119	.601	2.082	.724
Smoking	-.259	.772	.338	1.762	.539
CLTI Category	-.262	.769	.296	1.997	.590
GLASS Stage	.582	1.789	.893	3.584	.101
PACSS Category	-.073	.930	.498	1.738	.820
Calcification Severity	.884	2.420	.309	18.971	.400

None of the covariates analyzed ((including PACSS Category/ Calcification Severity/ Chronic Kidney Disease) affected the overall limb survival rate or was associated with worse results.

TABLE 26: COX REGRESSION ANALYSIS OF FACTORS ASSOCIATED WITH MAJOR ADVERSE CARDIAC EVENTS (MACE) – INCLUDING DEATH

VARIABLE	B	HR	95.0% CI		p value
DM	12.620	302663.345	.000	.	.988
HTN	-.758	.468	.090	2.440	.368
IHD	.674	1.962	.344	11.187	.448
CKD±HD	-.372	.689	.071	6.710	.749
WIfI Stage	.415	1.514	.364	6.291	.568
Smoking	-.727	.483	.081	2.892	.426
CLTI Category	.229	1.257	.225	7.038	.795
GLASS Stage	1.507	4.514	.886	22.994	.070
PACSS Category	-.451	.637	.176	2.298	.491
Calcification Severity	1.804	6.074	.114	324.937	.374

Univariate Cox Regression Analysis for factors affecting MACE in the given study population demonstrated that none of the above-mentioned covariates had any significant contribution to overall survival.

Discussion

7. DISCUSSION

Previous work on chronic coronary artery occlusion showed that vessel calcification was a predictor of technical failure of catheter-based treatment, and this result was first reported by Mollet et al., who described calcification of the coronary arteries on preoperative CT angiography [76]. In the field of peripheral intervention, the concept of using the calcium score was first applied to the tibial arteries, as described by Guzman et al. [3] Lower limb arterial calcification (LLAC) is an important facet of PAD and a marker of overall disease burden. The classification of vessel calcification severity in patients with peripheral artery disease (PAD) is not yet well-defined, and the influence of vessel calcification on the patency following endovascular therapy (EVT) for lower limb arterial lesions is still a topic of discussion. The PACSS system was established as an innovative approach for assessing the extent of vessel calcification in patients with peripheral artery disease (PAD). The prior studies assessing the influence of calcification on endovascular interventions for patients with chronic limb-threatening ischemia (CLTI) utilizing the PACSS grading system, have focused solely on the presence of calcification in the femoropopliteal segment. The present study is the first report to evaluate the impact calcification in both femoropopliteal and infrapopliteal segments following endovascular therapy (EVT).

Several investigators have established the importance of “heavy” SFA calcification and its impact on 12-month primary patency and late lumen loss (LLL). They demonstrated that circumferential calcification, defined as 270°-360° around the circumference of the SFA, was associated with a significant increase in 12-month LLL and a 50% increase in loss of primary patency when compared to lesser degrees of vessel wall calcium [65]. A retrospective study performed by Okuno et al. [57] conducted at a single center involving 394 Japanese patients, with newly diagnosed superficial femoral artery (SFA) lesions who received successful

endovascular treatment, revealed a correlation between PACSS grades and clinical outcomes. The findings indicated that PACSS grade 4 was independently linked to a loss of primary patency, alongside factors such as diabetes, lesion length, and vessel diameter. The study also clarified the impact of calcification laterality and length, disclosing that bilateral wall calcification was an independent predictor for loss of primary patency, whereas lengthy calcification was not.

The previously mentioned studies did not account for calcification within the infrapopliteal segment. The present study takes into consideration calcification in both femoropopliteal and infrapopliteal segments, to assess the outcome following endovascular therapy.

A total of 211 patients were enrolled based on specific inclusion and exclusion criteria, all of whom underwent endovascular interventions for femoropopliteal, infrapopliteal, and multilevel (both FP and IP) lesions. The patients included in the study were assessed for their baseline characteristics related to both patient and lesion. However, follow-up data, which included metrics such as the occurrence of major adverse limb events (MALE) and major adverse cardiovascular events (MACE), were collected for 203 patients after excluding 8 individuals, who were lost to follow up from the 1st month itself, while loss of primary patency was evaluated based on the data collected from 174 patients (after excluding total of 37 patients who were lost to follow up by the end of 1 year).

Our study revealed that the severity of calcification increased with age, as patients exhibiting higher levels of calcification were noted to be statistically significantly older (mean age group for PACSS 4 – 71.2 ± 6.84 years; mean age group for high calcification group – 69.1 ± 8.48 years; p value < 0.05 for both subset of patients). Calcification is a common hallmark of vascular pathology observed in the elderly population with previous studies showing that vascular calcification appeared during the fourth decade of life and was present in 12% of

subjects <50 yr old. In older subjects, calcification was substantially more prevalent, reaching 100% after 65 yr [77].

Nearly 80% of the patients in our study group were males which corresponds to studies performed in the past, wherein males were more commonly afflicted with peripheral arterial occlusive disease (PAOD) [78]. Sawan et al., [78] in their study demonstrated that about 80.4% of their study participants were smokers compared to 31% in a study from Southern India and 14-21% in the western population. In our study, we noted 45% being smokers with majority of these being males.

Diabetes mellitus and hypertension are recognized risk factors for peripheral arterial occlusive disease (PAOD) and are also well-established contributors to arterial stiffening due to calcification [79]. In our study population, the prevalence of diabetes mellitus was found to be 95%, which is considerably higher than the 39.3% reported in a North Indian study, with figures from Kerala and Western studies showing 25.5% and 10%, respectively. Likewise, the prevalence of hypertension among PAOD patients was recorded at 62.9% in South India and ranged from 29% to 47% in Western populations, whereas our study indicated that 65% of patients had hypertension.

Vascular calcification (VC) is part of chronic kidney disease-mineral and bone disorder (CKD-MBD) and is highly prevalent in CKD and its severity increases with worsening CKD [80]. Our study revealed that the occurrence of a higher grade of PACSS (≥2) was more prevalent among patients with chronic kidney disease, with 50% of CKD patients exhibiting a PACSS grade of ≥2 (p value < 0.05). The number of hemodialysis patients was higher in the high calcium score group. Nevertheless, no specific PACSS grade was found to be independently linked to an increased incidence of CKD.

Approximately 98% of the patients were noted to have Rutherford category V/ VI. In our study population we observed that most patients had wounds classified as WIfI stage 4 (58.7%), followed by stage 3 (29.9%) which corresponds to similar studies on CLTI performed in the past wherein WIfI 3 and 4 attributed to majority of the patients [81]. The PACSS grade and the increased severity of calcification (PACSS ≥ 2) demonstrated a significant relationship with the Society of Vascular Surgery WIfI (wound, ischemia, foot infection) stage. Patients classified with a PACSS grade of 4 and intense calcification were observed to correspond with WIfI stage 4 (p value < 0.05). Additionally, a PACSS grade of 4 was linked to elevated GLASS stages (II and III), indicating the presence of more complex lesions (p value < 0.05).

Nearly 50% of the patients in the study group were noted to some degree of calcification based on intraoperative fluoroscopy ranging from PACSS 1 to PACSS 4, with PACSS 4 grade contributing to nearly 17.4% of calcification. A similar study performed by Okuno S et al., [57] in Japan, demonstrated distribution of PACSS grade as 0 in 54%, grade 1 in 16%, grade 2 in 12%, grade 3 in 9%, and grade 4 in 9%.

Around 53% of the patients were noted to have infrapopliteal lesions while the remaining 47% patients had either femoropopliteal disease or multilevel infrainguinal lesions. Complete technical success was achieved in 94.3% pf the patients while remaining 5.7% were noted to have partial success.

During the follow-up period, 174 patients, representing 82.5%, successfully completed their one-year follow-up. However, 37 patients were lost to clinical follow-up at different stages throughout the process. Notably, 8 patients were lost before the first month of follow-up. Among the remaining 29 patients, most did not return for follow-up as their wounds had fully healed. Although telephonic conversations were conducted, evaluations such as ABI/PVR and wound status could not be performed.

Eighteen patients were identified as having experienced a loss of primary patency as indicated by Doppler ultrasound, which was conducted due to the emergence of new claudication, rest pain, wounds, or the deterioration of existing wounds. Of these 18 patients, 5 were treated conservatively due to claudication, while 7 underwent revascularization procedures, and 6 required major amputations, either below or above the knee. Statistically, the degree of calcification did not influence the loss of primary patency. The primary patency at the end of 1 year for patients belonging to PACSS 0, 1, 2, 3, 4 were noted to be 91.7%, 100%, 81.6%, 95.2% and 85.5% respectively.

A total of 18 patients underwent major amputations, consisting of 14 below knee amputation (BKA) and 4 above knee amputation (AKA) procedures. Additionally, 25 patients experienced major adverse limb events, which included 18 patients with major amputation (BKA/ AKA) and 7 patients who underwent revascularization following restenosis. The occurrence of major adverse limb events was found to be greater in patients with significant calcification (PACSS ≥ 2) compared to those with minimal calcification (PACSS <2), with this difference also being statistically significant (p value < 0.05). The estimated limb salvage rates at 1 year for patients belonging to PACSS 0, 1, 2, 3, 4 were noted to be 92.3%, 88.5%, 73.3%, 79.8% and 82.6% respectively.

Acute coronary syndrome occurred in five patients during the first two days following endovascular intervention, with one patient experiencing mortality on the tenth day. In total, two patients were reported to have died—one on the tenth day and the other after six months. In comparison to a recent retrospective study performed by Takei T et al., [81] comprising of 61 patients who underwent EVT for CLTI and were divided into high and low risk groups, the mortality was noted to be nearly 24.5% with death predominantly noted among high-risk group of patients. Both patients had MI as the cause of death in our study when compared to the study by Takei et al., [81] where in 40% of the patients dies secondary to wound related sepsis The

low mortality in our study could be attributed to the fact that patients with aorto-iliac occlusions were excluded from the study and nearly 50% of the patients had only infrapopliteal lesions. Further, no data regarding MACE was available for 8 patients and follow up period was only 1 year. The 1-year MACE after EVT was assessed for patients in each PACSS grade and was noted to be noted to be 97.2%, 96.3%, 94.1%, 95.2% and 97.05% respectively for PACSS 0, 1, 2, 3 and 4 respectively. There was no significant difference in MACE between the different groups, which may be probably because of the short observation period of only one year.

In a multivariate Cox regression analysis, Lida et al. [82] identified female sex (HR 1.899; 95% confidence interval (CI) 1.318–2.737; $p < 0.001$), ABI < 0.6 (HR 1.921; 95% CI 1.348–2.736; $p < 0.001$), TASC II C/D lesion (HR 2.068; 95% CI 1.346–3.177; $p = 0.0009$), stent fracture (HR 1.937; 95% CI 1.203–3.118; $p = 0.006$), and no administration of cilostazol (HR 2.102; 95% CI 1.394–3.172; $p < 0.001$) as strong independent risk factors for restenosis. Another study performed by Athayde Soared RD et al. [73] demonstrated that the factors associated with worse outcomes of the endovascular treatment of FEPO, in terms of loss of primary patency, were one tibial vessel or isolated popliteal artery runoff ($p = 0.005$), calcification grade 4 ($p = 0.019$), calcification grade > 2 ($p = 0.017$), femoropopliteal vessel diameter < 4 mm ($p = 0.03$) or primary ballooning without stenting ($p = 0.021$).

In our research, the Cox univariate regression analysis indicated that none of the covariates, including comorbidities, smoking status, WIfI stage, GLASS stage, PACSS grade, or calcification severity, showed any association with the primary patency of the vessel, limb salvageability, or overall survival.

LIMITATIONS:

The following were considered as limitations of our study:

1. This study was a single-center investigation, comprising of a small population.

2. PACSS grading may be associated with observer bias – scoring may not be accurate.
3. The patient groups differed in baseline clinical and angiographic characteristics, and there might be a type 2 error.
4. The morphology of calcification, including intimal, medial, and mixed type, and the actual length of calcification could not be assessed because they were not defined in PACSS.
5. The treatment strategy varied according to the operator's discretion.

Conclusion

8. CONCLUSION

A prospective, observational, longitudinal study was conducted involving 211 patients from August 1, 2022, to February 29, 2023, who were diagnosed with chronic limb-threatening ischemia (CLTI) secondary to infrainguinal lesions and received endovascular treatment. The patients were categorized into five groups according to the level of calcification identified through fluoroscopy, utilizing the PACSS classification system, which includes PACSS grades 0, 1, 2, 3, and 4. The primary aim was to evaluate the influence of increased levels of calcification on the results of endovascular procedures, particularly concerning primary patency, limb salvage rates, and the incidence of significant adverse cardiac events (MACE).

Our study indicates that lower limb arterial calcification (LLAC), closely linked to chronic kidney disease (CKD), significantly influences the occurrence of major adverse limb events (MALE), particularly regarding the overall likelihood of limb salvage. Nevertheless, the extent of calcification did not impact the rates of restenosis or major adverse cardiac events, including mortality. Additionally, the Cox regression analysis indicated that none of the variables examined individually had an impact on the occurrence of restenosis, major adverse limb events (MALE), or major adverse cardiovascular events (MACE).

This study also shows the similar technical success and non-significant difference in primary patency in short term period in patients irrespective of their calcification grades. However, compared to patients with less calcified vessels, patients with intense calcification tend to have higher rates of re-intervention and higher rates of major amputation.

The Peripheral Arterial Calcification Scoring System (PACSS) may not serve as the most reliable method for assessing the extent of calcification due to its inherent subjective bias. However, it can be effectively utilized alongside other scoring systems, such as CT calcium scoring, to categorize patients according to the level of calcification observed. This may help

the interventionalist in identifying at risk patients with intense calcification who tend to have high rates of non-healing wounds and lower amputation free survival rates, and who may benefit from aggressive wound management.

Recommendation

9. RECOMMENDATIONS

a) Peripheral Arterial Calcification Scoring System (PACSS) can be used as an effective tool in the intraoperative period to stratify patients into low and high calcification group which may allow the interventionalist to provide additional treatment options in patients with extensive calcification, like use of scoring balloons and atherectomy devices.

b) The inherent observer bias in the scoring system may be addressed by allowing two independent interventionalist to confirm the grade during the procedure or by corelating the score with preoperative CT scoring system.

c) The integration of the PACSS score with supplementary scoring systems, like the Pedal Artery Calcification score, could enhance the understanding of how calcification affects both local and systemic outcomes following revascularization.

d) Patients exhibiting elevated calcification scores necessitate more intensive wound care during the postoperative phase due to a heightened risk of non-healing, which could result in major amputations.

e) The impact of calcification on hybrid procedures and open surgery needs to be evaluated.

Summary of Thesis

10. SUMMARY OF THESIS

1. **NAME OF SPECIALITY**: Vascular Surgery

2. **NAME OF SYSTEM OF BODY**: Infrainguinal Arterial Lesions

3. **TITLE OF THESIS & YEAR OF SUBMISSION OF THESIS**:

   TITLE – Impact of Severity of Vascular Calcification on the Clinical Outcomes following Endovascular Revascularization in Chronic Limb Threatening Ischemia (CLTI): A Prospective, Observational Study

   YEAR OF SUBMISSION OF THESIS – 2024

4. **NAME OF THE CANDIDATE**: Dr. Siju T Abraham

5. **NAME OF THE GUIDE**: Dr. Vishnu M

6. **NAME OF THE HOPITAL**: Bhagwan Mahaveer Jain Hospital, Bengaluru

7. **AIMS & OBJECTIVES OF THE STUDY**:

   AIMS – Use of peripheral artery calcification severity score (PACSS) to evaluate the severity of lower limb arterial calcification and its impact on clinical outcomes following endovascular revascularization for infrainguinal lesions (femoropopliteal and infrapopliteal segments) in patients with chronic limb threatening ischemia

(CLTI).

