



Jain Institute of Vascular Sciences

# JIVAS NEWS

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Jain Institute of Vascular Sciences

Bhagwan Mahaveer Jain Hospital



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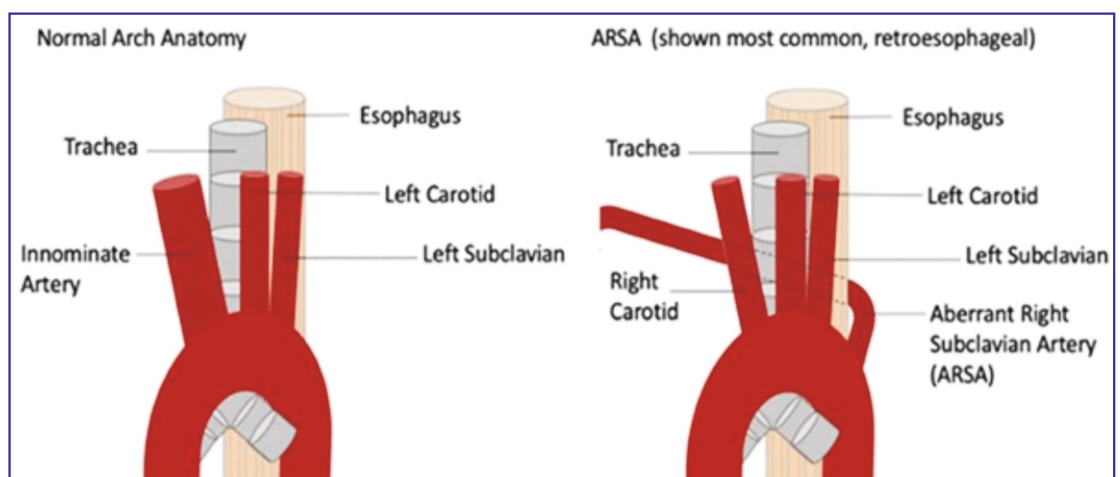
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## A RARE CASE OF RIGHT ABERRANT SUBCLAVIAN ARTERY PRESENTING AS UPPER LIMB ISCHEMIA.

Aberrant subclavian artery (ASA), or aberrant subclavian artery syndrome, is a rare anatomical variant of the origin of the right or left subclavian artery. This abnormality is the most common congenital vascular anomaly of the aortic arch, occurring in approximately 1% of individuals.

This condition is usually asymptomatic. The aberrant artery usually arises just distal to the left subclavian artery and crosses in the posterior part of the mediastinum on its way to the right upper extremity. In 80% of individuals it crosses behind the oesophagus. Such course of this aberrant vessel may cause a vascular ring around the trachea and oesophagus.

