TRAUMATIC PSEUDOANEURYSM OF THE SUPERFICIAL TEMPORAL ARTERY- RARE CASE REPORTS.

Mohammed Arif[1], Santosh V[2]

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ABSTRACT: Pseudoaneurysm, or false aneurysm, presents rarely as a cause of facial tumor. The condition should be considered by primary care physicians as a cause of facial masses in patients with recent traumatic head injuries. Approximately 337 pseudo aneurysms of the superficial temporal artery (STA) have been reported in the literature since 1644.A good history and careful palpation, auscultation, and ancillary testing easily differentiate pseudo aneurysms from cysts, dermal lesions, and AV fistulas. Timely referral & surgical resection of a pseudoaneurysm is the key in management to avoid complications such as hemorrhage, enlargement and compression of nerves and vessels.

We present two cases of traumatic pseudoaneurysm arising from the STA seen in our institution during last 2years period, which suggests that this condition may be more common than reported. We have reviewed the anatomy of the STA and the mechanisms of injury; pathophysiology, pertinent history, and physical findings; differential diagnosis and other diagnostic considerations; surgical management; and complications of STA pseudo aneurysms.

KEY WORDS: trauma, pseudoaneurysm, superficial temporal artery.

INTRODUCTION: Pseudo aneurysms of the superficial temporal artery are a rare and potentially curable cause of facial lumps. Approximately 337 pseudo aneurysms of the superficial temporal artery (STA) have been reported in the literature since 1644. Most pseudo aneurysms are formed as a result of blunt trauma and present as painless, pulsatile tumors that may be associated with neuropathic findings and enlarge in size. Without careful evaluation in the primary care setting, pseudo aneurysms can be easily misdiagnosed and improperly managed. They can, however, be accurately diagnosed through physical examination alone and subsequently treated with surgical ligation. Here we are presenting two cases of traumatic pseudo aneurysms of the superficial temporal artery caused by blunt injury and discuss pertinent diagnosis and treatment options, as well as provide a brief review of the microanatomy and histopathology of pseudo aneurysms.

CASE REPORT – I: A 23-year-old farmer, who was referred by a family physician presented with an irregular pulsatile lump in the right temporal region. He had past history of injury by wooden stick at his workplace 2 months ago. He did not have loss of consciousness or laceration at the time of injury. He denied a history of congenital bleeding disorder. The initial swelling he had, after the injury subsided within 4-5 days, but a new, irregular pulsatile mass became palpable 4 to 6 weeks later.

Physical examination revealed a 1.5 cm pulsatile irregular shaped lump on the right temporal region. The mass was compressible with digital pressure, but no bruit was appreciable on auscultation. Proximal compression of the temporal artery eliminated the pulsation of the mass.

Cranial nerve examination in the vicinity demonstrated no deficits. Computerized tomography (CT) of the head revealed no intracranial communication or any other abnormality.

Intraoperative findings revealed two arterial branches proximally & on the side supplying the pseudoaneurysm. On dissection and ligation of all supplying branches, a 1.3x 1.1 cm mass was resected. Histologic evaluation confirmed the presence of a pseudoaneurysm. The patient's recovery was uneventful.

CASE REPORT – II: A 17-year-old girl presented with a mass on her left side of forehead. Her parents stated that 4 months ago she lost her balance while climbing down stairs and sustained head injury. The patient denied loss of consciousness at the time of the injury. A few weeks later, a mass of fluctuating size developed at the area of the past injury.

On physical examination, a 0.9cm pulsatile mass was noted along the hair line on the left side of the forehead. The lesion was totally compressible and was not pulsatile on compression of feeding vessel. No bruit was heard, and cranial nerve examination revealed no abnormalities. Because of the location and presentation of the mass and because of the relevant clinical findings a pseudoaneurysm was highly suspected. A vascular Doppler clinched the diagnosis.

Surgical exploration revealed a 0.6 x 0.7 cm mass in the STA, which was later confirmed histologically to be a pseudoaneurysm. The patient recovered without complications.