OBJECTIVES –

a) **Primary End Point**: To measure the primary patency, defined as the treated vessel remaining patent without restenosis or reintervention stratified as per PACSS classification
b) **b) Secondary End Point:** To measure major adverse cardiac events (MALE) including death and major adverse limb events (MALE) stratified according to the PACSS classification. MALE was any intervention (repeat endovascular therapy or surgical revision) or major (above ankle) amputation. MACE was defined as cerebrovascular accident, myocardial infarction, and death.

8. MATERIALS & METHODS:

STUDY AREA – A single center, prospective, observational, and longitudinal study conducted in the Department of Vascular & Endovascular Surgery, Bhagwan Mahaveer Jain Hospital, Bangalore.

STUDY POPULATION – All patients presenting with clinical features suggestive of chronic limb threatening ischemia (CLTI) with documented infrainguinal lesion on radiological imaging and planned for pure endovascular intervention have been considered for the study.

STUDY DESIGN – A single center, prospective, observational, and longitudinal study.

INCLUSION CRITERIA –

a) Age more than 18 years

b) Patients with chronic limb threatening ischemia (CLTI) – corresponding to Rutherford category 4, 5 and 6 who underwent purely endovascular infrainguinal revascularization during the study period.

c) Patients giving consent to participate in the study.

EXCLUSION CRITERIA –

a) Patients presenting with chronic limb ischemia (CLI) – corresponding to Rutherford category 1,2 and 3.

b) Patients with CLTI secondary to aorto-iliac artery involvement alone or in combination with infrainguinal disease.

c) Patients undergoing open surgical intervention/ hybrid revascularization procedures.

d) Patients presenting with acute limb ischemia (ALI).

SAMPLE SIZE –

$$n = \frac{Z^2\alpha\ p\ (1\text{-}p)}{e^2}$$

Where,

- n is sample size
- Zα at 95% Confidence Interval = 1.96
- p = 60%

(50% to 90% of patients with occlusive disease in India undergo endovascular intervention)

- e (allowable error) = 7%

- **CALCULATED SAMPLE SIZE IS 188**

9. STUDY PERIOD – Patients were enrolled from 1st August 2022 to 28th February 2023 and were follow up prospectively at 1, 3, 6 and 12 months till February 2024 according to study protocol.

10. METHODOLOGY –

a) Patient Enrolment:

Patients presenting to the outpatient department of Vascular and Endovascular Surgery in Jain Institute of Vascular Sciences (JIVAS), Bhagwan Mahaveer Jain Hospital, Bangalore who meet the eligibility criteria and planned for surgery will be subject to standard pre-operative workup. Demographic data of patients were recorded with history and physical examination findings preoperatively in the form on chief complaints, personal history of smoking, tobacco, and alcohol, if any. They were assessed for medical risk factors like diabetes mellitus (DM), hypertension (HTN), ischemic heart disease (IHD)/ coronary artery disease (CAD), chronic kidney disease (CKD), cerebrovascular disease (CVD) and others. In all patients general and local examinations were carried out with careful documentation of primary wound status/ presence of digital gangrene, vascular status of both lower limbs along with ankle brachial index (ABI), toe brachial index (TBI) and pulse

volume recordings (PVR). Preoperative imaging was based on clinical findings and was performed in the form of arterial duplex ultrasound, CT angiography or MR angiography of the lower limbs.

b) Laboratory Analysis:

Routine blood investigations which included haematocrit, renal function test, liver function test, fasting lipid profile, coagulation profile, chest x ray, ECG, 2D echocardiogram and glycosylated haemoglobin (HbA1c) was recorded for all patients after enrolment in study.

c) Medical Management:

Patients planned for endovascular intervention (angioplasty-stenting) received oral N-acetyl cysteine 600mg orally TID for one day prior to procedure. All DM patients who were on oral hypoglycemic agents were switched over to regular insulin and strict glycaemic control was ensured pre-operatively. Patient were started on IV hydration with 0.9% NaCl at 1ml/kg/ hour for 12 hours pre-procedure and 12 hours post-procedure. Sodium bicarbonate infusion was also administered post procedure for 12 hours. All patients received 300mg loading dose of clopidogrel approximately 12 hours prior to the endovascular intervention. Prophylactic IV antibiotics (2^{nd} generation cephalosporins) were administered prior to the procedure. However, patients with active wound infections were initiated on IV 3^{rd} generation cephalosporins and lincosamide (clindamycin) antibiotics which were continued till culture sensitivity report of the wound swab is obtained.

d) Primary Wound Procedures:

All patients presenting with grossly infected wounds/ ulcers or wet gangrene of the digits underwent wound debridement or amputation of digits (as required) prior to undergoing revascularization. However, patients who did not have any active evidence of gross contamination of the wounds underwent primary wound procedure along with revascularization in the same sitting. Post debridement/ toe amputation procedures, all patients received daily change of dressing with hydrocolloids.

e) Endovascular Intervention – Infrainguinal Angioplasty:

Most of the procedures were carried out under regional anaesthesia with monitored anaesthesia care (MAC) unless the patient opted for general anaesthesia. All cases were done by consultant vascular surgeons with >15 years' experience in open vascular and endovascular revascularization. In majority of the cases, access was through ipsilateral antegrade common femoral artery (CFA). However, contralateral retrograde common femoral artery (CFA) access has also been obtained for patients with proximal superficial femoral artery lesions. Usually 6 Fr sheaths were deployed (7Fr sheaths used in patients with contralateral retrograde CFA access).

The preprocedural angiograms were examined to stratify the de novo infrainguinal lesions. The grade of calcification of the femoropopliteal arteries was defined with the proposed peripheral arterial calcium-scoring system (PACSS) [5]. This score describes the intimal and medial vessel wall calcification at the target lesion site, assessed with high intensity fluoroscopy and digital subtraction angiography in the antero-posterior projection. There are five grades: grade 0, no visible calcium at the target lesion site; grade 1, unilateral calcification of <5 cm at the target lesion site

(figure 6); grade 2, unilateral calcification of ≥5 cm at the target lesion site (figure 7); grade 3, bilateral calcification of <5 cm at the target lesion site (figure 8) and grade 4, bilateral calcification of ≥5 cm at the target lesion site (figure 9). The grading of calcification was determined based on the extent of calcification in the vessel wall within the target lesion site. In patients with multi-level infrainguinal lesion (lesions involving the SFA/ PA/ Tibial Vessels), the vessel with the highest grade of calcification based on PACSS was considered. Further, in patients with lesions involving >1 tibial vessel, the primary infrapopliteal artery target for achieving effective revascularization (TAP – Target Artery Pathway) was evaluated to determine the grade of calcification.

An intra-arterial bolus of 5000 units heparin 5000 units was administered followed by 1000 units for every passing hour. Non-ionic media Iohexol (Omipaque) or CO2 (in patients with CKD/ AKI/ Elevated creatinine) was used as contrast media for DSA and findings were documented. A 0.035-, 0.018-, or 0.014-inch guidewire along with support catheter was delivered across the lesion (additional retrograde tibial access was obtained to cross the lesions as and when required). Non-ionic media Iohexol (Omipaque) or CO2 (in patients with CKD/ AKI/ Elevated creatinine) was used as contrast media for imaging. After successful wire crossing, angioplasty was performed with an optimally sized balloon. The lesion commonly was dilated for 2 minutes; stent implantation was performed if the lesion had a residual mean pressure gradient >10 mm Hg, residual stenosis >30%, and/or flow-limiting dissection. The selection of stents and balloons was at the operator's discretion. The stent size was chosen visually to be 1 to 2 mm larger than the reference vessel diameter.

Post procedure, the sheath was removed once the activated clotting time (ACT) drifted to less than 180 seconds and manual compression was applied for a duration of 15 minutes followed by application of compression bolster over the access site. Patient was shifted to recovery room and monitored for any hemodynamic instability. The post procedure pulses/ doppler signal status was noted and the PVR/ ABI documented on the 1st postoperative day. Any other significant perioperative events in the form of morbidity (ACS/ CIN/ Puncture Site Bleeding, etc.) and mortality were also recorded.

f) Follow Up Procedures:

All patients were counselled about the life style modifications regarding the foot wear and foot care and were regularly followed up at 1, 3, 6 and 12 months. Depending upon the wound status, they were either dressed with hydrocolloids or vacuum assisted closure (VAC) device was used. In the follow up period, toe amputations/ debridement/ placement of split skin graft (SSG) was done as necessary for wound healing.

All enrolled patients had a thorough clinical examination and PVR/ ABI surveillance at 1,3,6 and 12 months. The duplex ultrasound was performed if there was a worsening in their symptoms with an increase in one category in the Rutherford scale, decrease in ABI > 0.15 from the maximum post procedural level (or reduction in amplitude of waveforms in case of non-compressible ABI/ TBI) or clinical worsening of the tissue loss. The duplex ultrasound was performed by an experienced sonologist.

Attempts were made for telephonic conversation with patients who did not follow up at the prescribed time duration as mentioned in the protocol and efforts were

made to document any MACE/ MALE in patients who were lost to follow up through this telephonic conversation.

11. STATISTICAL METHODS –

- Collected data was recorded in the Study Performa, and was entered into MS Excel worksheet and analysed. All data were entered in Microsoft Excel Office 2019. Data were expressed as the mean ± standard deviation for continuous variables or as counts (percentages) for dichotomous variables. Continuous variables were examined using an unpaired t test. Categorical variables were compared using the chi-square test or Fischer's exact test to analyse the significance of difference between frequency distribution of the data. p value < 0.05 was considered as statistically significant.
- Survival curves for estimated limb salvage, patency, and survival rates were constructed with the Kaplan– Meier method. Cox regression was used in the univariate analyses
- All analyses were performed using SPSS software (version 30.0.0.0 (172); IBM Corporation, Somers, NY, USA).

12. SALIENT FINDINGS –

We conducted a prospective, observational, and longitudinal study in the department of Vascular Surgery, at Jain Institute of Vascular Sciences, Bengaluru with an aim to find the impact of severity of calcification in patients undergoing infrainguinal endovascular revascularization for Chronic Limb Threatening Ischemia (CLTI).

We enrolled 211 patients with CLTI in this study after careful history and physical examination who then underwent relevant radiological imaging.

The patients underwent necessary debridement and minor amputation followed by lower limb endovascular revascularization. During the endovascular intervention, based on DSA findings, severity of calcification was decided for each patient individually based on the PACSS grading and patients were divided into 5 groups – PACSS 0, 1, 2, 3 and 4. Post revascularization minor surgical procedures for wound healing as deemed necessary was performed. The patients were followed at 1^{st}, 3^{rd}, 6^{th} and 12^{th} months during which they underwent wound examination, PVR, ABI and any other tests if clinically indicated. They were also on regular follow up for wound dressing and rehabilitation in our department.

Patients were divided into 5 groups based on the PACSS grade – PACSS 0, 1, 2, 3 and 4 and further into low (PACSS < 2) and high/ intense calcification (PACSS ≥ 2). The baseline patient and lesion characteristics were determined for all 211 patients. However, 8 patients were lost to follow up before the first follow up at 1^{st} month – hence, follow up results pertaining to restenosis/ MALE/ MACE were determined for 203 patients.

Mean age of our study population was 67.1 ± 10.3 years, with age group of PACSS 4 and high calcification group noted to be higher than the rest of the patients with p value < 0.05. Gender distribution was noted to be similar across all grades of PACSS with males contributing to nearly 79.6% of the total population. On comparing patients with and without restenosis, higher number of males developed stenosis (p value < 0.05). However, this can be attributed to the lower number of females in the study population. Most of the patients belonged to Rutherford category V and WIfI stage 3 and 4. The most common comorbidity noted was diabetes mellitus (95.3%). There was higher number of patients with chronic kidney disease (CKD) in the high calcification group with p value < 0.05. The smokers were distributed similarly between the different

grades of PACSS. Out of the 211 patients in the study population, 199 patients were noted to have complete technical success, while in 12 patients a partial technical success was noted – inability to address all the critical lesions. The technical success rates were similar in both the groups – 91.5% in the high calcification group and 96.2% in the low calcification group.

During the follow up period of 1 year, a total of 18 patients developed restenosis of the revascularized segment, with no significant difference between the different grades of PACSS or between the low and high calcification group. However, the incidence of major adverse limb events (MALE) was noted to be higher in patients with high calcification and with p value < 0.01. The number of patients undergoing major amputation was noted to be higher in patients with restenosis than those with no restenosis (p value < 0.05). There was no significant difference between the different groups of calcifications with respect to the overall survival.

According to the Kaplan-Meier curve, the primary patency rates at the one-year mark were recorded as 91.7%, 100%, 81.6%, 95.2%, and 85.5% for patients classified under PACSS grades 0, 1, 2, 3, and 4, respectively, resulting in an overall patency rate of 90.7%. In addition, the estimated limb salvage rates and major adverse cardiac events (MACE) at the end of one year were observed to be 92.3%, 88.5%, 73.3%, 79.8%, 82.6% and 97.2%, 96.3%, 94.1%, 95.2%, 97.05% for PACSS grades 0, 1, 2, 3, and 4, respectively. Further, on Cox regression analysis, none of the covariables were noted to be independently associated with increased risk of loss of primary patency, overall limb salvageability or overall survival.

13. CONCLUSION-

In patients with highly calcified vessels, endovascular intervention can be considered for revascularization as these group of patients have good technical success rates and

similar short term primary patency rates when compared to patients with low calcification. However, this group is associated with lower amputation free survival rates and hence an aggressive wound care regimen should be followed for better wound healing and limb salvage.

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Annexures

ANNEXURE – 1

STUDY PERFORMA

IMPACT OF SEVERITY OF VASCULAR CALCIFICATION ON THE CLINICAL OUTCOMES FOLLOWING ENDOVASCULAR REVASCULARIZATION IN CHRONIC LIMB THREATENING ISCHEMIA (CLTI): A PROSPECTIVE, OBSERVATIONAL STUDY

1. **Patient Characteristics**:

Demographics-

Hospital Number		
Age (years)		
Gender	Male	Female
Co-morbidities: 1.) Diabetes Mellitus	YES	NO
2.) Hypertension	YES	NO
3) Ischemic Heart Disease	YES	NO
4) Chronic Kidney Disease	YES	NO
5) Others		
Tobacco Consumption	YES	NO

Clinical Examination-

Symptom at Presentation	Claudication	Rest Pain	Wound/ Gangrene
Limb Involved	Right	Left	
Rutherford Category	IV	V	VI
WIfI Scoring	W	I	fI

Overall WIfI Stage					
Peripheral Pulses	FA	PA	ATA	PTA	DPA
ABI/ TBI					
PVR (Waveforms)	Thigh		Leg		Foot

2. <u>Operative Parameters</u>:

GLASS Scoring	FP Segment			IP Segment	
Overall GLASS Stage	I		II		III
Wound Procedure Done					
Vessel for PACSS Grading	SFA	PA	ATA	PTA	Peroneal
PACSS Grade	0	1	2	3	4
Revascularization Procedure					
Technical Success	YES		PARTIAL		NO

3. <u>Post-Operative Parameters</u>:

Peripheral Pulses	FA	PA	ATA	PTA	DPA
ABI/ TBI					
PVR (Waveforms)	Thigh		Leg		Foot

4. <u>Follow Up Period</u>:

FOLLOW UP MONTH	WOUND STATUS	PVR/ ABI/ TBI
1st Month		
3rd Month		

6th Month		
12th Month		

- Any Additional Wound Procedure during Follow up Period:
  _____

- If fall in ABI/ TBI/ PVR noted, then month _____

- Any additional imaging performed (if wound ischemic/ fall in ABI/ TBI/ PVR noted): _____
- If restenosis noted in imaging, further management

Conservative (Medical Management)	Revascularization of the Restenosis Segment

- If revascularization performed post restenosis, then procedure
  _____

- Time taken for complete wound healing _____
- Any Major Amputation (month): _____
- Major Adverse Cardiac Events (MACE): _____

ANNEXURE – 2

PATIENT INFORMATION SHEET

STUDY TITLE:

IMPACT OF SEVERITY OF VASCULAR CALCIFICATION ON THE CLINICAL OUTCOMES FOLLOWING ENDOVASCULAR REVASCULARIZATION IN CHRONIC LIMB THREATENING ISCHEMIA (CLTI): A PROSPECTIVE, OBSERVATIONAL STUDY

PURPOSE, BACKGROUD & REASON OF STUDY:

Infrainguinal arterial disease, also known as chronic limb ischemia or arterial occlusive disease, is a common vascular disease that affects the arteries below the inguinal ligament. It can cause limb loss and other complications. It is the most common site for peripheral interventions for people with peripheral arterial disease (PAD).

