

## TRAUMATIC PSEUDOANEURYSM IN HEAD NECK REGION

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### ABSTRACT

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#### BACKGROUND

Pseudoaneurysm is very rare in Head Neck region. Pseudoaneurysm or false aneurysm develops only from adventitia, lacking one or more of the layers of the vascular wall. Correct clinical diagnosis and management is challenging.

#### CASE REPORT

19 years old male patient presented with a swelling in the left parotid region following trauma in the same region with the sharp end of a scissor. USG and Colour Doppler were suggestive of a A-V malformation. MRI and MR Angiogram showed it to be a pseudoaneurysm arising from superficial temporal artery. Superficial parotidectomy was done followed by ligation of superficial temporal artery. Aneurysm was subsequently excised.

#### DISCUSSION

Pseudoaneurysms are relatively rare in the external carotid system. It is most commonly seen in association with superficial temporal artery in external carotid system. Several anatomical factors predispose to such propensity. Imaging studies followed by surgical excision remains the treatment of choice.

#### CONCLUSION

Penetrative trauma in the head-neck region is not uncommon. Their exterior entrance may appear benign but deeper part may have significant and dangerous injuries. Any pulsatile mass that follows trauma in the head and neck regions might be a case of pseudoaneurysm.

#### KEYWORDS

Aneurysm, False, Arteriovenous fistula, Parotid region, Temporal arteries, Angiography, Embolism.

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**INTRODUCTION:** Pseudoaneurysm is very rare in Head Neck region. In most cases it results from blunt trauma. This results in slow arterial extravasations in the surrounding tissue, with formation of hematoma. Hematomas progressively organized to form a fibrous capsule around itself. Continual lysis of the thrombus followed by re canalization of the artery with establishment of blood flow results in formation of pseudoaneurysm. A true aneurysm involves or compromises all the three layers of the arterial walls, i.e. intima, media, adventitia; whereas pseudoaneurysm or false aneurysm develops only from adventitia, lacking one or more of the layers of the vascular wall.

**CASE REPORT:** 19 years old male patient attended in ENT out-patient clinic of a tertiary care hospital with complaints of progressive swelling in the angle of lower jaw to the left.

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History of present illness revealed that there was injury in the same region with sharp end of a scissor 3 months prior to development of the swelling. On examinations there was a swelling approx. 4 cm × 4 cm in size at the left parotid region. Skin over the swelling showed the old scar mark with smooth surface. The swelling was pulsatile, compressible, and decreased in size on occlusion of ipsilateral carotid. Intraoral examination showed no gross abnormality. There was no regional lymph node palpable. Facial nerve function was intact. (Fig. 1, Fig. 2) USG with Colour Doppler study- The mass is deep to the parotid tissue; compressing the normal parotid gland with high blood flow rate suggestive of arterio-venous malformation (A-V malformation). MRI and MR Angiogram were done which showed pseudoaneurysm arising from the superficial temporal artery. (Fig. 3, 4) Patient was taken up for operative intervention. Neck was explored by a modified Blair incision for superficial parotidectomy. Facial nerve was identified and dissected to separate it from the lesion. External carotid artery was identified. Superficial temporal artery was traced and ligated subsequently. Aneurysm was excised and rent was repaired with fine synthetic, monofilament, non-absorbable polypropylene suture. Haemostasis was ensured. (Fig. 5, 6,

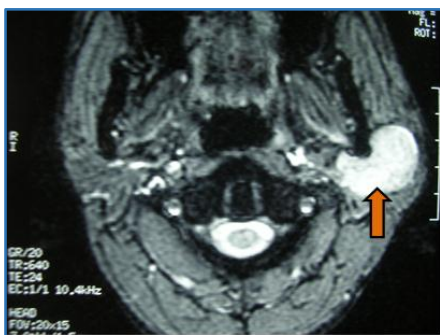
7) Histopathology examination revealed fibro-connective tissue encasing the embolus with no epithelial lining. Pseudocapsule of normal salivary gland was found. Post-operative period was uneventful. (Fig. 8)



**Fig. 1**



**Fig. 2**



**Fig. 3: MRI Showing the tumour Mass**



**Fig. 4: MR Angiography showing the feeding vessel**



**Fig. 5**



**Fig. 6**



**Fig. 7: Excised tumour mass**



**Fig. 8: Post-operative photograph**

**DISCUSSION:** William Hunter (1757) was the first to diagnose A-V fistula as an abnormal communication between artery and vein bypassing the capillary system.<sup>1</sup> In most of the cases (>75%) these vascular abnormal communications are due to blunt trauma.<sup>2</sup> Rarely these are spontaneous. Mortality depends on the site of injury. Vascular injuries include—partial or complete tears, rupture, A-V malformation, pseudoaneurysms. True aneurysms

involve all the 3 layers of arterial wall whereas pseudoaneurysm is covered only by the adventitia or none at all. Pseudoaneurysms are relatively rare in the external carotid system.<sup>3</sup> In the external carotid system pseudoaneurysms are most commonly seen in association with superficial temporal artery (STA).<sup>4</sup> STA is separated from skull bone only by temporal muscle. Anterior branch of STA is fixed to the galea aponeurotica and lies directly on the skull bone. It is also tethered to the frontalis and temporalis muscle by its adventitia. Hence more prone to pseudoaneurysms.<sup>5</sup> Following differential diagnosis shall be kept in mind while dealing with a suspected case of pseudoaneurysm: Simple hematoma, abscess, foreign body granulomas, soft tissue tumours and schwannoma.

#### Specific investigations include<sup>6</sup>:

- USG: hypoechoic mass with occasional calcification.
- Doppler shows flow rate, feeder vessel.
- MRI: T<sub>2</sub> Weighted film shows enhancement; T<sub>1</sub> Weighted film is iso-dense. MR with Gadolinium is enhanced.
- Digital Subtraction angiogram (DSA) shows well delineation of the vascular supply.
- CT angiography with 3D reconstruction is less invasive and dependable radiological investigation, as well as avoids the associated risk of DSA.

#### Treatment modalities include<sup>6</sup>:

- Surgical excision-the method of choice.
- Endovascular occlusion.
- Coils.
- Balloons.

**CONCLUSION:** Penetrative trauma in the head-neck region is not uncommon. Their exterior entrance may appear benign but deeper part may have significant and dangerous injuries. It is known to damage underlying vessels, nerves and other important structures. Any pulsatile mass that follows trauma in the head and neck regions might be a case of pseudoaneurysm.

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