DISCUSSION: An aneurysm may be classified as true, false, or dissecting. True aneurysms involve three intact arterial wall layers and account for most aneurysms. One percent of aneurysms are pseudo aneurysms, which develop as a result of complete or incomplete disruption of arterial intima, possibly due to trauma induced necrosis of a section of the arterial wall. This disruption allows for extravasation and the formation of a blood-filled balloon that is encapsulated only by arterial adventitia or subcutaneous tissue. A fibrous pseudocapsule consisting of mucopolysaccharide rich connective tissue replaces the arterial wall as the hematoma undergoes cavitation, due to infiltrating leukocytes. As this tissue reorganizes, the hematoma can re-canalize because of lysis and destruction of the luminal thrombus and extramural clot. This, in turn, allows substantial flow through the damaged artery and, thereby, expansion of the artery.

Depending on the location and depth of the artery, pseudo aneurysms can occur from either blunt or penetrating injury. Literature dating back to 1644 has cited several mechanisms of injury including motor and industrial accidents, knife and bullet wounds, injuries in warfare, etc. In addition, iatrogenic trauma secondary to surgeries, punch hair grafting, dental surgery (including circumferential mandibular wiring), mentoplasty and internal carotid artery ligation have been implicated as potential causes of pseudoaneurysm.

Differential diagnosis: Temporal artery pseudoaneurysm may mimic epidermal inclusion cysts, lipomas, hematomas, abscesses, sebaceous cysts, aneurysms, arteriovenous fistulas of the middle meningeal artery, vascular and soft tissue tumors, lymphadenopathy, meningocele, and encephalocele.

Diagnostic evaluation: Echo-Doppler may reveal a waveform of turbulent flow and high peripheral vascular resistance, which would eliminate consideration of an arteriovenous fistula. Contrast CT or MRI may find extracranial masses and intracranial pathology. Arteriography is the

diagnostic study of choice, but selective angiography with subtraction technique may better demarcate small aneurysms.

Treatment options: Definitive treatment of pseudo aneurysms has changed little since the second century when Antyllus ligated the artery immediately above and below the pseudoaneurysm with subsequent excision of the lesion. Winslow also reported ligation of the common carotid artery in 1935, boasting a cure rate of 87%. Surgical extirpation remains the treatment of choice. Occasionally, the pseudoaneurysm will occur at the bifurcation between two or more smaller branches. The surgeon should be cautious in identifying all vessels supplying the pseudoaneurysm to avoid unnecessary bleeding. In addition, end-to-end anastomosis or arterial grafting is occasionally necessary to restore blood flow to critical dependent structures.

Embolization of deeper pseudo aneurysms may also prove an effective alternative to surgery. A 1-mm coil can be positioned at the bifurcation of the anterior branch of the STA. The literature also reports use of isobutyl-2 cyanoacrylate plus isophendylate (Pantopaque), polyvinyl alcohol, or an absorbable gelatin sponge in embolization. Another method that has been successful is super selective embolization of the proximal STA, distal external carotid artery, and proximal internal maxillary artery.

CONCLUSION: The primary care physician should consider the possibility of a pseudoaneurysm in any patient presenting with a mass in vulnerable vascular area after head trauma and refer the patient timely. A thorough history and physical examination should suffice for diagnosis when a pseudoaneurysm is suspected, making expensive diagnostic testing unnecessary in most cases. Surgical resection of an STA pseudoaneurysm via proximal and distal artery ligation remains the treatment of choice. Embolization may prove to be a promising approach to the treatment of vascular abnormalities.

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CASE REPORT

AUTHORS:

1. Mohammed Arif
2. Santosh. V

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor in Surgery, Department of General Surgery. Shimoga Institute of Medical Sciences, Shimoga, Karnataka.
2. Senior Resident in Surgery, Department of General Surgery. Shimoga Institute of Medical Sciences, Shimoga, Karnataka.

NAME ADRRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Mohammed Arif,
6 th cross, A - Block,
Sharavathinagar Extension, Shimoga-577201,
Karnataka State, India.
Email: arifmohd_surg@yahoo.co.in

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