Peripheral arterial occlusive disease is becoming a major health problem as the population continues to age. The most common risk factor of arterial occlusive diseases is atherosclerosis. This condition may result from increasing age, smoking, diabetes mellitus, hypercholesterolemia, hypertension. Other causes include increased C-reactive protein levels, homocysteinemia, thrombophilia, inflammation, and trauma.

In addition to risk of limb loss, the complexity of the disease is magnified by its intimate association with medical comorbidity, especially cardiovascular and cerebrovascular disease. Risk factor modification and antiplatelet therapy are essential to improve long-term survival. Surgical options for management of infrainguinal arterial occlusive disease are conceptually grouped into two major categories: open reconstruction/bypass and endovascular therapy.

Endovascular treatment of PAD has become increasingly popular and successful as improvements in techniques and devices have resulted in better efficacy and longer patency. It has replaced open revascularization as the most used modality in the treatment of lower extremity PAD. The efficacy of endovascular intervention is affected by both clinical and anatomical factors. Outcomes are worse for patients with DM, end stage renal disease, history of previous vascular intervention, and tissue loss at the time of intervention. Likewise, long

segment occlusions and heavily calcified lesions predict worse outcomes following endovascular intervention.

Vascular calcification (VC), is common in patients with diabetes mellitus and chronic kidney disease and is associated with increased cardiovascular morbidity and mortality. The prevalence of VC in lower extremity PAD is inadequately defined but evidence states that 30–50% of patients may manifest some degree of VC.

The impact of VC on the safety and effectiveness of endovascular devices to treat symptomatic peripheral arterial disease (PAD) remains poorly defined. The absence of a generally accepted, validated vascular calcium grading scale hampers clinical progress in assessing the safety and utility of various endovascular devices (e.g., atherectomy) in treating calcified vessels. The peripheral arterial calcification scoring system (PACSS) has been introduced to assess the prevalence of vascular calcification in patients receiving endovascular interventions. This system categorizes patients into low and high calcification groups, potentially aiding in the identification of individuals at risk for major adverse limb events (MALE) and major adverse cardiovascular events (MACE).

This study aims to assess the prevalence of vascular calcification in patients receiving endovascular treatment for infrainguinal chronic limb-threatening ischemia (CLTI) and to classify these patients according to the grades of the Peripheral Arterial Calcification Scoring System (PACSS). Additionally, we will explore the factors linked to a heightened risk of vascular calcification and examine the impact of vascular calcification on both local and systemic outcomes.

PROCEDURE:

Data will be collected as per the study protocol for consenting patients fulfilling the inclusion criteria for the study. During hospitalisation, the relevant observations will be recorded in the Cath lab and post operatively from hospital case sheets, by interviewing the patient and family and examining the patient, if feasible. Patients will be prepared for endovascular intervention for CLTI and well-informed operative consent will be taken. All probable risks involved with the procedure like bleeding, hematoma formation, surgical site infection, re-occlusion, major amputation, contrast induced nephropathy, respiratory failure, myocardial infarction, probability of prolonged Intensive care unit stay and ventilation will be explained to the patient and his/ her relatives prior to the procedure.

Patient will be discharged from hospital once he/she is symptomatically better and vitals are stable and is able to self-void urine and mobilize independently. Patients will be called for follow up after 7 days in Vascular Surgery OPD.

RISK AND BENEFITS:

No additional risks or side effects will be borne by the patient by being part of this study.

VOLUNTARY PARTICIPATION:

Patient's participation in this study is voluntary and at any time if he /she wishes, he/ she can withdraw from the study.

PRIVACY, CONFIDENTIALITY AND DISCLOSURE OF INFORMATION:

Patient's privacy will be always maintained during the study.

Complete confidentiality will be maintained.

No disclosure of any personal information will be resorted to.

ANNEXURE – 3

INFORMED CONSENT FORM

- Subject identification number for this trial _____

- Title of the Project: **IMPACT OF SEVERITY OF VASCULAR CALCIFICATION ON THE CLINICAL OUTCOMES FOLLOWING ENDOVASCULAR REVASCULARIZATION IN CHRONIC LIMB THREATENING ISCHEMIA (CLTI): A PROSPECTIVE, OBSERVATIONAL STUDY**

- Name of the Principal Investigator _____
- Telephone Number _____
- I have received the information sheet on the above study and have read and/ or understood the written information.
- I have been given the chance to discuss the study and ask questions.
- I consent to take part in the study and I am aware that my participation is voluntary.
- I understand that I may withdraw at any time without this affecting my future care.
- I understand that the information collected about me from my participation in this research and sections of any of my medical notes maybe looked at by responsible persons (ethics committee members/ regulatory authorities). I give access to these individuals to have access to my records.
- I understand I will receive a copy of the patient information sheet and the informed consent form.

_____ _____

Signature/ Thumb Impression of Subject Date of Signature

_____

Printed name of the subject in capitals

_____ _____

Signature of the person conducting the Informed consent discussion

Date of Signature

_____

Printed name of the person conducting the informed Consent discussion in capitals

_____ _____

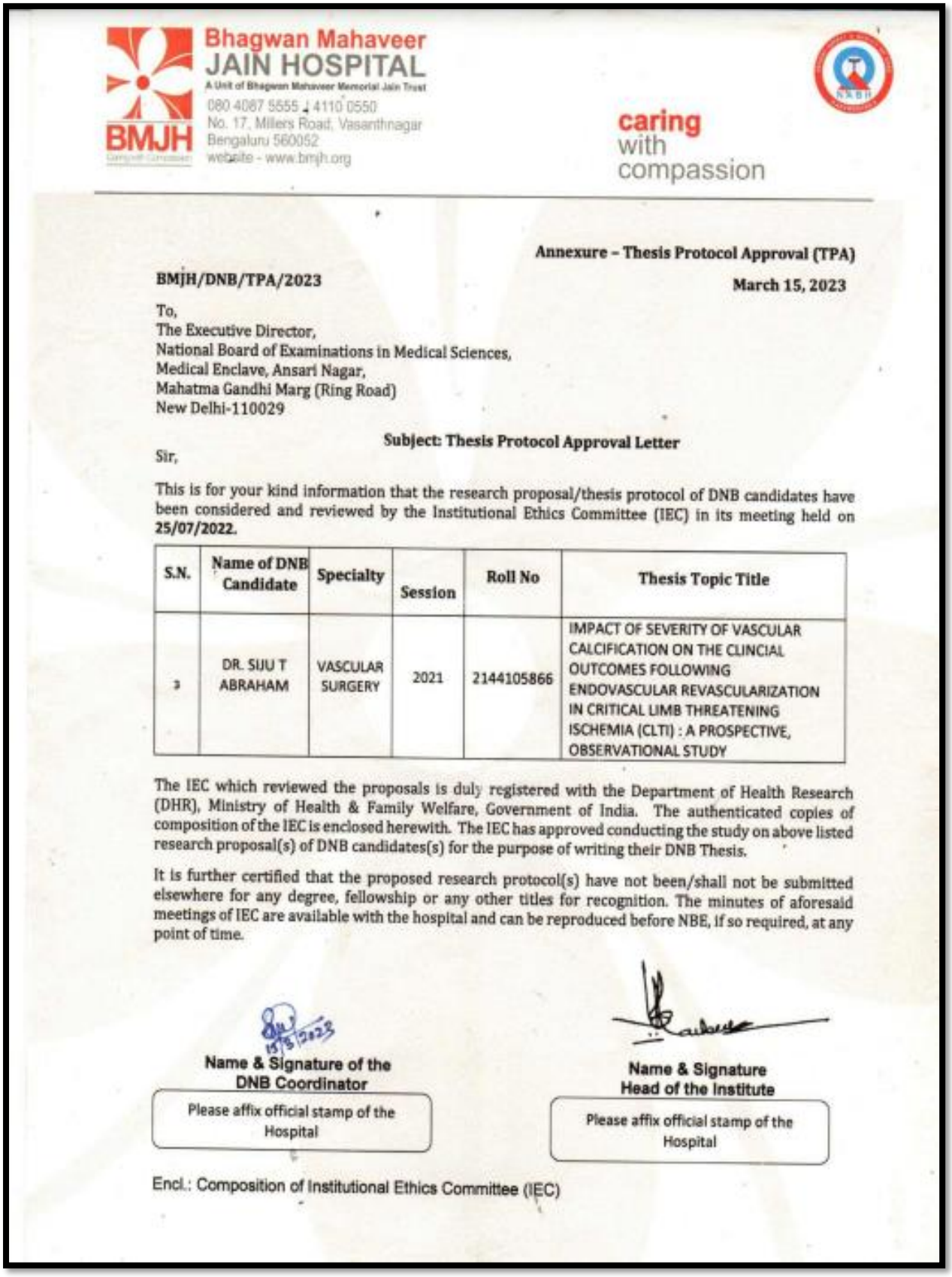
Signature of impartial witness

Date of Signature

_____

Printed name of the impartial witness in Capitals

ANNEXURE 4



Bhagwan Mahaveer
JAIN HOSPITAL
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Bengaluru 560052
website - www.bmjh.org

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Annexure – Thesis Protocol Approval (TPA)

BMJH/DNB/TPA/2023

March 15, 2023

To,
The Executive Director,
National Board of Examinations in Medical Sciences,
Medical Enclave, Ansari Nagar,
Mahatma Gandhi Marg (Ring Road)
New Delhi-110029

Subject: Thesis Protocol Approval Letter

Sir,

This is for your kind information that the research proposal/thesis protocol of DNB candidates have been considered and reviewed by the Institutional Ethics Committee (IEC) in its meeting held on **25/07/2022.**

S.N.	Name of DNB Candidate	Specialty	Session	Roll No	Thesis Topic Title
3	DR. SIJU T ABRAHAM	VASCULAR SURGERY	2021	2144105866	IMPACT OF SEVERITY OF VASCULAR CALCIFICATION ON THE CLINCIAL OUTCOMES FOLLOWING ENDOVASCULAR REVASCULARIZATION IN CRITICAL LIMB THREATENING ISCHEMIA (CLTI) : A PROSPECTIVE, OBSERVATIONAL STUDY

The IEC which reviewed the proposals is duly registered with the Department of Health Research (DHR), Ministry of Health & Family Welfare, Government of India. The authenticated copies of composition of the IEC is enclosed herewith. The IEC has approved conducting the study on above listed research proposal(s) of DNB candidates(s) for the purpose of writing their DNB Thesis.

It is further certified that the proposed research protocol(s) have not been/shall not be submitted elsewhere for any degree, fellowship or any other titles for recognition. The minutes of aforesaid meetings of IEC are available with the hospital and can be reproduced before NBE, if so required, at any point of time.

15/3/2023

Name & Signature of the DNB Coordinator

Please affix official stamp of the Hospital

Name & Signature Head of the Institute

Please affix official stamp of the Hospital

Encl.: Composition of Institutional Ethics Committee (IEC)

ETHICS COMMITTEE ON HUMAN RESEARCH
BHAGWAN MAHAVEER JAIN HOSPITAL
A UNIT OF BHAGWAN MAHAVEER MEMORIAL JAIN TRUST
Millers Road, Vasanthnagar, Bangalore - 560 052.
✆ : 4087 5555 (30 Lines), 4110 0550, Fax: 080 2226 1153
e-mail : bmjh.mdoffice@gmail.com

COMPOSITION OF THE ETHICS COMMITEE

No	NAME	DESIGNATION	APPOINTMENT	AFFILIATED INSTITUTION
1	Prof. H.P. Khincha	Scientist	Chairperson	IISc Bangalore
2	Sri. Phoolchand Jain	President BMJH	Non Scientific Member (Lay Person)	BMJH
3	Dr. M.D. Marker	Medical Director BMJH	Member Secretary	BMJH
4	Dr. Prakash K Mehta	Consultant OBGYN BMJH	Scientific Member	BMJH
5	Dr. Sunanda Kulkarni	Consultant OBGYN	Scientific Member (Lady Member)	Retired Prof
6	Dr. Kopparathi Balaiah	Pathologist	Basic Medical Scientific	BMJH
7	Sri. F.R Singhvi	Consumer Protection Activist	Non Scientific Member (Legal Member)	Nil
8	Dr.H.J.Hrishikeshawan	Pharmacologist	Scientific Member	NRF, Bangalore
9	Dr. G.R. Nagabhushan	CMO JNCASR Bangalore	Scientific Member	JNCASR, Banglore
10	Sri. Mahesh	Social Worker	Social Scientist	Social Worker
11	Sri. Mohith Kumar	Advocate	Non scientific (Legal Member)	Karnataka High Court

Dr. M.D.MARKER
MEMBER SECRETARY
BMJH ECHR

Member Secretary
Ethics Committee on Human Research
Bhagwan Mahaveer Jain Hospital
Miller's Road, Vasanthnagar
Bangalore-560 052

ETHICS COMMITTEE ON HUMAN RESEARCH
BHAGWAN MAHAVEER JAIN HOSPITAL
A UNIT OF BHAGWAN MAHAVEER MEMORIAL JAIN TRUST
Millers Road, Vasanthnagar, Bangalore - 560 052.
✆ : 4087 5555 (30 Lines), 4110 0550, Fax: 080 2226 1153
e-mail : bmjh.mdoffice@gmail.com

APPROVAL CERTIFICATE OF DISSERTATION FOR NBE

Approval has been granted by Ethics Committee of Bhagwan Mahaveer Jain Hospital for the following Dissertation as per NBE requirement **IMPACT OF SEVERITY OF VASCULAR CALCIFICATION ON THE CLINICAL OUTCOMES FOLLOWING ENDOVASCULAR REVASCULARIZATION IN CRITICAL LIMB THREATENING ISCHEMIA (CLTI) : A PROSPECTIVE OBSERVATIONAL STUDY** Conducted by **Dr.SIJU T ABRAHAM** Department of **VASCULAR SURGERY** under the guidance of **DR.VISHNU M** approximate period of study is from **01/08/2022** to **31/07/2023.**

Ethics Committee meeting held on **25/07/2022.**

Date : 15/10/2024

MEMBER SECRETARY
BMJH Ethics Committee

Member Secretary
Ethics Committee on Human Research
Bhagwan Mahaveer Jain Hospital
Miller's Road, Vasanthnagar
Bangalore-560 052

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Bengaluru 560052
website - www.bmjh.org

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SCIENTIFIC COMMITTEE

APPROVAL CERTIFICATE OF DISSERTATION FOR NBE

Approval has been granted by Scientific Committee of Bhagwan Mahaveer Jain Hospital for the following Dissertation as per NBE requirement **IMPACT OF SEVERITY OF VASCULAR CALCIFICATION ON THE CLINICAL OUTCOMES FOLLOWING ENDOVASCULAR REVASCULARIZATION IN CRITICAL LIMB THREATENING ISCHEMIA(CLTI): A PROSPECTIVE OBSERVATIONAL STUDY** Conducted by **DR.SIJU T ABRAHAM** Department of **VASCULAR SURGERY** under the guidance of **DR.VISHNU.M** approximate period of study is from **01/08/2022 to 31/07/2023.**

Scientific Committee meeting held on **25/07/2022.**

Date : 15/10/2024

Bhagwan Mahaveer Jain Hospital 15/10/2024 Bangalore - 52.