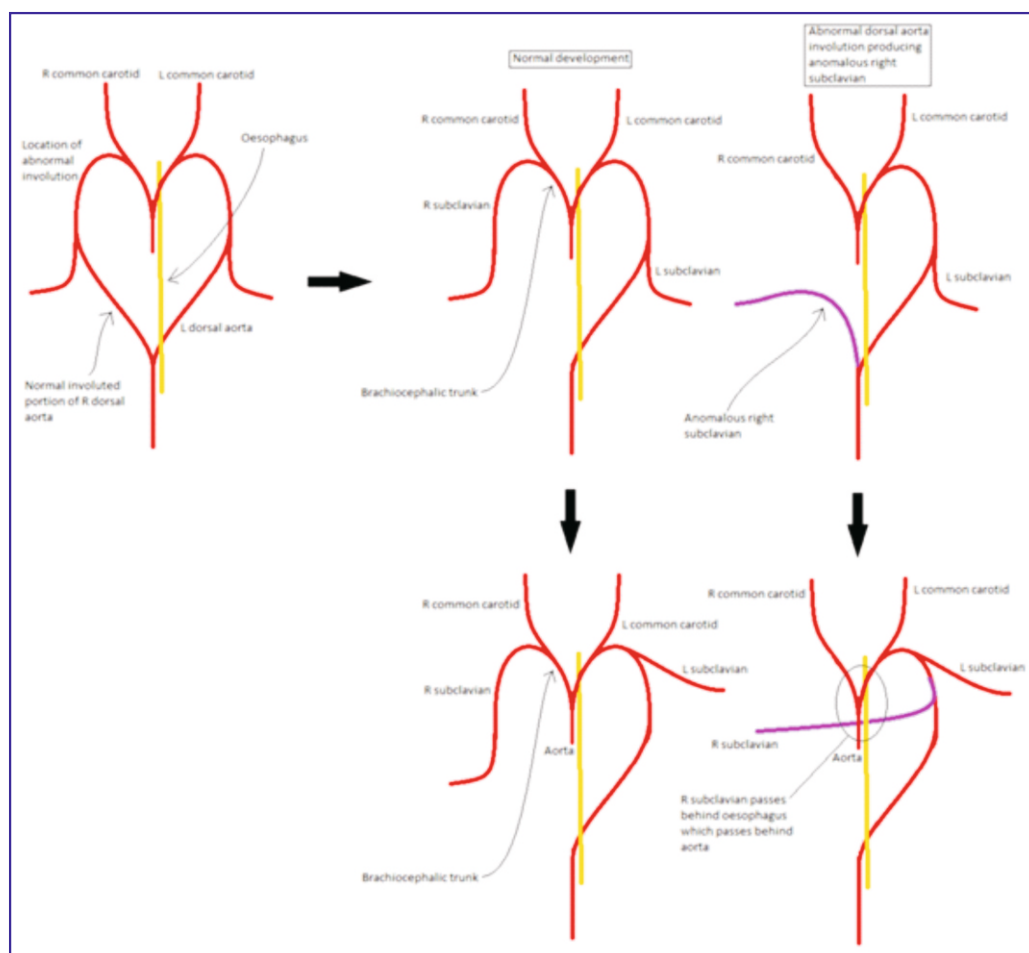


The aberrant right subclavian artery (ARSA) frequently arises from a dilated segment of the proximal descending aorta, the so-called Diverticulum of Kommerell (which was named for the German radiologist Burkhard Friedrich Kommerell (1901–1990), who discovered it in 1936). It is alternatively known as a lusorian artery.

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In the normal embryological development of the aortic arches, the right dorsal aorta regresses caudal to the origin of the 7th intersegmental artery which gives rise to the right subclavian artery. In formation of an aberrant right subclavian artery, the regression occurs instead between the 7th intersegmental artery and the right common carotid so that the right subclavian artery is then connected to the left dorsal aorta via the part of the right dorsal aorta which normally regresses as seen in Fig 1a. During growth, the origin of the right subclavian artery migrates until it is just distal to that of the left subclavian.



**Fig 1a – Embryological development of aortic arches**

- ◆ Dysphagia due to an ARSA is termed dysphagia lusoria, although this is a rare complication.
- ◆ ARSA may cause stridor, dyspnoea, chest pain, or fever.
- ◆ ARSA may compress the recurrent laryngeal nerve causing a palsy of that nerve, which is termed Ortner's syndrome.
- ◆ CT or MR (magnetic resonance imaging) angiography has replaced conventional angiography and is considered the gold standard for the diagnosis. It not only confirms the diagnosis but also helps to exclude aneurysm of the aorta, presence of vascular ring or other associated anomalies, and to plan the operation.