MEDICAL DIRECTOR
BMJH Scientific Committee

Dr. UMESH N
Medical Director
BHAGWAN MAHAVEER JAIN HOSPITAL
Bangalore-560 052.

KEY TO MASTER CHART

- ACS – Acute Coronary Syndrome
- ATA – Anterior Tibial Artery
- ABI – Ankle Brachial Index
- AKA – Above Knee Amputation
- BKA – Below Knee Amputation
- CKD ± MHD – Chronic Kidney Disease; Maintenance Hemodialysis
- CLTI – Chronic Limb Threatening Ischemia
- DOI – Date of Intervention
- DPA – Dorsalis Pedis Artery
- DM – Diabetes Mellitus
- FA – Femoral Artery
- FP – Femoropopliteal
- GLASS – Global Limb Anatomic Staging System
- HTN – Hypertension
- IP – Infrapopliteal
- IHD – Ischemic Heart Disease
- LFU – Lost to Follow Up
- PA – Popliteal Artery
- PTA – Posterior Tibial Artery
- PVR – Pulse Volume Recording
- PACSS – Peripheral Arterial Calcification Scoring System
- TPT – Tibio Peroneal Trunk
- TMA – Transmetatarsal Amputation
- WIfI – Wound, Ischemia, foot Infection

MASTER CHART

SL no	Hospital Number	DOI	Age	Gender	Comorbidities					WIfI	WIfI Stage	Limb Involved	Smoking	Pulses in Index Lower Limb			Preop PVR/ Waveforms			Preop ABI	CLTI Category	GLASS Stage			Vessel for PACSS	PACSS Category	Wound Procedure	Revascularization Procedure	Technical Success	Postop PVR	Postop ABI	Wound Status				Fall in ABI/ PVR - Till Last Follow Up	Additional Wound Procedures - Till Last Follow Up	Patency of Revascularized Vessel (Wound Status)	Revascularization Post Restenosis	MALE	MACE/ Death
					DM	HTN	IHD	CKD ± HD	Others					FA	PA	Tibial	THIGH	LEG	FOOT			FP	IP	Stage								1 Month	3 Month	6 Month	12 Month					
1	213669/ 671861	02-08-2022	77	F	YES	YES	NO	NO	NIL	W0I3f0	2	Left	NO	PALPABLE	SIGNALS	NO SOUNDS	REDUCED	REDUCED	REDUCED	0.12	IV	2	0	I	SFA	4	No Debridement	SFA/ PA Angioplasty	YES	IMPROVED	0.5	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU
2	213667/ 628070	03-08-2022	64	F	YES	NO	YES (CABG)	NO	NIL	W2I2f1	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.88	V	0	3	II	ATA	1	1st Toe Debridement	ATA Angioplasty	YES	IMPROVED	1.06	HEALING	HEALED	HEALED	LFU	NIL	NIL	LFU	LFU	LFU
3	213734/ 671743	03-08-2022	76	M	YES	YES	YES	AKI	NIL	W2I3f1	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	ATA	4	1st Toe Amputation	ATA/ DPA Angioplasty	Attempted PTA Plasty - Partial Success	STATUS QUO	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
4	213626/ 671819	03-08-2022	66	M	YES	NO	NO	NO	NIL	W3I2f2	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.77	V	0	2	I	NIL	0	Transmetatarsal Amputation	Distal ATA Angioplasty	YES	STATUS QUO	0.77	HEALING	HEALING	HEALING	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
5	213610/ 448629	03-08-2022	80	M	YES	YES	YES	AKI	NIL	W1I3f1	3	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	4	III	PTA	4	Foot Wound Debridement	ATA/ PTA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
6	213789/ 568385	04-08-2022	57	M	YES	YES	NO	NO	NIL	W1I3f1	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	PTA	2	5th Toe Amputation	ATA/ PTA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
7	213755/ 671986	04-08-2022	74	M	YES	YES	NO	NO	CVA	W1I1f1	2	Left	NO	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	NC	V	3	4	III	NIL	0	1st Toe Amputation	PA Angioplasty/Stenting with PTA Angioplasty	YES	IMPROVED	NC	HEALING	UNHEALTHY	BKA	BKA	NIL	TMA - 4TH MONTH	PATENT	NIL	BKA - 6TH MONTH	NIL
8	213793/ 672161	05-08-2022	68	F	YES	YES	NO	YES	OSA	W2I3f2	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	REDUCED	REDUCED	REDUCED	NC	V	2	3	II	ATA	3	Transmetatarsal Amputation	PA Angioplasty/ Stenting with ATA Angioplasty	YES	STATUS QUO	NC	UNHEALTHY	BKA	BKA	BKA	NIL	TMA STUMP WOUND DEBRIDEMENT - 1 MONTH	PATENT	NIL	BKA (OUTSIDE) - 2ND MONTH	NIL
9	213918/ 672388	08-08-2022	46	M	YES	NO	YES (MM)	NO	HYPOTHYROIDISM	W1I2f1	3	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	0.42	V	3	0	II	NIL	0	Foot Wound Debridement	PA/ TPT Angioplasty	YES	IMPROVED	0.87	HEALING	UNHEALTHY	HEALING	HEALED	FALL IN ABI - 2ND MONTH	REDEBRIDEMENT - 3RD MONTH	Restenosis at 2nd Month (Ischemic Foot Wound)	PA/ TPT Angioplasty- Stenting & PTA Angioplasty (2nd Month)	NIL	NIL
10	213734/ 671743	08-08-2022	76	M	YES	YES	YES	AKI	NIL	W2I3f1	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	PTA	4	1st Toe Amputation	ATA/ PTA Angioplasty	YES	STATUS QUO	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
11	213951/ 672393	08-08-2022	73	M	YES	NO	NO	NO	NIL	W2I3f1	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.81	V	0	2	I	NIL	0	2nd to 5th Toe Amputation (Multiple Toes)	ATA/ Peroneal Angioplasty	YES	IMPROVED	0.88	HEALING	HEALING	HEALED	HEALED	NIL	MULTIPLE TOE AMPUTATION - 1ST WEEK	PATENT	NIL	NIL	NIL
12	213830/ 672328	08-08-2022	82	M	YES	YES	YES (PTCA)	AKI	CVA	W3I3f1	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	3	II	ATA	2	Heel Wound Debridement	ATA Angioplasty	Attempted PTA Plasty - Partial Success	IMPROVED	NC	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU
13	213974/ 672139	11-08-2022	60	M	YES	YES	NO	AKI	NIL	W2I3f2	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	NIL	0	2nd to 4th Toe Amputation (Multiple Toes)	ATA/ DPA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALING	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
14	213887/ 672480	11-08-2022	59	M	YES	NO	NO	NO	NIL	W1I2f3	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.48	V	2	0	I	NIL	0	Transmetatarsal Amputation	SFA/ PA Angioplasty and Stenting	YES	IMPROVED	0.84	HEALING	HEALING	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
15	213977/ 671374	11-08-2022	74	M	YES	NO	NO	NO	NIL	W2I3f2	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.34	V	2	0	I	SFA/ PA	4	Transmetatarsal Amputation	SFA/ PA Angioplasty and Stenting	YES	IMPROVED	0.86	UNHEALTHY	LFU	LFU	LFU	NIL	REDEBRIDEMENT - 1 MONTH	LFU	LFU	LFU	LFU
16	214015/ 672779	11-08-2022	68	M	YES	YES	YES	NO	NIL	W2I1f2	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	V	2	3	II	SFA	2	Foot/ Leg Wound Debridement	SFA/ PA/TPT/ PTA/ ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
17	214153/ 599776	12-08-2022	64	M	YES	NO	YES	NO	NIL	W2I1f1	3	Left	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	V	3	1	II	SFA	2	5th Toe Wound Debridement	SFA Angioplasty amd Stenting	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
18	214184/ 671532	13-08-2022	57	M	YES	YES	YES (PTCA & CABG)	NO	NIL	W2I2f2	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	2	I	NIL	0	Transmetatarsal Amputation	ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	SSG - 2ND MONTH	PATENT	NIL	NIL	NIL
19	214099/ 673049	13-08-2022	58	M	YES	NO	YES (PTCA)	AKI	NIL	W2I3f3	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	PTA	4	5th Toe Amputation	ATA/ PTA/ Peroneal Angioplasty	YES	STATUS QUO	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
20	214043/ 672896	13-08-2022	51	M	YES	YES	YES (MM)	NO	ANAEMIA	W3I1f2	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.98	VI	0	4	III	TPT	1	Transmetatarsal Amputation	TPT/ Peroneal Angioplasty	YES	IMPROVED	1.02	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
21	214259/ 670844	16-08-2022	71	M	YES	YES	NO	NO	NIL	W2I2f1	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.42	V	2	2	II	NIL	0	No Debridement	SFA Angioplasty and Stenting	YES	IMPROVED	0.94	HEALING	HEALING	HEALED	HEALED	NIL	MULTIPLE TOE AMPUTATION - 2ND MONTH	PATENT	NIL	NIL	NIL
22	214302/ 672837	17-08-2022	74	M	NO	NO	YES (MM)	NO	NIL	W1I3f1	3	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	0.64	V	2	1	II	NIL	0	1st Toe Amputation Stump Debridement	PA/ TPT/ PTA Angioplasty	YES	IMPROVED	0.88	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
23	214337/ 672421	17-08-2022	72	F	YES	YES	NO	NO	RA	W0I3f1	3	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	V	2	3	II	SFA	4	4th Toe Debridement	SFA/ PA Angioplasty	YES	STATUS QUO	NC	UNHEALTHY	HEALING	HEALING	HEALED	NIL	TMA - 1 MONTH	PATENT	NIL	NIL	NIL
24	214442/ 518374	20-08-2022	37	M	NO	NO	NO	NO	HYPOTHYROIDISM	W2I3f0	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.56	V	0	2	I	NIL	0	No Debridement	TPT/ Peroneal/ ATA Angioplasty	YES	STATUS QUO	0.6	UNHEALTHY	HEALING	HEALED	HEALED	NIL	MULTIPLE TOE AMPUTATION - 1 MONTH	PATENT	NIL	NIL	NIL
25	214429/ 673684	20-08-2022	69	M	YES	NO	NO	NO	NIL	W3I3f2	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	3	II	NIL	0	2nd Toe Amputation with Foot Debridement	ATA Angioplasty	YES	IMPROVED	NC	HEALING	UNHEALTHY	HEALING	HEALED	NIL	REDEBRIDEMENT - 4TH MONTH; SSG - 8TH MONTH	PATENT	NIL	NIL	NIL
26	214428/ 673848	22-08-2022	75	M	YES	NO	YES (PTCA)	NO	NIL	W3I3f3	4	Left	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	2	1	II	SFA	4	Transmetatarsal Amputation	SFA Angioplasty	YES	STATUS QUO	NC	HEALING	UNHEALTHY	HEALING	HEALED	NIL	MULTIPLE DEBRIDEMENT IN 4TH MONTH	PATENT	NIL	NIL	NIL
27	214575/ 577899	23-08-2022	62	M	YES	YES	YES (PTCA)	NO	NIL	W2I2f0	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	PTA	4	1st Toe Debridement	PTA Angioplasty	Attempted Peroneal Plasty - Partial Success	IMPROVED	NC	HEALING	HEALING	HEALING	HEALED	NIL	1ST TOE COMPLETION AMPUTATION - 6TH MONTH	PATENT	NIL	NIL	NIL
28	214556/ 673898	23-08-2022	49	M	YES	NO	NO	NO	NIL	W2I1f1	3	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.96	V	0	2	I	NIL	0	1st Toe Amputation	TPT/ ATA/ PTA Angioplasty	YES	IMPROVED	1.01	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
29	214579/ 620662	23-08-2022	63	M	YES	YES	YES (MM)	NO	CVA	W1I2f1	3	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.8	VI	0	3	II	NIL	0	Ankle and Leg Debridement	TPT/ ATA/ Peroneal Angioplasty	YES	STATUS QUO	0.8	HEALED	HEALED	LFU	LFU	NIL	INTRAOPERATIVE FLAP ADVANCEMENT	LFU	LFU	LFU	LFU
30	214583/ 674057	23-08-2022	74	M	YES	YES	NO	NO	NIL	W2I3f1	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	4	III	ATA	1	4th Toe Amputation	ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALING	HEALED	NIL	MULTIPLE TOE AMPUTATION - 3RD MONTH	PATENT	NIL	NIL	NIL
31	214530/ 555802	24-08-2022	62	M	YES	NO	NO	NO	NIL	W1I1f1	2	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	ATA	1	Foot Wound Debridement	Distal ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
32	214510/ 674096	24-08-2022	70	F	YES	YES	NO	NO	NIL	W2I3f2	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	ATA	3	Transmetatarsal Amputation	ATA/ PTA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
33	214508/ 674051	25-08-2022	81	M	YES	YES	NO	YES	NIL	W2I2f3	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	0.52	V	2	3	II	NIL	0	5th Toe Amputation	PA/ PTA Angioplasty (CO2)	YES	STATUS QUO	0.56	UNHEALTHY	HEALING	HEALED	HEALED	NIL	TOE AMPUTATION - 1ST MONTH	PATENT	NIL	NIL	NIL
34	214630/ 629554	25-08-2022	71	M	YES	YES	NO	AKI	NIL	W2I3f2	4	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.33	VI	1	4	III	PA	1	Heel Wound Debridement	SFA/ PA/ TPT/ Peroneal Artery Angioplasty (CO2)	YES	IMPROVED	0.64	HEALING	HEALING	HEALING	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
35	214683/ 673902	25-08-2022	79	M	YES	NO	YES (CABG)	NO	NIL	W1I3f0	3	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	1	I	NIL	0	Foot Wound Debridement	Proximal ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
36	214421/ 493879	26-08-2022	67	F	YES	NO	NO	NO	HYPOTHYROIDISM	W2I1f2	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	2	I	NIL	0	Foot Wound Debridement	TPT/ ATA/ Peroneal Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALING	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
37	214692/ 674462	26-08-2022	70	M	YES	NO	YES (MM)	NO	NIL	W2I1f2	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	2	I	PTA	4	Foot Wound Debridement	Distal PTA/ Peroneal Angioplasty	YES	STATUS QUO	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
38	214584/ 674243	26-08-2022	60	M	YES	NO	NO	NO	NIL	W3I3f3	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	3	II	Peroneal	2	Transmetatarsal Amputation	Peroneal Angioplasty	Attempted PTA Plasty - Partial Success	IMPROVED	NC	HEALING	HEALING	HEALING	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
39	214690/ 674536	26-08-2022	58	M	YES	NO	NO	NO	NIL	W2I3f0	4	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.32	V	2	3	II	NIL	0	5th Toe Amputation	SFA/ PA Angioplasty and Stenting with ATA/ PTA Angioplasty	YES	IMPROVED	1.02	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
40	214780/ 674791	30-08-2022	70	M	YES	NO	NO	NO	NIL	W2I2f2	3	Left	YES	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.55	VI	2	3	II	NIL	0	Transmetatarsal Amputation	PA/ TPT/ PTA Angioplasty	YES	IMPROVED	0.96	HEALING	HEALING	HEALED	HEALED	NIL	TMA STUMP DEBRIDEMENT - 1.5 MONTHS; SSG - 4TH MONTH	PATENT	NIL	NIL	NIL
41	214985/ 675314	02-09-2022	72	M	YES	NO	NO	NO	NIL	W1I1f1	2	Right	YES	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.63	V	2	2	II	PA	1	3rd Toe Stump Debridement	PA/ ATA Angioplasty	YES	IMPROVED	0.88	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
42	214980/ 675006	03-09-2022	65	F	NO	NO	NO	NO	RA	W2I1f1	3	Right	NO	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	0.6	V	1	3	II	NIL	0	2nd/ 3rd/ 5th Toe Partial Amputation	SFA/ TPT/ ATA Angioplasty	YES	STATUS QUO	0.7	HEALING	HEALING	HEALED	HEALED	FALL IN ABI - 4TH MONTH	ADDITIONAL TOE AMPUTATION - 2ND MONTH	Restenosis at 4th Month (No Wounds)	Managed Conservatively - Claudication	NIL	NIL
43	214968/ 674910	03-09-2022	81	M	YES	YES	NO	NO	NIL	W2I3f2	4	Right	YES	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	0.29	V	3	1	II	SFA	3	3rd to 5th Toe Amputation	SFA Angioplasty and Stenting with PA Angioplasty	YES	IMPROVED	1.09	HEALING	HEALED	HEALED	LFU	NIL	NIL	LFU	LFU	LFU	LFU
44	215020/ 675244	05-09-2022	90	M	YES	YES	YES (PTCA)	YES	NIL	W2I3f1	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	NS	V	2	0	I	SFA	4	1st Toe Amputation	SFA/ PA Angioplasty	YES	IMPROVED	NC	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU
45	214926/ 626750	05-09-2022	76	M	YES	NO	YES (PTCA)	NO	NIL	W3I2F3	4	Left	YES	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	NC	VI	3	3	III	SFA	4	1st Toe Amputation and Leg Debridement	SFA/ PA Angioplasty and Stenting with TPT/ Peroneal Artery Angioplasty	YES	IMPROVED	NC	UNHEALTHY	HEALING	HEALING	HEALED	NIL	TMA AND ANKLE FIXATION - 1ST MONTH	PATENT	NIL	NIL	NIL
46	215025/ 675420	07-09-2022	60	M	YES	NO	NO	NO	CLD	W2F2f2	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	4	III	NIL	0	5th Toe Amputation with Wound Debridement	ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
47	215195/ 675734	08-09-2022	61	M	YES	YES	YES (PTCA)	AKI	COPD	W2I2f2	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.8	V	0	2	I	NIL	0	1st Toe Amputation and Foot Debridement	ATA/ DPA Angioplasty	YES	IMPROVED	0.98	HEALING	LFU	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
48	215193/ 675718	08-09-2022	92	F	YES	YES	NO	NO	NIL	W2I3f2	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	NC	V	2	2	II	NIL	0	Transmetatarsal Amputation	SFA/ PA/ TPT/ Peroneal Artery Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
49	215268/ 675727	09-09-2022	32	F	YES	YES	NO	NO	NIL	W2I2f1	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.5	V	2	3	II	NIL	0	Heel Wound Debridement	SFA/ PA Angioplasty and Stenting with ATA/ TPT/ Peroneal Artery Angioplasty	YES	STATUS QUO	0.4	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
50	215330/ 676270	12-09-2022	54	M	YES	NO	YES (MM)	NO	NIL	W2I3f1	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.4	V	2	3	II	SFA	1	Foot Wound Debridement	PA/ ATA Angioplasty	YES	IMPROVED	0.71	UNHEALTHY	HEALING	HEALED	HEALED	NIL	TMA AT 1.5 MONTH	PATENT	NIL	NIL	NIL
51	215450/ 594800	13-09-2022	64	F	YES	NO	NO	NO	NIL	W2I3f1	4	Right	NO	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.8	VI	3	2	II	NIL	0	Transmetatarsal Amputation	PA/ ATA Angioplasty	YES	IMPROVED	0.98	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
52	215451/ 676089	14-09-2022	69	M	YES	YES	NO	NO	PARKINSON	W2I3f2	4	Right	NO	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	NS	VI	1	2	II	SFA	1	2nd and 3rd Toe Amputation with Heel Debridement	PA/ ATA Angioplasty	YES	IMPROVED	1.22	UNHEALTHY	UNHEALTHY	BKA	BKA	NIL	RE-DEBRIDEMENT - 1.5 MONTH	PATENT	NIL	BKA - 4TH MONTH	ACS (INHOSPITAL)
53	215535/ 676828	15-09-2022	62	M	YES	YES	NO	NO	CVA	W2I3f1	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	Peroneal	4	2nd Toe Amputation	ATA/ Peroneal Artery Angioplasty	YES	STATUS QUO	NC	HEALING	HEALING	HEALED	LFU	NIL	NIL	LFU	LFU	LFU	LFU
54	215544/ 676833	16-09-2022	56	M	YES	YES	NO	NO	NIL	W2I2f2	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.65	V	0	4	III	PTA	3	2nd Toe Amputation	PTA/ ATA Angioplasty	YES	IMPROVED	0.96	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
55	215551/ 676858	16-09-2022	72	M	YES	NO	NO	NO	NIL	W2I3f1	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.82	V	0	3	II	NIL	0	1st Toe Amputation	ATA/ PTA Angioplasty	YES	IMPROVED	0.99	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
56	215706/ 677028	20-09-2022	63	M	YES	YES	NO	NO	NIL	W1I3f1	3	Left	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	3	3	III	NIL	0	Leg Wound Debridement	SFA/ PA Angioplasty and Stenting	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	FALL IN WAVEFORMS - 7TH MONTH	NIL	Restenosis at 7th Month (No Wounds)	Managed Conservatively	NIL	NIL
57	215637/ 677111	21-09-2022	65	M	YES	YES	YES (MM)	AKI	NIL	W2I2f3	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	1	I	NIL	0	3rd and 4th Toe Amputation Stump Debridement	PTA/ ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
58	215772/ 598912	22-09-2022	75	M	YES	NO	YES (PTCA)	NO	CLD	W1I2f0	2	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	NIL	0	No Debridement	ATA/ Peroneal Artery/ DPA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
59	215819/ 677580	24-09-2022	72	M	YES	NO	NO	NO	NIL	W1I2f1	3	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.72	V	0	3	II	ATA	1	1st Toe Amputation	ATA/ PTA Angioplasty	YES	IMPROVED	0.88	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL

60	215993/ 670520	27-09-2022	79	M	YES	YES	NO	AKI	NIL	W1I2f1	3	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	NIL	0	2nd/ 3rd/ 4th Toe Wound Debridement	ATA/ DPA Angioplasty (CO2)	YES	IMPROVED	NC	UNHEALTHY	HEALING	HEALING	HEALED	NIL	TMA - 2ND MONTH; SSG - 3RD MONTH - INCOMPLETE UPTAKE	PATENT	NIL	NIL	NIL
61	215952/ 677852	28-09-2022	58	F	YES	YES	NO	NO	NIL	W1I2f1	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	NIL	0	4th and 5th Toe Amputation	ATA/ DPA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
62	216136/ 678134	30-09-2022	57	F	NO	YES	NO	NO	CVA	W2I2f1	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	0.49	V	3	1	II	NIL	0	5th Toe Wound Debridement	PA Angioplasty	YES	IMPROVED	0.82	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
63	216190/ 678440	03-10-2022	75	M	YES	YES	NO	NO	NIL	W2I3f1	4	Left	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.32	V	3	0	II	SFA	3	Heel Wound Debridement	SFA Angioplasty and Stenting	YES	IMPROVED	0.85	HEALING	HEALED	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
64	216462/ 679282	11-10-2022	72	M	YES	YES	YES	NO	NI;	W0I3f0	2	Left	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.29	IV	3	4	III	NIL	0	No Debridement	SFA Angioplasty and Stenting with TPT Angioplasty	YES	IMPROVED	0.54	NO WOUNDS	NO WOUNDS	NO WOUNDS	NO WOUNDS	NIL	NIL	PATENT	NIL	NIL	NIL
65	216611/ 679693	12-10-2022	76	M	NO	YES	YES (PTCA)	YES	NIL	W2I3f1	4	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	0.72	V	4	0	III	NIL	0	3rd Toe Partial Amputation	SFA/ PA Angioplasty and Stenting (CO2)	YES	IMPROVED	1.02	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
66	216654/ 472401	13-10-2022	66	M	YES	YES	YES (MM)	AKI	PULMONARY TB	W2I3f1	4	Left	NO	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	1	2	II	NIL	0	2nd to 5th Toe Amputation	SFA/ PA/ ATA/ Peroneal Artery Angioplasty (CO2)	YES	IMPROVED	NC	HEALING	HEALING	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
67	216715/ 679608	14-10-2022	86	M	YES	NO	NO	NO	NO	W2I3f2	4	Right	NO	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	3	1	II	SFA	4	Heel Wound Debridement	SFA/ PA Angioplasty	YES	IMPROVED	NC	UNHEALTHY	UNHEALTHY	BKA	BKA	NIL	NIL	PATENT	NIL	BKA - 5TH MONTH (OUTSIDE)	NIL
68	216658/ 661216	14-10-2022	62	M	YES	YES	NO	NO	ASTHMA	W2I3f2	4	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.62	V	2	1	II	NIL	0	1st Toe Partial Amputation	SFA Angioplasty and Stenting	YES	IMPROVED	0.94	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
69	216709/ 679491	15-10-2022	87	F	YES	YES	NO	NO	NIL	W1I1f0	1	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.7	V	2	2	II	SFA	1	4th Web Space Wound Debridement	SFA/ PA/ ATA Angioplasty	YES	IMPROVED	1.02	UNHEALTHY	HEALING	HEALED	HEALED	NIL	MULTIPLE TOE AMPUTATION - 2ND MONTH	PATENT	NIL	NIL	NIL
70	216773/ 680050	17-10-2022	73	F	YES	YES	NO	NO	SCLERODERMA	W3I3f2	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	V	3	4	III	SFA	4	Foot Debridement	SFA/ P3/ TPT Angioplasty (SFA Instent Plasty)	YES	STATUS QUO	NC	HEALING	HEALED	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
71	216864/ 674900	18-10-2022	49	M	YES	YES	NO	YES	NIL	W2I3f2	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	ATA	3	1st Toe Tip Debridement	ATA/ PTA Angioplasty	YES	STATUS QUO	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
72	216964/ 680258	20-10-2022	45	M	YES	NO	NO	NO	NIL	W0I3f0	2	Left	YES	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	0.52	IV	1	1	I	NIL	0	No Debridement	SFA Angioplasty	YES	IMPROVED	0.88	NO WOUNDS	NO WOUNDS	NO WOUNDS	NO WOUNDS	NIL	NIL	PATENT	NIL	NIL	NIL
73	217157/ 680697	26-10-2022	58	M	YES	YES	NO	YES	NIL	W2I2f2	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	NIL	0	4th Toe Amputation with Wound Debridement	ATA/ Peroneal Artery Angioplasty	YES	STATUS QUO	NC	UNHEALTHY	HEALING	HEALING	HEALED	NIL	MULTIPLE TOE AMPUTATION - 1 MONTH	PATENT	NIL	NIL	NIL
74	217196/ 680912	27-10-2022	60	M	YES	YES	NO	NO	NIL	W0I2f0	2	Left	YES	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	0.73	V	2	2	II	NIL	0	No Debridement	SFA Angioplasty/ Stenting with ATA Angioplasty	YES	IMPROVED	0.95	NO WOUNDS	NO WOUNDS	NO WOUNDS	NO WOUNDS	NIL	NIL	PATENT	NIL	NIL	NIL
75	217199/ 681120	28-10-2022	69	M	YES	NO	YES (CABG)	NO	NIL	W2I3f1	4	Right	YES	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	2	3	II	NIL	0	4th Toe Amputation and Wound Debridement	PA/ TPT/ Peroneal Artery/ ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	LFU	NIL	NIL	LFU	LFU	LFU	LFU
76	217120/ 680993	28-10-2022	61	M	YES	NO	NO	NO	NIL	W2I3f1	4	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.54	V	2	4	III	SFA	1	3rd Toe Amputation	SFA/ PA/ ATA Angioplasty	YES	IMPROVED	0.83	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
77	217237/ 681010	28-10-2022	73	M	YES	YES	YES (CABG)	NO	NIL	W1I3f1	3	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	NIL	0	3rd and 4th Wound Debridement	ATA Angioplasty	YES	STATUS QUO	NC	HEALING	HEALING	HEALED	HEALED	NIL	TMA - 2ND MONTH; SSG - 5TH MONTH	PATENT	NIL	NIL	NIL
78	217451/ 680993	03-11-2022	61	M	YES	NO	NO	NO	NIL	W2I2f1	4	Left	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.55	V	3	2	II	SFA	1	3rd Toe Amputation	SFA/ PA/ ATA Angioplasty	YES	IMPROVED	0.86	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
79	217504/ 681265	04-11-2022	67	F	YES	YES	NO	NO	NIL	W2I2f2	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.46	V	2	2	II	NIL	0	3rd/ 5th Toe Amputation and Wound Debridement	SFA/ PA Angioplasty and Stenting with ATA Angioplasty	YES	IMPROVED	0.63	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
80	217455/ 595554	05-11-2022	64	M	YES	YES	YES (CABG)	AKI	CVA	W2I3f2	4	Right	NO	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	2	2	II	SFA	3	1st Toe Amputation and Wound Debridement	SFA/ Peroneal Artery Angioplasty (CO2)	YES	IMPROVED	NC	UNHEALTHY	HEALING	HEALED	LFU	NIL	MID FOOT AMPUTATION - 1ST MONTH; SSG - 5TH MONTH	LFU	LFU	LFU	LFU
81	217489/ 681745	05-11-2022	76	F	YES	YES	NO	NO	NIL	W2I2f1	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.45	V	0	4	III	NIL	0	5th Toe Wound Debridement	TPT/ Peroneal Angioplasty	YES	IMPROVED	0.94	HEALING	HEALED	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
82	217514/ 644680	05-11-2022	73	M	YES	NO	YES	COPD	W1I1f1	2	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.67	VI	0	3	II	NIL	0	Foot Wound Debridement	ATA/ TPT Angioplasty (CO2)	YES	IMPROVED	0.88	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
83	217559/ 681863	05-11-2022	72	M	YES	YES	YES (PTCA)	NO	NIL	W1I2f1	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	ATA	4	2nd to 5th Toe Amputation	ATA Angioplasty	YES	STATUS QUO	NC	HEALING	HEALING	HEALED	HEALED	NIL	SSG - 2ND MONTH	PATENT	NIL	NIL	NIL
84	217562/ 681858	07-11-2022	75	F	YES	NO	NO	YES	NIL	W2I2f1	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	0	3	II	Peroneal	3	3rd Toe Amputation with Wound Debridement	ATA/ Peroneal Angioplasty (CO2)	YES	IMPROVED	NC	UNHEALTHY	HEALING	HEALED	HEALED	NIL	TMA - 1.5 MONTH	PATENT	NIL	NIL	NIL
85	217683/ 681583	09-11-2022	82	M	YES	YES	YES (PTCA & CABG)	NO	NIL	W2I3f0	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	ATA	3	1st and 5th Toe Wound Debridement	ATA Angioplasty	YES	STATUS QUO	NC	UNHEALTHY	UNHEALTHY	LFU	LFU	NIL	MULTIPLE TOE AMPUTATION - 1ST MONTH: ADVISED TMA	LFU	LFU	LFU	LFU
86	217658/ 626714	09-11-2022	61	M	YES	YES	YES (PTCA)	NO	CVA	W1I3f0	3	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	NIL	0	No Debridement	ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
87	217659/ 682140	09-11-2022	68	M	YES	YES	YES (PTCA)	YES	NIL	W2I1f1	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	PTA	4	4th and 5th Toe Amputation	PTA Angioplasty (CO2)	YES	STATUS QUO	NC	UNHEALTHY	HEALING	HEALED	HEALED	NIL	WOUND DEBRIDEMENT - 1ST MONTH;MULTIPLE TOE AMPUTATION - 2ND MONTH; SSG - 3RD MONTH	PATENT	NIL	NIL	NIL
88	217692/ 680562	09-11-2022	71	M	YES	YES	YES (MM)	NO	CVA	W3I1f2	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	NC	V	0	2	I	PTA	4	1st Toe Amputation	ATA/ PTA Angioplasty	Attempted Peroneal Plasty - Partial Success	IMPROVED	NC	HEALING	HEALING	UNHEALTHY	LFU	FALL IN WAVEFORMS - 6TH MONTH	ADVISED TMA - 6TH MONTH	Restenosis at 6th Month (Forefoot Ischaemia); LFU	LFU	LFU	LFU
89	217792/ 681070	11-11-2022	72	F	YES	NO	YES (PTCA)	NO	NIL	W1I2f1	3	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	V	2	3	II	NIL	0	4th Toe Wound Debridement	SFA/ PA/ ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
90	217543/ 660742	12-11-2022	68	M	YES	YES	NO	NO	NIL	W2I3f2	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	NIL	0	Transmetatarsal Amputation	ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	SSG - 2ND MONTH	PATENT	NIL	NIL	NIL
91	217891/ 682956	15-11-2022	74	M	YES	NO	YES (CABG)	NO	NIL	W2I3f1	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	PTA	4	1st Toe Amputation Stump Wound Debridement	PTA Angioplasty	YES	IMPROVED	NC	HEALED	HEALED	NEW WOUND	HEALED	FALL IN WAVEFORM - 8TH MONTH	HEEL WOUND DEBRIDEMENT; SSG OF NEW HEEL WOUND - 10TH MONTH	Restenosis at 8th Month (New Heel Wound)	Right PTA Angioplasty (8th Month)	NIL	NIL
92	217543/ 660742	15-11-2022	68	M	YES	YES	NO	NO	NIL	W2I3f1	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	NIL	0	3rd and 4th Toe Amputation	ATA Angioplasty	YES	IMPROVED	NC	UNHEALTHY	HEALING	HEALED	HEALED	NIL	TMA - 2ND MONTH; SSG - 4TH MONTH	PATENT	NIL	NIL	NIL
93	217957/ 683009	16-11-2022	56	M	YES	YES	NO	NO	NIL	W2I3f1	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	NIL	0	Transmetatarsal Amputation with Wound Debridement	TPT/ Peroneal Angioplasty	YES	STATUS QUO	NC	HEALING	HEALING	HEALING	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
94	218025/ 682267	17-11-2022	77	M	YES	YES	YES (CABG)	NO	HYPOTHYROIDISM	W1I3f0	3	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	ATA	1	2nd and 3rd Toe Wound Debridement	ATA Angioplasty	YES	STATUS QUO	NC	HEALED	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
95	218024/ 652812	18-11-2022	67	M	YES	NO	YES (CABG)	YES	NIL	W2I3f1	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	ATA	2	1st Toe Wound Debridement	ATA Angioplasty (CO2)	YES	IMPROVED	NC	HEALING	UNHEALTHY	HEALING	HEALED	NIL	TMA - 5TH MONTH; SSG - 8TH MONTH	PATENT	NIL	NIL	NIL
96	217893/ 682894	18-11-2022	64	M	YES	YES	YES (PTCA)	NO	NIL	W1I2f1	3	Right	NO	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	0.45	V	2	1	II	SFA	2	1st Toe Amputation and Foot Wound Debridement	SFA/ PA Angioplasty amd Stenting	YES	IMPROVED	0.71	HEALING	HEALING	ISCHEMIC	AKA	FALL IN WAVEFORM - 6TH AND 9TH MONTH	FOOT AND HEEL WOUND DEBRIDEMENT - 6th month	Restenosis at 6th and 9th Month (Ischaemic Foot and Heel Wounds)	CFA Endarterectomy and CFA to P3 Bypass (6th Month)	AKA - 9TH MONTH	NIL
97	218041/ 683348	19-11-2022	64	M	YES	NO	YES (CABG)	NO	NIL	W1I2f2	4	Left	NO	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	2	3	II	PTA	2	Foot Wound Debridement	SFA Angioplasty/ Stenting with TPT/ PTA Angioplasty	YES	IMPROVED	NC	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU
98	218038/ 680077	19-11-2022	55	M	YES	YES	YES (PTCA)	NO	RENAL TRANSPLANT	W2I3f1	4	Left	YES	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	2	4	III	PA	1	Transmetatarsal Amputation	PA/ ATA/ PTA Angioplasty	Attempted PTA Plasty - Partial Success	IMPROVED	NC	UNHEALTHY	UNHEALTHY	AKA	AKA	NIL	NIL	PATENT	NIL	AKA - 4TH MONTH	NIL
99	218095/ 681583	19-11-2022	82	M	YES	YES	YES (PTCA)	NO	NIL	W2I1f1	3	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	PTA	2	1st Toe Wound Debridement	PTA and Proximal ATA Angioplasty	YES	IMPROVED	NC	UNHEALTHY	HEALED	HEALED	HEALED	NIL	1ST TOE AMPUTATION - 1ST MONTH	PATENT	NIL	NIL	NIL
100	218107/ 683539	21-11-2022	70	M	YES	YES	YES (MM)	YES	NIL	W0I3f0	2	Left	YES	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	0.25	IV	2	0	I	NIL	0	No Debridement	SFA/ PA Angioplasty and Stenting (CO2)	YES	IMPROVED	0.71	HEALING	LFU	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
101	218145/ 683726	22-11-2022	57	M	YES	YES	NO	YES	NIL	W2I3f2	4	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	V	3	2	II	PTA	4	Foot Wound Debridement	SFA Angioplasty and Stenting with PTA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	5TH TOE AMPUTATION - 5TH MONTH	PATENT	NIL	NIL	NIL
102	218187/ 672163	23-11-2022	75	M	YES	YES	NO	NO	NIL	W2I1f2	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	0.71	V	2	3	II	NIL	0	2nd and 4th Toe Amputation	SFA/ PA/ Peroneal Artery Angioplasty	YES	IMPROVED	0.97	HEALING	HEALED	HEALED	HEALED	NIL	MULTIPLE TOE AMPUTATION WITH SECONDARY SUTURING IN 2ND MONTH	PATENT	NIL	NIL	NIL
103	218147/ 683729	24-11-2022	39	F	YES	YES	NO	NO	HYPOTHYROIDISM	W2I2f1	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	V	1	3	II	NIL	0	Heel Wound Debridement	SFA/ Peroneal Artery Angioplasty	YES	IMPROVED	NC	UNHEALTHY	HEALING	UNHEALTHY	HEALED	NIL	DEBRIDEMENT IN 1ST AND 7TH MONTH	PATENT	NIL	NIL	NIL
104	218304/ 421180	25-11-2022	63	M	YES	YES	YES (MM)	YES	HYPOTHYROIDISM	W1I1f1	2	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.69	V	2	0	I	NIL	0	1st Toe Wound Debridement	PA Angioplasty	YES	IMPROVED	1.02	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
105	218400/ 682101	28-11-2022	69	M	YES	NO	YES (MM)	NO	BA	W2I2f2	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.98	V	0	2	I	NIL	0	Foot Wound Debridement	PTA Angioplasty	YES	STATUS QUO	0.98	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
106	218384/ 554347	28-11-2022	65	M	YES	YES	NO	YES	NO	W2I2f1	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.48	V	0	3	II	NIL	0	2nd Toe Amputation	ATA Angioplasty (CO2)	YES	IMPROVED	0.98	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
107	218349/ 684214	29-11-2022	80	M	YES	YES	NO	NO	TCC BLADDER	W2I2f1	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	PTA	1	1st Toe Amputation with Wound Debridement	ATA/ PTA Angioplasty	YES	IMPROVED	NC	UNHEALTHY	HEALING	HEALED	HEALED	NIL	2ND TOE AMPUTATION - 1ST MONTH	PATENT	NIL	NIL	NIL
108	218386/ 684415	29-11-2022	76	M	YES	YES	NO	NO	NIL	W1I2f1	3	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	NIL	0	1st Toe Wound Debridement	ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
109	218397/ 684326	29-11-2022	84	M	YES	YES	NO	YES	PARKINSON	W2I3f1	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	NIL	0	2nd Toe Amputation	ATA/ Peroneal Artery Angioplasty (CO2)	YES	STATUS QUO	NC	HEALING	LFU	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
110	218440/ 683031	30-11-2022	55	M	YES	NO	YES (PTCA)	NO	NIL	W0I3f0	2	Left	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.55	V	3	0	II	NIL	0	No Debridement	SFA Angioplasty/ Stenting	YES	IMPROVED	0.84	NO WOUNDS	NO WOUNDS	NO WOUNDS	HEALED	FALL IN WAVEFORMS - 10TH MONTH	NEW HEEL WOUND DEBRIDEMENT - 10TH MONTH	Restenosis at 10th Month (New Heel Wound)	CFA Endarterectomy with CFA to P1 Bypass with Graft (11th Month)	NIL	NIL
111	218438/ 684483	01-12-2022	83	M	YES	YES	NO	NO	NIL	W2I3f1	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	2	2	II	SFA	2	Foot Wound Debridement	SFA/ PA/ ATA Angioplasty	YES	IMPROVED	NC	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	ACS (INHOSPITAL); LFU
112	218389/ 684423	01-12-2022	92	M	YES	YES	NO	YES	NIL	W2I3f2	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.46	VI	2	3	II	NIL	0	Foot and Leg Wound Debridement	SFA Angioplasty/ Stenting with ATA Angioplasty (CO2)	YES	IMPROVED	0.84	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
113	218565/ 666076	02-12-2022	71	M	YES	YES	NO	NO	CVA	W2I3f1	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.32	V	3	2	II	NIL	0	1st Toe Wound Debridement	SFA Angioplasty/ Stenting with PA/ ATA Angioplasty	YES	IMPROVED	0.92	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
114	218448/ 684169	02-12-2022	50	M	YES	YES	YES (MM)	YES	CLD	W3I3f2	4	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	1	3	II	NIL	0	Heel Wound Debridement	SFA Angioplasty with TPT/ ATA Angioplasty (CO2)	YES	IMPROVED	NC	UNHEALTHY	HEALING	HEALED	HEALED	NIL	WOUND DEBRIDEMENT IN 1ST/ 2ND MONTH; SSG IN 5TH MONTH	PATENT	NIL	NIL	NIL
115	218633/ 677464	03-12-2022	67	M	YES	NO	NO	NO	PARKINSON	W2I3f1	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	4	III	ATA	4	5th Toe Amputation Stump Wound Debridement	ATA Angioplasty	YES	IMPROVED	NC	UNHEALTHY	HEALING	UNHEALTHY	BKA	NIL	MULTIPLE DEBRIDEMENT; NEW ONSET INFECTION IN 5TH-6TH MONTH	PATENT	NIL	BKA - 8TH MONTH	NIL
116	218612/ 503162	06-12-2022	65	M	YES	YES	NO	NO	NIL	W2I1f2	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	4	III	TPT	1	Transmetatarsal Amputation	TPT Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	TMA STUMP SSG - 4TH MONTH	PATENT	NIL	NIL	NIL
117	218788/ 685429	08-12-2022	73	M	YES	YES	NO	NO	NIL	W3I3f2	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	0	2	I	PTA	3	TMA Stump Wound Debridement	TPT/ ATA/ PTA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
118	218780/ 684940	08-12-2022	51	M	YES	YES	NO	YES	NIL	W2I2f1	4	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	V	2	0	I	PA	3	2nd Toe Amputation and 1st Toe Stump Debridement	PA Angioplasty	YES	IMPROVED	NC	HEALING	UNHEALTHY	BKA	BKA	NIL	NIL	PATENT	NIL	BKA - 6TH MONTH	NIL

119	218830/ 684661	09-12-2022	72	M	YES	YES	NO	NO	HYPOTHYROIDISM	W12f2f1	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.62	V	0	3	II	NIL	0	2nd to 4th Toe Amputation Stump Wound Debridement	TPT/ Peroneal Angioplasty	YES	IMPROVED	0.99	HEALING	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU
120	218805/ 684522	09-12-2022	62	M	YES	NO	NO	NO	NIL	W11f3f1	3	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	3	II	NIL	0	Leg Incision & Drainage	ATA/ Peroneal Artery Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	HEALED	NIL	SSG - 1 MONTH	PATENT	NIL	NIL	NIL
121	218921/ 685848	12-12-2022	72	M	YES	YES	YES (PTCA)	NO	NIL	W21f3f1	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	NIL	0	2nd Toe Amputation and Foot Wound Debridement	ATA Angioplasty	YES	STATUS QUO	NC	HEALING	HEALED	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
122	219011/ 470410	14-12-2022	62	M	YES	YES	YES (PTCA)	YES	AF	W11f3f1	3	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	4	III	ATA	4	Foot Wound Debridement	ATA Angioplasty (CO2)	YES	STATUS QUO	NC	HEALING	HEALED	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
123	218839/ 685624	15-12-2022	74	M	YES	NO	YES (CABG)	YES	NIL	W21f1f2	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	1.05	V	0	3	II	PTA	2	4th and 5th Toe Amputation	ATA/ PTA Angioplasty (CO2)	YES	STATUS QUO	1.06	UNHEALTHY	BKA	BKA	BKA	NIL	MULTIPLE TOE AMPUTATION AND WOUND DEBRIDEMENT - 1 MONTH	PATENT	NIL	BKA - 2ND MONTH	NIL
124	219093/ 686216	16-12-2022	74	M	YES	YES	YES (CABG)	NO	NIL	W11f3f1	3	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	NIL	0	1st Toe Partial Amputation	PTA Angioplasty	YES	IMPROVED	NC	HEALED	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
125	219101/ 686143	16-12-2022	61	M	YES	YES	NO	NO	RCC	W11f3f1	3	Left	YES	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	0.33	V	2	4	III	SFA	3	1st Toe Wound Debridement	SFA/ PA/ TPT Angioplasty	YES	IMPROVED	0.88	HEALED	HEALED	HEALED	LFU	NIL	NIL	LFU	LFU	LFU	LFU
126	219124/ 643085	17-12-2022	64	M	YES	NO	NO	NO	NIL	W21f2f2	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	3	II	NIL	0	Heel Wound Debridement	ATA Angioplasty	YES	IMPROVED	NC	UNHEALTHY	UNHEALTHY	BKA	BKA	NIL	HEEL REDEBRIDEMENT IN 1ST AND 2ND MONTH	PATENT	NIL	BKA - 4TH MONTH	NIL
127	219109/ 686292	19-12-2022	63	F	YES	NO	NO	NO	NIL	W21f3f2	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	0.18	V	3	2	II	NIL	0	Transmetatarsal Amputation	SFA/ PA/ ATA Angioplasty	YES	IMPROVED	0.67	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
128	218978/ 685947	19-12-2022	65	M	YES	YES	NO	NO	NIL	W31f3f2	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	0.47	VI	2	3	II	NIL	0	TMA Stump Wound Debridement	SFA/ PA Angioplasty & Stenting and TPT/ ATA Angioplasty	YES	IMPROVED	0.71	HEALING	HEALING	HEALING	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
129	219218/ 685955	20-12-2022	55	M	YES	NO	NO	NO	HYPOTHYROIDISM	W21f3f1	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	0.18	V	3	3	III	NIL	0	1st Toe Debridement	SFA/ PA Angioplasty & Stenting with ATA/ TPT/ Peroneal Artery Angioplasty	YES	IMPROVED	0.88	UNHEALTHY	HEALING	HEALED	HEALED	NIL	TMA AFTER 2 MONTH; SSG - 5TH MONTH	PATENT	NIL	NIL	NIL
130	219237/ 622209	20-12-2022	83	F	YES	YES	NO	NO	NIL	W11f3f1	3	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.72	V	2	4	III	PTA	4	3rd Toe Debridement	SFA/ PA Angioplasty with Attempted Infrapopliteal Angioplasty	Attempted IP Plasty - Partial Success	REDUCED	0.68	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
131	219221/ 633028	20-12-2022	73	M	YES	NO	YES (CABG)	NO	NIL	W21f2f2	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	0.69	VI	2	2	II	SFA	1	TMA Stump Wound Debridement	PA Angioplasty/ Stenting and ATA Angioplasty	YES	STATUS QUO	0.89	HEALED	HEALED	HEALED	HEALED	NIL	SSG - 2ND WEEK	PATENT	NIL	NIL	NIL
132	219187/ 686508	20-12-2022	59	M	YES	NO	NO	NO	NIL	W21f2f1	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	NIL	0	5th Toe Amputation	PTA Angioplasty	Attempted ATA plasty - Partial Success	IMPROVED	NC	UNHEALTHY	HEALING	HEALED	HEALED	NIL	4TH TOE AMPUTATION - 2ND MONTH	PATENT	NIL	NIL	NIL
133	219206/ 686522	24-12-2022	64	M	YES	YES	YES (PTCA)	NO	NIL	W31f2f3	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	0	2	I	PTA	1	Foot Wound Debridement	PTA Angioplasty	YES	IMPROVED	NC	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU
134	219556/ 684514	28-12-2022	84	M	YES	NO	NO	YES	NIL	W11f3f1	3	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	NC	V	0	3	II	PTA	4	1st Toe Wound Debridement	ATA and PTA Angioplasty (CO2)	YES	IMPROVED	NC	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU
135	219529/ 687219	28-12-2022	67	M	YES	YES	NO	YES	NIL	W21f3f1	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	4	III	PTA	4	5th Toe Amputation	ATA and PTA Angioplasty (CO2)	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
136	219571/ 685249	28-12-2022	59	M	YES	NO	YES (MM)	NO	NIL	W11f1f1	2	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.9	V	0	3	II	NIL	0	1st Toe Amputation Stump Wound Debridement	ATA/ DPA Angioplasty	YES	STATUS QUO	1.05	UNHEALTHY	HEALING	HEALED	HEALED	NIL	TMA - 2ND MONTH; SSG - 3RD MONTH	PATENT	NIL	NIL	NIL
137	219508/ 686566	28-12-2022	71	F	YES	YES	YES (PTCA)	NO	NIL	W21f3f1	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.49	V	2	3	II	ATA	1	1st Toe Wound Debridement	SFA/ PA Angioplasty and Stenting with ATA Angioplasty	YES	IMPROVED	0.98	UNHEALTHY	HEALING	HEALING	HEALED	NIL	HEEL PATCH DEBRIDEMENT - 2ND/ 5TH MONTH	PATENT	NIL	NIL	NIL
138	219608/ 687177	30-12-2022	77	M	YES	NO	NO	NO	NIL	W13f3f0	3	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.53	V	2	0	I	NIL	0	1st Toe Wound Debridement	SFA Angioplasty/ Stenting	YES	IMPROVED	1.08	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
139	219431/ 686696	31-12-2022	81	M	YES	YES	YES (CABG)	AKI	NIL	W21f2f2	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	2	3	II	PA	1	Foot and Leg Debridement	PA/ ATA Angioplasty (CO2)	YES	IMPROVED	NC	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU	LFU
140	219719/ 686330	31-12-2022	64	F	YES	YES	NO	NO	NIL	W11f3f1	3	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.43	V	3	1	II	SFA	4	1st Toe Wound Debridement	SFA/ PA Angioplasty and Stenting	YES	IMPROVED	0.94	UNHEALTHY	HEALING	HEALED	HEALED	NIL	1ST TOE AMPUTATION	PATENT	NIL	NIL	NIL
141	219535/ 687411	31-12-2022	78	F	YES	NO	NO	AKI	CVA	W21f3f1	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	REDUCED	GOOD	REDUCED	NS	V	3	3	III	SFA	4	4th Toe Amputation	SFA/ PA Angioplasty and Stenting with ATA Angioplasty (CO2)	YES	IMPROVED	NC	UNHEALTHY	UNHEALTHY	AKA	DEATH	NIL	MULTIPLE TOE AMPUTATION - 1 MONTH,	Restenosis at 4th Month (Non Salvagable Foot Wound)	NIL	AKA - 5TH MONTH	DEATH - 6TH MONTH
142	219673/ 687685	31-12-2022	63	F	YES	YES	YES (MM)	NO	CVA	W13f3f0	3	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.37	V	1	1	I	NIL	0	No Debridement	SFA/ PA Angioplasty	YES	IMPROVED	0.89	NO WOUNDS	CYANOSIS OF FOOT	HEALED	HEALED	FALL IN WAVEFORMS - 3RD MONTH	NIL	Restenosis in 3rd Month (Cyanosis of Foot)	Iliac Stenting with DFA to P3 Bypass with RGSV - 3rd Month	NIL	NIL
143	219671/ 632192	31-12-2022	56	M	YES	YES	YES (PTCA)	NO	NIL	W11f3f1	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.59	V	0	4	III	NIL	0	1st and 3rd Toe Stump Wound Debridement	TPT/ Peroneal Artery Angioplasty	YES	IMPROVED	0.89	UNHEALTHY	HEALING	HEALING	HEALED	NIL	TMA AT 2ND MONTH	PATENT	NIL	NIL	NIL
144	219725/ 687668	02-01-2023	57	M	YES	NO	NO	NO	NIL	W21f2f1	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	NIL	0	2nd and 4th Toe Amputation	ATA/ PTA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
145	219808/ 685593	03-01-2023	69	F	YES	YES	YES (PTCA)	NO	NIL	W21f1f2	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.58	VI	0	3	II	NIL	0	Foot Wound Debridement	ATA Angioplasty	YES	IMPROVED	0.92	HEALING	HEALED	HEALED	LFU	NIL	NIL	LFU	LFU	LFU	LFU
146	219868/ 686428	04-01-2023	83	F	NO	YES	NO	NO	NIL	W0f3f0	2	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	2	4	III	SFA	4	No Debridement	SFA/ TPT/ Peroneal Artery Angioplasty	YES	IMPROVED	0.66	NO WOUNDS	NO WOUNDS	NO WOUNDS	NO WOUNDS	FALL IN ABI - 6TH MONTH	NIL	Restenosis at 6th Month (No Wounds)	Managed Conservatively	NIL	NIL
147	219988/ 688461	06-01-2023	83	M	YES	NO	NO	NO	NIL	W21f3f2	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	NIL	0	2nd Toe Amputation	ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