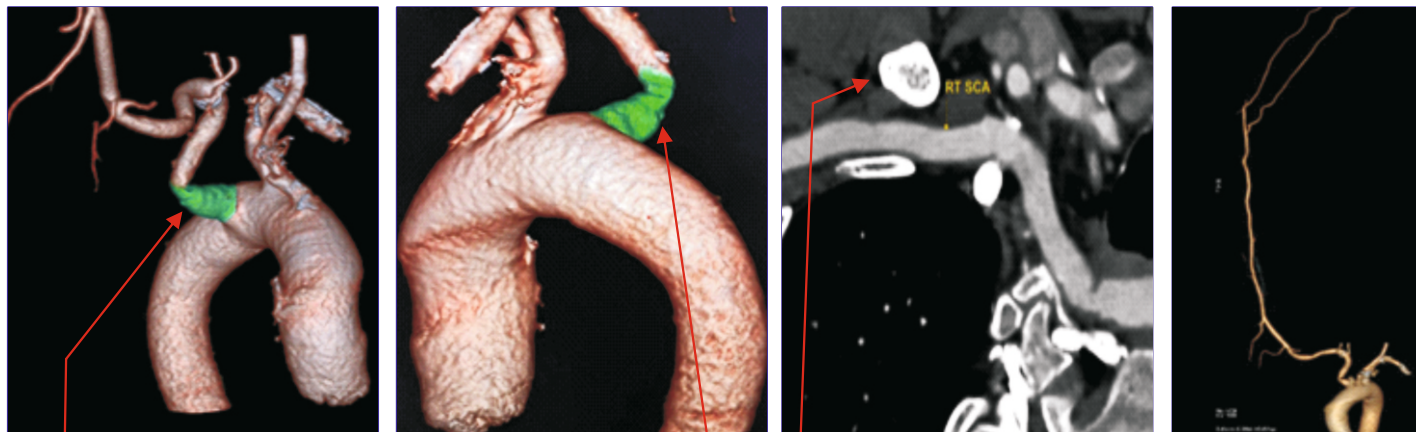
- ◆ There is no indication of operative intervention for incidentally detected, asymptomatic, non-aneurysmal ASA.
- ◆ Respiratory symptoms are more common in infancy and childhood due to the absence of tracheal rigidity.
- ◆ The treatment options available should be individualized to the patient and the presenting symptomatology.
- ◆ Symptomatic patients have been shown to benefit

from surgical intervention with a relative low surgical risk.

- ◆ Patients with aneurysmal change of the aberrant vessel should be approached via thoracotomy so that most proximal transection of the aberrant vessel may be obtained.
- ◆ However cervical incision with transection of the vessel and concomitant revascularization of the right upper extremity can be performed and should be viewed as a reasonable alternative.

## CASE REPORT OF A RARE CASE OF RIGHT ABERRANT SUBCLAVIAN ARTERY PRESENTING AS UPPER LIMB ISCHEMIA.

66 year old male presented to JIVAS with complaints of right 3rd fingertip blackish discoloration associated with pain since 15 days. No h/o fever/ trauma. He is Hypertensive since 8 years. No other associated comorbidities or compression symptoms.



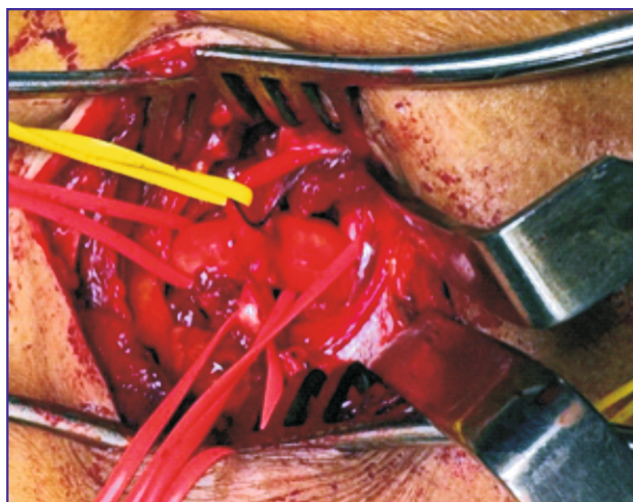
**Fig 1b** Aberrant origin of right subclavian artery arising as last branch of aortic arch.