148	219890/ 464226	07-01-2023	68	M	YES	NO	NO	AKI	NIL	W21f3f2	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	3	II	NIL	0	Transmetatarsal Amputation	PTA/ Peroneal Artery Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
149	219759/ 487518	09-01-2023	71	M	YES	NO	YES (PTCA & CABG)	NO	NIL	W21f2f2	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	3	II	PTA	3	1st Toe Amputation and Foot Debridement	ATA/ PTA Angioplasty	YES	IMPROVED	NC	HEALING	UNHEALTHY	HEALING	BKA	NIL	DEBRIDEMENT - 4TH MONTH/ 7TH MONTH	PATENT	NIL	BKA - 8TH MONTH	NIL
150	219933/ 664443	09-01-2023	58	M	YES	YES	YES (PTCA)	YES	NIL	W21f3f2	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	PTA	2	2nd Toe Amputation	PTA Angioplasty	YES	STATUS QUO	NC	UNHEALTHY	HEALING	HEALED	HEALED	NIL	TMA - 2ND MONTH	PATENT	NIL	NIL	NIL
151	220105/ 688217	12-01-2023	71	M	YES	NO	NO	NO	NIL	W11f3f0	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.46	V	0	2	I	ATA	2	Transmetatarsal Amputation	ATA Angioplasty	YES	IMPROVED	0.88	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
152	220105/ 688217	12-01-2023	71	M	YES	NO	NO	NO	NIL	W11f3f0	3	Left	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	V	2	3	II	Peroneal	4	Foot Wound Debridement	PA/ Peroneal Artery Angioplasty	YES	IMPROVED	NC	UNHEALTHY	BKA	BKA	BKA	NIL	NIL	PATENT	NIL	BKA - 2ND MONTH	NIL
153	220103/ 688709	12-01-2023	55	M	YES	YES	YES (MM)	NO	NIL	W11f1f1	2	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.88	VI	0	4	III	NIL	0	Foot Wound Debridement	ATA Angioplasty	YES	IMPROVED	1.02	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
154	221092/ 612950	12-01-2023	55	M	YES	YES	NO	NO	NIL	W11f2f0	2	Right	YES	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.84	V	3	2	II	NIL	0	1st Toe Wound Debridement	PA/ Peroneal Artery Angioplasy	YES	IMPROVED	0.99	UNHEALTHY	HEALING	UNHEALTHY	HEALED	NIL	1ST TOE AMPUTATION - 15 DAYS; 2ND/3RD TOE AMPUTATION - 7TH MONTH	PATENT	NIL	NIL	NIL
155	220201/ 657818	12-01-2023	73	M	YES	YES	NO	NO	NIL	W11f3f1	3	Left	NO	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	2	3	II	SFA	4	Dorsum of Foot Debridement	SFA/ PA Angioplasty and Stenting with ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
156	220240/ 528018	13-01-2023	67	M	YES	YES	YES (MM)	NO	NIL	W11f2f0	2	Left	YES	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	0.58	VI	1	3	II	NIL	0	Foot and Heel Wound Debridement	PA/ PTA/ Peroneal Artery Angioplasty	YES	IMPROVED	0.92	HEALING	ISCHEMIC	BKA	BKA	FALL IN ABI - 4TH MONTH	NIL	Restenosis at 4th Month (Ischaemic Heel Wound)	NIL	BKA - 5TH MONTH	NIL
157	220124/ 686965	14-01-2023	60	M	YES	YES	YES (MM)	NO	NIL	W21f3f1	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.45	V	2	2	II	SFA	1	2nd to 5th Toe Amputation	SFA/ PA/ TPT/ PTA Angioplasty	YES	IMPROVED	0.92	HEALING	LFU	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
158	220380/ 595260	17-01-2023	75	F	YES	YES	NO	NO	NIL	W11f3f0	3	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	0.76	V	3	3	III	SFA	4	2nd Toe Debridement	SFA Angioplasty and Stenting with ATA Angioplasty	YES	IMPROVED	0.88	HEALING	HEALED	HEALED	LFU	NIL	NIL	LFU	LFU	LFU	LFU
159	220107/ 688763	18-01-2023	80	F	YES	NO	YES (MM)	NO	CVA	W21f2f0	3	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.44	V	3	2	II	NIL	0	1st Toe Amputation	PA Angioplasty and Stenting with ATA Angioplasty	YES	IMPROVED	0.92	DEATH	DEATH	DEATH	DEATH	NIL	NIL	PATENT	NIL	NIL	ACS (INHOSPITAL)/ DEATH - 10 DAYS POST DISCHARGE
160	220376/ 601312	17-01-2023	54	M	YES	YES	YES (MM)	YES	NIL	W11f3f1	3	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	ATA	3	1st and 2nd Toe Wound Debridement	ATA Angioplasty (CO2)	YES	IMPROVED	NC	UNHEALTHY	HEALING	HEALING	HEALED	NIL	MULTIPLE TOE AMPUTATION - 1ST MONTH	PATENT	NIL	NIL	NIL
161	220371/ 632517	18-01-2023	64	M	YES	YES	YES (PTCA)	YES	NIL	W11f3f1	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	1.01	V	0	3	II	NIL	0	2nd Toe Wound Debridement	ATA/ PTA Angioplasty	YES	IMPROVED	1.02	HEALING	HEALED	HEALING	HEALED	NIL	5TH TOE NEW WOUND - AMPUTATION	PATENT	NIL	NIL	NIL
162	220464/ 656992	19-01-2023	74	M	YES	NO	NO	NO	NIL	W11f1f1	2	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	NIL	0	1st Toe Wound Debridement	ATA/ Peroneal Artery Angioplasty	YES	STATUS QUO	NC	HEALING	HEALED	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
163	220459/ 689628	20-01-2023	59	M	YES	NO	YES (PTCA)	NO	NIL	W11f1f0	1	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	NIL	0	1st Toe Wound Debridement	TPT/ Peroneal/ PTA Angioplasty	YES	STATUS QUO	NC	UNHEALTHY	HEALING	HEALED	HEALED	NIL	TMA - 2ND MONTH	PATENT	NIL	NIL	NIL
164	220558/ 689972	23-01-2023	55	F	YES	NO	NO	NO	NIL	W21f3f1	4	Left	NO	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	1.09	V	2	2	II	NIL	0	Transmetatarsal Amputation	PA/ PTA Angioplasty	YES	STATUS QUO	1.11	HEALING	ISCHEMIC	HEALING	HEALED	FALL IN WAVEFORM - 4TH MONTH	NIL	Restenosis at 4th Month (Ischaemic TMA Stump)	Left P3/ TPT/ PTA Angioplasty - 4th Month	NIL	NIL
165	220553/ 689978	23-01-2023	70	F	YES	YES	NO	NO	NIL	W21f2f1	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.63	VI	0	3	II	NIL	0	2nd Toe and Leg Debridement	PTA Angioplasty	YES	IMPROVED	1.16	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
166	220634/ 687079	24-01-2023	65	M	YES	NO	NO	NO	NIL	W11f3f1	3	Left	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	0.26	V	2	0	I	NIL	0	1st Toe Wound Debridement	SFA/ PA Angioplasty	YES	IMPROVED	0.82	HEALING	HEALING	HEALED	HEALED	FALL IN WAVEFORMS - 6TH MONTH	NIL	Restenosis at 6th Month (No Wounds)	Managed Conservatively	NIL	NIL
167	220658/ 690243	25-01-2023	74	M	YES	YES	YES (CABG)	NO	NIL	W21f1f2	4	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.26	V	3	3	III	SFA	4	2nd/ 3rd/ 4th Toe Amputation	SFA/ PA Angioplasty and Stenting with TPT/ Peroneal Angioplasty	YES	IMPROVED	0.88	HEALING	HEALING	HEALED	HEALED	NIL	TMA - 2 WEEKS	PATENT	NIL	NIL	NIL
168	220776/ 689458	28-01-2023	62	M	YES	YES	NO	NO	NIL	W11f3f1	3	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	3	2	II	PTA	2	4th Web Space Wound Debridement	SFA Angioplasty and Stenting with PA/ TPT/ PTA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	FALL IN ABI - 10TH MONTH	NIL	Restenosis at 10th Month (No Wounds - Claudication)	Managed Conservatively	NIL	NIL
169	220779/ 690574	28-01-2023	84	F	YES	YES	NO	NO	NIL	W21f2f1	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.54	V	0	3	II	NIL	0	1st - 3rd Toe Debridement	ATA Angioplasty	Attempted Peroneal Artery Plasty - Partial Success	STATUS QUO	0.7	UNHEALTHY	LFU	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
170	220833/ 688969	28-01-2023	55	M	NO	NO	NO	NO	NIL	W31f2f2	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	0.26	V	0	4	III	TPT	1	Transmetatarsal Amputation	TPT/ Peroneal Artery Angioplasty	YES	IMPROVED	0.66	HEALING	HEALING	HEALING	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
171	220622/ 690126	31-01-2023	69	F	YES	YES	YES (PTCA & CABG)	NO	NIL	W21f2f2	4	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	0.4	V	0	3	II	NIL	0	Transmetatarsal Amputation and Debridement	PTA/ Peroneal Artery/ ATA Angioplasty	YES	IMPROVED	0.88	UNHEALTHY	UNHEALTHY	BKA	BKA	NIL	NIL	Restenosis at 4th Month (Ischaemic Heel and TMA Stump Wounds)	NIL	BKA - 5TH MONTH (OUTSIDE)	NIL
172	220934/ 690357	31-01-2023	50	M	YES	YES	NO	NO	NIL	W21f2f1	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.92	V	0	3	II	NIL	0	Foot Wound Debridement	TPT/ PTA Angioplasty	YES	IMPROVED	1.02	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
173	220898/ 690417	31-01-2023	63	M	YES	YES	NO	NO	NIL	W21f1f0	3	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	NIL	0	5th Toe Wound Debridement	PTA/ Peroneal Artery Angioplasty	YES	IMPROVED	NC	UNHEALTHY	HEALING	HEALED	HEALED	NIL	4TH / 5TH TOE AMPUTATION - 2ND MONTH; SSG - 4TH MONTH	PATENT	NIL	NIL	NIL
174	220835/ 675364	31-01-2023	58	M	YES	YES	YES (CABG)	NO	NIL	W31f2f3	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	V	2	2	II	SFA	2	2nd to 5th Toe Amputation	SFA/ PA Angioplasty and Stenting with PTA Angioplasty	YES	IMPROVED	NC	UNHEALTHY	ISCHEMIC	BKA	BKA	FALL IN WAVEFORM - 4TH MONTH	TMA - 2ND MONTH;	Restenosis at 4th Month (Ischaemic TMA Stump)	NIL	BKA - 5TH MONTH (OUTSIDE)	NIL
175	220907/ 690083	31-01-2023	73	M	YES	YES	YES (PTCA)	NO	NIL	W21f3f1	4	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	0.72	V	3	1	II	NIL	0	2nd Toe Wound Debridement	SFA Angioplasty and Stenting	Attempted IP Plasty (ATA Open) - Partial Success	IMPROVED	0.88	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL

176	220897/ 641934	01-02-2023	80	M	YES	NO	NO	YES	COPD	W2I1fI2	4	Left	YES	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	2	2	II	SFA	1	5th Toe Amputation	Distal SFA/ PA/ TPT/ ATA/ Peroneal Angioplasty (CO2)	YES	IMPROVED	NC	UNHEALTHY	BKA	BKA	BKA	NIL	2ND TOE AMPUTATION - 1ST MONTH; MULTIPLE DEBRIDEMENT - 2ND MONTH	PATENT	NIL	BKA - 3RD MONTH	NIL
177	220990/ 690833	02-02-2023	60	M	NO	YES	NO	YES	COPD	W1I3fI1	3	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.58	VI	2	1	II	NIL	0	Heel Wound Debridement	SFA Angioplasty (CO2)	YES	STATUS QUO	0.69	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
178	220799/ 528969	02-02-2023	66	M	YES	YES	NO	NO	NIL	W3I2fI2	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	3	II	NIL	0	Heel Debridement with Calcaneum Chipping	ATA/ PTA/ MPA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
179	221046/ 550240	03-02-2023	58	M	YES	YES	NO	NO	NIL	W1I2fI1	3	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	V	2	2	II	ATA	3	1st Toe Debridement	SFA/ PA/ ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
180	221007/ 490561	04-02-2023	79	M	YES	YES	YES (MM)	NO	CVA	W2I1fI2	4	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.77	V	0	3	II	ATA	1	2nd Toe Amputation	TPT/ ATA/ PTA/ Peroneal Artery Angioplasty	YES	IMPROVED	1.02	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
181	221120/ 682777	06-02-2023	42	M	YES	NO	NO	NO	NIL	W2I3fI2	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.97	V	0	3	II	NIL	0	1st Toe Amputation Stump Wound Debridement	ATA Angioplasty	YES	IMPROVED	1.02	UNHEALTHY	HEALING	HEALED	HEALED	NIL	DEBRIDEMENT - 1ST MONTH	PATENT	NIL	NIL	NIL
182	221178/ 691026	06-02-2023	77	M	YES	YES	YES (PTCA)	NO	NIL	W2I1fI0	3	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	4	III	NIL	0	Heel Debridement	ATA/ Perroneal/ PTA Angioplasty	YES	IMPROVED	NC	HEALING	UNHEALTHY	LFU	LFU	NIL	DEBRIDEMENT - 3RD MONTH	LFU	LFU	LFU	LFU
183	221212/ 624943	07-02-2023	73	M	YES	YES	NO	NO	NIL	W1I2fI1	3	Right	YES	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	NC	V	2	3	II	SFA	4	1st Toe Amputation	Distal SFA/ Peroneal/ ATA Angioplasty (CO2)	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
184	221024/ 691176	08-02-2023	62	M	YES	YES	YES (MM)	NO	NIL	W2I3fI2	4	Left	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	3	2	II	SFA	3	Transmetatarsal Amputation	SFA Angioplasty and Stenting with ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALING	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
185	221256/ 623043	08-02-2023	67	F	YES	YES	NO	NO	NIL	W1I2fI1	3	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.79	V	0	3	II	NIL	0	3rd Toe Wound Debridement	ATA/ Peroneal Angioplasty	YES	STATUS QUO	0.95	UNHEALTHY	HEALING	HEALING	HEALED	NIL	MULTIPLE DEBRIDEMENT 1ST/ 2ND MONTH	PATENT	NIL	NIL	NIL
186	221307/ 691582	09-02-2023	67	F	YES	YES	NO	NO	NIL	W1I1fI0	1	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.92	V	0	4	III	NIL	0	3rd Web Space Debridement	Peroneal Artery Angioplasty	Attempted ATA Plasty - Partial Success	STATUS QUO	0.92	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
187	221264/ 691306	09-02-2023	69	M	YES	YES	NO	NO	NIL	W1I3fI1	3	Right	NO	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	0.64	V	2	2	II	PA	1	1st Toe Debridement	PA/ PTA Angioplasty	YES	IMPROVED	0.94	HEALING	HEALED	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
188	221337/ 691916	10-02-2023	62	F	YES	YES	NO	NO	NIL	W3I2fI1	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	0.49	VI	2	2	II	NIL	0	Heel Wound Debridement	SFA/ PA/ ATA/ Peroneal Angioplasty	YES	IMPROVED	0.77	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
189	221371/ 691304	10-02-2023	73	M	YES	YES	YES (MM)	NO	CVA	W1I3fI1	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	4	III	TPT	3	1st Toe Debridement	TPT Angioplasty	Attempted ATA Plasty - Partial Success	STATUS QUO	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	ACS (INHOSPITAL)
190	221408/ 691192	11-02-2023	69	F	YES	YES	NO	NO	NIL	W2I3fI1	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	V	3	2	II	PA	3	3rd Toe Amputation	PA/ TPT/Peroneal/ ATA Angioplasty	YES	IMPROVED	NC	UNHEALTHY	UNHEALTHY	AKA	AKA	FALL IN WAVEFORMS - 5TH MONTH	MULTIPLE TOE AMPUTATION - 2ND MONTH; I&D FOOT ABSCESS - 4TH MONTH;	Restenosis at 5th Month (Non Salvagable Foot Wound)	NIL	AKA - 5TH MONTH	NIL
191	221443/ 692128	13-02-2023	65	F	YES	YES	YES (MM)	YES	NIL	W1I3fI1	3	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	V	2	2	II	ATA	4	1st Toe Wound Debridement	PA/ ATA Angioplasty	YES	STATUS QUO	NC	UNHEALTHY	HEALING	ISCHEMIC	HEALED	FALL IN WAVEFORMS - 6TH MONTH	1ST TOE AMOUTATION - 4TH MONTH; TMA - 6TH MONTH	Restenosis at 6th Month (Ischaemic TMA Stump)	Left PA/ TPT Angioplasty (CO2)	NIL	NIL
192	221517/ 692120	14-02-2023	72	M	YES	YES	NO	NO	NIL	W1I2fI1	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	1.04	V	0	3	II	Peroneal	2	1st Toe Amputation	Peroneal Artery Angioplasty	YES	STATUS QUO	1.2	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
193	221226/ 414750	15-02-2023	52	M	YES	YES	NO	YES	NIL	W1I2fI0	2	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	2	I	NIL	0	Transmetatarsal Amputation	ATA/ TPT Angioplasty	YES	STATUS QUO	NC	HEALING	HEALING	HEALING	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
194	221514/ 636278	15-02-2023	63	M	YES	YES	YES (CABG)	YES	NIL	W2I1fI1	3	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	2	I	TPT/ PTA	3	1st Toe Debridement	TPT/ ATA/ Proximal PTA Angioplasty	YES	STATUS QUO	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
195	221560/ 458238	16-02-2023	69	M	YES	YES	YES (CABG)	NO	NIL	W1I2fI1	3	Right	YES	PALPABLE	SIGNALS	SIGNALS	GOOD	GOOD	REDUCED	NC	V	3	2	II	SFA	4	5th Toe Debridement	SFA Angioplasty and Stenting with ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
196	221552/ 691809	17-02-2023	57	M	NO	NO	NO	NO	NIL	W1I1fI1	2	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	1.04	V	0	3	II	NIL	0	1st Toe Debridement	ATA/ Peroneal/ DPA Angioplasty	YES	STATUS QUO	1.04	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
197	221632/ 692545	17-02-2023	49	M	YES	NO	NO	NO	NIL	W2I1fI1	3	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.95	V	0	2	I	NIL	0	1st Toe Amputation	ATA/ Peroneal Artery Angioplasty	YES	IMPROVED	1.04	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
198	221503/ 690261	17-02-2023	39	M	YES	NO	NO	NO	NIL	W2I2fI1	4	Right	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	0.58	V	0	2	I	NIL	0	1st Toe Amputation and Woud Debridement	ATA/ PTA Angioplasty	YES	IMPROVED	1.03	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
199	221607/ 692583	18-02-2023	68	M	YES	YES	NO	AKI	NIL	W2I1fI1	3	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	PTA	4	3rd and 4th Toe Amputation	PTA/ Peroneal Artery Angioplasty (CO2)	YES	IMPROVED	NC	HEALING	UNHEALTHY	HEALING	HEALED	NIL	ADDITIONAL TOE AMPUTATION - 6TH MONTH	PATENT	NIL	NIL	NIL
200	221641/ 692677	18-02-2023	65	M	YES	NO	NO	NO	NIL	W2I2fI2	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	2	I	PTA	2	Heel and Distal Leg Wound Debridement	ATA/ TPT/ PTA Angioplasty	YES	STATUS QUO	NC	HEALING	HEALED	HEALED	HEALED	NIL	INTRAOPERATIVE FLAP ADVANCEMENT COVERAGE	PATENT	NIL	NIL	NIL
201	221629/ 692643	18-02-2023	91	M	NO	YES	NO	NO	NIL	W2I3fI2	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	2	4	III	SFA/ PA	3	4th Toe Amputation	Distal SFA Angioplasty and Stenting with PA/ TPT Angioplasty	YES	IMPROVED	NC	UNHEALTHY	UNHEALTHY	HEALED	LFU	NIL	MULTIPLE TOE AMPUTATIION - 2ND MONTH; TMA - 3RD MONTH	LFU	LFU	LFU	LFU
202	221732/ 692910	20-02-2023	58	F	YES	YES	NO	YES	NIL	W2I3fI0	4	Left	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	2	2	II	SFA	1	1st Toe Debridement	SFA/ PA Angioplasty with Left ATA Angioplasty (CO2)	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
203	221761/ 692799	21-02-2023	68	M	YES	NO	NO	NO	NIL	W1I3fI1	3	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	NC	V	0	3	II	PTA	4	I&D Foot Abscess	PTA/ ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
204	221756/ 693321	22-02-2023	74	F	YES	YES	NO	NO	NIL	W1I3fI0	3	Right	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	2	I	NIL	0	1st Toe Partial Amputation	ATA and PTA Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	LFU	LFU	NIL	NIL	LFU	LFU	LFU	LFU
205	221892/ 546902	23-02-2023	65	M	YES	YES	YES (PTCA)	NO	NIL	W2I2fI1	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	0	3	II	PTA	1	5th Toe Amputation and Heel Debridement	ATA/ PTA/ Peroneal Artery Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
206	221860/ 693207	24-02-2023	59	M	YES	NO	NO	NO	NIL	W1I1fI2	3	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	VI	0	3	II	NIL	0	Transmetatarsal Amputation	PTA/ Peroneal/ TPT Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	SSG - 4TH MONTH	PATENT	NIL	NIL	NIL
207	222016/ 662550	25-02-2023	83	M	YES	YES	YES (PTCA)	YES	HYPOTHYROIDISM	W2I2fI1	4	Left	YES	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	0	3	II	ATA	3	5th Toe Amputation	ATA/ Peroneal Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL
208	222029/ 693009	27-02-2023	80	F	YES	YES	YES (MM)	NO	NIL	W2I3fI1	4	Right	NO	PALPABLE	SIGNALS	SIGNALS	GOOD	REDUCED	REDUCED	NC	V	3	2	II	NIL	0	2nd Toe Partial Amputation	SFA/ PA/ Peroneal Angioplasty	YES	IMPROVED	NC	HEALING	HEALED	HEALED	HEALED	NIL	MULTIPLE TOE AMPUTATION - 2ND MONTH	PATENT	NIL	NIL	NIL
209	221871/ 693313	27-02-2023	62	M	YES	NO	YES (MM)	NO	NIL	W2I2fI1	4	Left	YES	PALPABLE	WEAKLY PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	NC	V	2	3	II	NIL	0	2nd to 5th Toe Amputation	PA/ TPT/ Peroneal Artery Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	ACS (INHOSPITAL)
210	222097/ 693068	28-02-2023	65	F	YES	NO	YES (PTCA/S)	NO	NIL	W1I1fI1	2	Left	NO	PALPABLE	PALPABLE	SIGNALS	GOOD	GOOD	REDUCED	0.84	V	0	3	II	Peroneal	3	1st Toe Wound Debridement	Peroneal Angioplasty	YES	STATUS QUO	1.04	HEALING	HEALING	HEALING	HEALED	NIL	TMA - 4TH MONTH; SSG - 6TH MONTH	PATENT	NIL	NIL	NIL
211	222062/ 693463	29-2-2023	70	F	YES	YES	NO	NO	CVA	W1I3fI1	3	Right	NO	PALPABLE	WEAK PALPABLE	SIGNALS	GOOD	REDUCED	REDUCED	NC	VI	3	2	II	SFA	2	Heel Wound Debridement	SFA/ P1 Angioplasty and Stenting with Distal ATA Angioplasty	YES	IMPROVED	NC	HEALING	HEALING	HEALED	HEALED	NIL	NIL	PATENT	NIL	NIL	NIL