**Fig 1c and Fig 1d** - Focal area of kinking / 50-60% narrowing in proximal subclavian artery

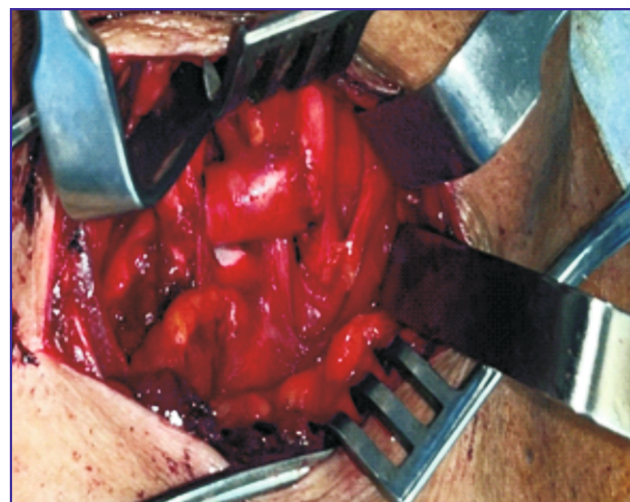
**On examination :** right 3rd middle finger tip dry gangrene present. Right upper limb all pulses palpable. Lower limb pulses normal. Routine blood investigations were within normal limits.

**On evaluation with CT angiogram revealed :** Aberrant origin of right subclavian artery arising as last branch of aortic arch as seen in Fig 1b and retroesophageal / retrotracheal course with compression on adjacent oesophagus. Focal area of kinking - 50-60% narrowing in proximal subclavian artery along the right lateral aspect of oesophagus at D3 level as seen in Fig 1c No evidence of significant compression of distal subclavian artery by scalene muscle or ribs. Attenuation of digital artery to the middle finger along radial aspect. Distally good flow in CTA as seen in Fig 1d.

After evaluation he underwent Right Subclavian Artery to Right Common Carotid Artery Transposition as seen in Fig 1e with Ligation of Proximal SCA Stump as seen in Fig 1d. Post-operatively patient stable, right upper limb pulses present .Discharged on postoperative day 3.



**Fig 1d**



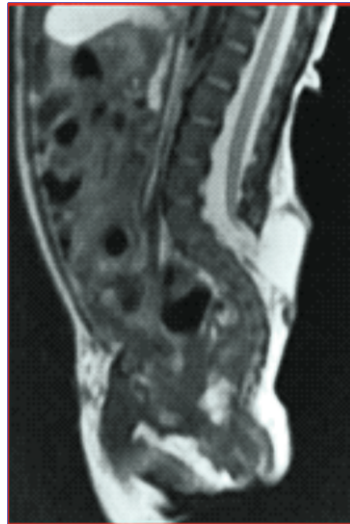
**Fig 1e**



**DEPARTMENT OF SPINE AND JOINT SURGERY**

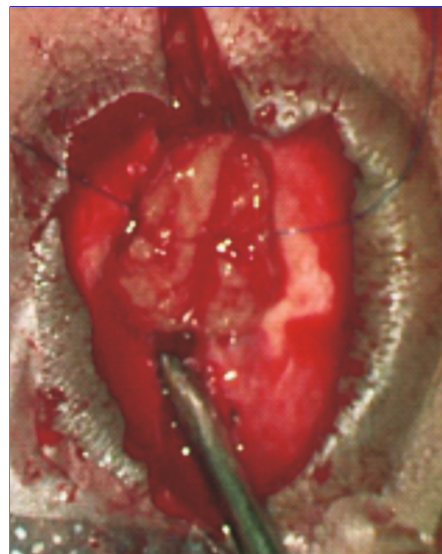
**MYELOMENINGOCELE** : 10 day old female baby born to 18 year old girl, with poor socio-economic background, was brought with complaint of swelling in the lower back since birth.

On examination there was a large swelling with exposed Dura suggestive of Myelomeningocele (Open Spina Bifida).Baby underwent Myelomeningocele repair with reconstruction of the Spinal canal.



Patient was kept in NICU, treated with antibiotics as per the culture report. Child developed rectal prolapse which was recurring with manual reduction. Evaluated by pediatric surgeon underwent rectopexy after 1 month of primary surgery.

After a long battle of 42 days in hospital, baby went home with wound healed and good general condition. Early intervention, antibiotics according the culture to prevent associated deadly complications like Meningitis is the key for the success of Myelomeningocele cases.



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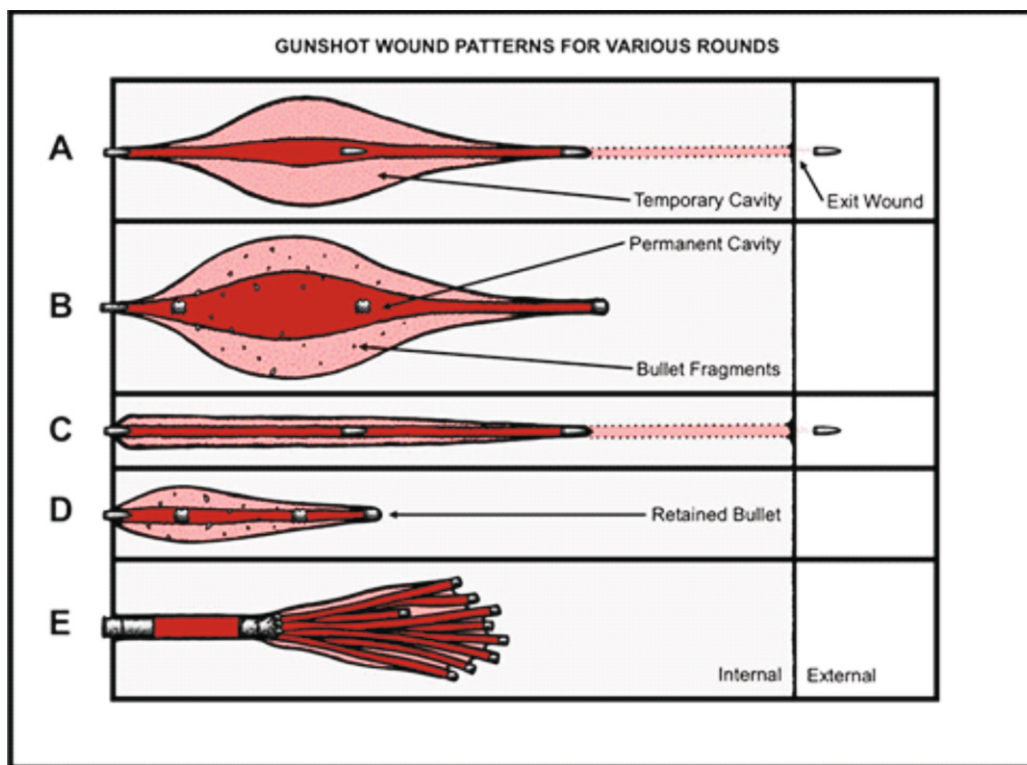


## GUN SHOT INJURY AND ARTERIAL INVOLVMENT

A gunshot wound (GSW) is a penetrating injury caused by a projectile (e.g. a bullet) shot from a gun (typically a firearm). Damage may include bleeding, bone fractures, organ damage, wound infection, and loss of the ability to move part of the body. Damage depends on the part of the body hit, the path the bullet follows through (or into) the body, and the type and speed of the bullet. In severe cases, although not uncommon, the injury is fatal.

Long-term complications can include bowel obstruction, failure to thrive, neurogenic bladder and paralysis, recurrent cardiorespiratory distress and pneumothorax, hypoxic brain injury leading to early dementia, amputations, chronic pain and pain with light touch (hyperalgesia), deep venous thrombosis with pulmonary embolus, limb swelling and debility, and lead poisoning.

Trauma from a gunshot wound varies widely based on the bullet, velocity, mass, entry point, trajectory, affected anatomy, and exit point. Gunshot wounds can be particularly devastating compared to other penetrating injuries because the trajectory and fragmentation of bullets can be unpredictable after entry.



The immediate damaging effect of a gunshot wound is typically severe bleeding with the potential for a type of shock known as hypovolemic shock, a condition characterized by inadequate delivery of oxygen to vital organs. In



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the case of traumatic hypovolemic shock, this failure of adequate oxygen delivery is due to blood loss, as blood is the means of delivering oxygen to the body's constituent parts. Besides blood loss, internal bleeding can lead to complications.

Non-fatal gunshot wounds frequently have mild to severe long-lasting effects, typically some form of major disfigurement such as amputation because of a severe bone fracture and may cause permanent disability. A sudden blood gush may take effect immediately from a gunshot wound if a bullet directly damages larger blood vessels, especially arteries.

Civilian gunshot injuries are a rare cause of penetrating arterial injury in India due to stricter gun control laws. Gunshot injuries present mostly in extremities, most commonly involved artery being Femoral artery.

◆ Treatment should start with control of haemorrhage and correction of shock.

- ◆ Investigations must include CT Angiogram to exactly delineate the region and extent of injury.
- ◆ Transection of the popliteal artery should be considered in trauma patients with profuse lower extremity bleeding.
- ◆ In severe injuries and hemodynamically unstable patients, prompt haemostasis should be achieved and open surgical repair with an interposition vein graft should be done for limb salvage.
- ◆ Even with prompt treatment and successful revascularization gunshot wounds are associated with long term morbidity, higher chances of delayed amputation and mortality owing to heavy contamination and sepsis related complications, thus wound care, antimicrobial therapy and physical rehabilitation post operatively plays a pivotal role in successful recovery.

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### CASE REPORT OF ACCIDENTAL GUNSHOT CAUSING POPLITEAL ARTERY INJURY

A 32 year old gentleman presented to the Jain hospital emergency room with history of accidental self-misfire from shotgun, 7 to 8 hours back, and injury to left thigh. Upon presentation the patient was hemodynamically stable.

**On examination :** He had an entry wound on the lateral aspect of the left thigh, about 2x2cm, with burn marks and tattooing as shown in Fig2a. Exit wound was noted on the medial aspect of about 10x8cm as shown in Fig2b with active bleeding from within. Femoral pulse was palpable with no palpable distal pulses, and feeble distal doppler signals. Right foot drop was present.



Fig 2a : Exit wound on medial thigh



Fig 2b : Entry wound on lateral thigh

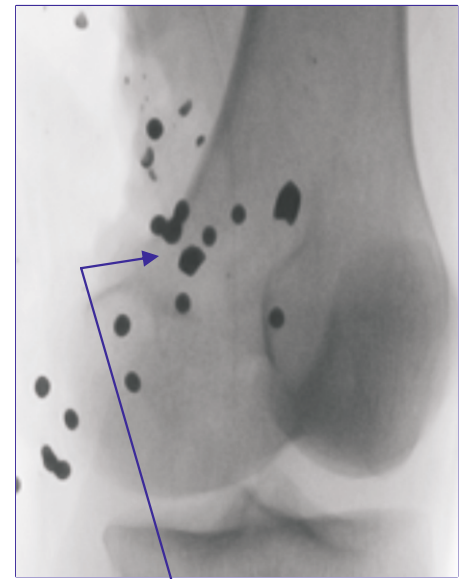


Fig 2c: x ray showing multiple bullet fragments



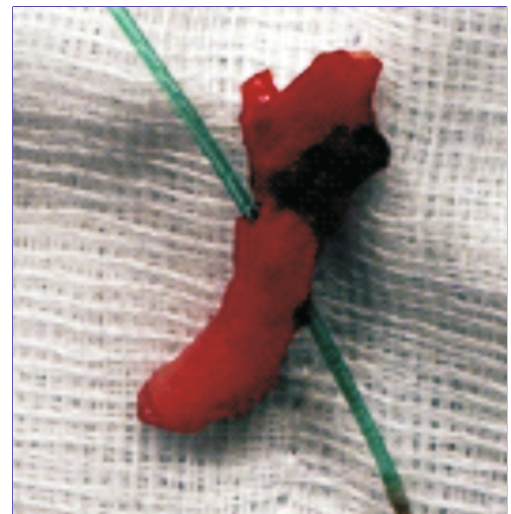
CT Angiogram done showed: multiple metallic fragments with soft tissue and subcutaneous tissue in the left mid-distal thigh, partial thrombus with 70-80% luminal narrowing of left popliteal artery, focal active extravasation and collection of dye as seen in Fig 2c within soft tissue in posterior aspect of lower shaft of left femur.

Patient continued to have bleeding from the wound, developed tachycardia and hypotension, he was started on massive transfusion protocol and resuscitation with blood products was done.

Patient was rushed to the operating room and underwent Left thigh wound exploration followed by trans-popliteal proximal and distal thrombectomy with Distal superficial femoral artery to P1 (popliteal) interposition bypass as seen in Fig. 2d with Right thigh reversed GSV graft, and Leg fasciotomy.



**Fig 2c : CTAngio Left PA injury with extra vasation of dye.**



**Fig 2d: Injured segment of artery with entry and exist wound**



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Postoperatively patient was vitally stable, had palpable popliteal pulse and excellent distal doppler signals. He was shifted to ICU for observation, wound care and other supportive measures were continued. Patient's foot is viable, he continued to have a foot drop.

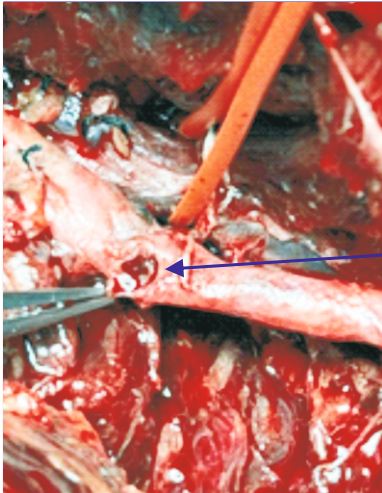


Fig 2e: injured segment of left PA.

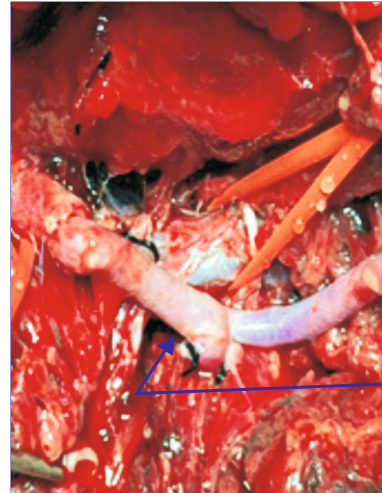
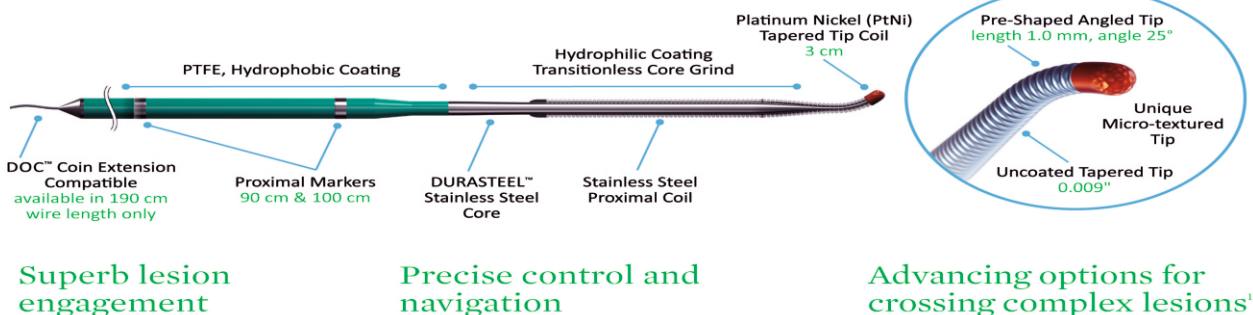


Fig 2d Interposition bypass with RGSV

## Proceed in engaging<sup>2</sup> and navigating through complex lesions<sup>1</sup>



<sup>1</sup> Data on file at Abbott

<sup>2</sup> Test(s) performed by and data on file at Abbott

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