

Pseudoaneurysm of the Internal Maxillary Artery: A Rare Complication of Condylar Fracture

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Abstract

Pseudoaneurysms are among very rare complications of maxillofacial trauma. When encountered, they have the potential to cause life-threatening hemorrhage. A wise surgeon should consider the possibility of underlying aneurysm even if the classic sign of pulsatile mass is not present. The role of interventional radiology is immaculate in the management of these aneurysms.

Keywords

- ▶ condylar fracture
- ▶ pseudoaneurysm
- ▶ hemorrhage
- ▶ embolization

Immediate serious complications after condylar fractures are rare namely intracranial displacement of condylar head, injury to middle ear, etc. Recently we came across a patient with pseudoaneurysm of the internal maxillary artery following condylar fracture. Pseudoaneurysms are a rare phenomenon but can occur after injury to any artery. There have been reports of pseudoaneurysms of descending palatine artery after Le Fort I osteotomy,¹ superficial temporal artery after trauma,^{2,3} external carotid artery following condylar fracture,⁴ but that of internal maxillary artery has not been reported in the literature.

Case Report

A 23-year-old man reported to us with a history of maxillofacial trauma about a month ago. The patient had undergone open reduction internal fixation (ORIF) of left parasymphysis and intermaxillary fixation for bilateral condylar fracture. Intermaxillary fixation (IMF) had been removed after 3 weeks but the patient complained of inability to bite properly, swelling in front of right ear, and pulsatile headache. On examination, there was a firm and tender swelling over right temporomandibular joint, anterior open bite, and a step at parasymphyseal fracture site. The swelling was a bit febrile and overlying skin was reddish, so cellulitis was anticipated and a decision was taken to decompress the swelling.

Under local anesthesia, an incision of approximately 1 cm was made in preauricular region and blunt dissection was done to decompress the lesion. Initially there was 1 or 2 mL of serosanguineous discharge followed by a sudden spurt of blood indicating vascular injury. Attempts for hemostasis in form of pressure pack and ligation failed. Intravenous access was gained and crystalloids were administered. Surgicel (Ethicon, Johnson and Johnson, Menlo Park, CA) soaked in tranexamic acid was packed in the wound and the same was administered intravenously. Pressure was again maintained for 10 minutes. There was cessation in hemorrhage so the pack was gently removed. After a few seconds, the bleeding started again. The wound was repacked in the same fashion and preanesthetic medication given with the intent of controlling hemorrhage under general anesthesia (GA). Fortunately, the hemorrhage was controlled. A pressure dressing was given in the form of a mastoid bandage. Total blood loss was estimated to be around 800 mL during this period (▶ **Fig. 1**). The computed tomography (CT) angiogram revealed a pseudoaneurysm in relation to internal maxillary artery approximately 1.5 × 2 cm (▶ **Fig. 2**) medial to the right subcondylar region. After 2 days, the aneurysm was obliterated using a coil 0.035 inches, 3 × 4 cm. Next day, the swelling started to increase again, which was managed by incision and drainage to yield the lysed Surgicel and blood clots. Models were made to evaluate occlusion of the patient. It was seen that the

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Figure 1 Preoperative photograph of the patient.



Figure 2 Computed tomography angiogram showing pseudoaneurysm.

parasymphysis fixation had been done with improper reduction of fracture segments. The miniplates were removed, fracture segments were mobilized, and IMF was done in occlusion for 45 days keeping in mind multiple fracture sites (bilateral condyle and left parasymphysis). On appearance of healthy granulation tissue in the preauricular region, the wound margins were refreshed and primary closure achieved. Follow-up CT angiogram was done at 11 months (► **Figs. 3** and **4**).

Discussion

Traumatic pseudoaneurysms are thought to form due to partial breach in wall of an artery with extravasation of blood in the surrounding tissues, which if elastic exert backpressure arresting further hemorrhage. This extravasated blood may remain in communication with the injured vessel and gradually develop an epithelial lining.⁵ Consequently, a lateral mass projects from the vessel with a nonstreamlined blood flow exerting a continuous pressure all around, leading to a

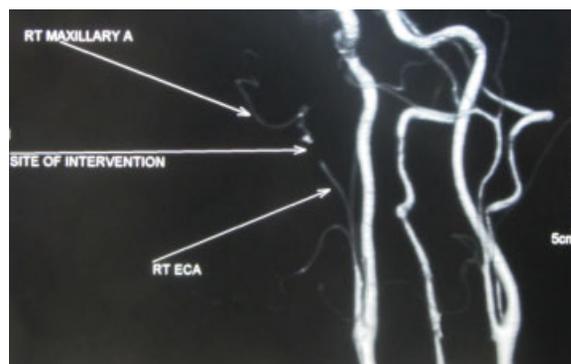


Figure 3 Follow-up computed tomography angiogram at 11 months.

gradual increase in its size. The pulsations are due to blood fill in the cavity with every heartbeat. Aneurysms may also form due to blunt trauma, irradiation, malignancy, etc. These lesions are dangerous as they can pose a serious threat of sudden hemorrhage.⁶⁻⁸ Although they are rare, few cases have been reported in the literature such as those involving superficial temporal artery, external carotid artery, and sphenopalatine artery.

In our case, aneurysm would have formed due to trauma from fractured and displaced proximal condylar segment. The distal segment (ramus of mandible) must have moved superiorly and hence, the position of aneurysm was medial to the ramus. Gradual increase in size of the aneurysm would have caused temporal headache. The pulsations of the aneurysm were masked mainly by its position, that is, medial to the ramus, and partially due to firm edema over the preauricular region. Insult to the aneurysm would have been due to encroachment on part of the aneurysm curving behind the posterior border of the ramus.

The role of interventional radiology in hemorrhage control by selective embolization has been well accepted and acknowledged. There are various materials available for this purpose such as polyvinyl alcohol (PVA), coils, and absolute



Figure 4 Postoperative photograph of the patient.

alcohol. When other methods of hemorrhage control fail, embolization is the only reliable technology to bail out the patient of circulatory collapse.

Our approach to incise and decompress the swelling was mainly based on anticipation of initial stage of space infection. The characteristics of a cellulitic swelling with absence of pulsations misled our minds. Differential diagnosis of a persistent swelling in relation to a fracture may include a pseudoaneurysm, in addition to a consolidated hematoma, infection, periostitis, or osteomyelitis. We would like to convey a suggestion to colleagues who receive an old case of trauma to consider a hidden aneurysm in a persistent swelling. Merely the absence of pulsations doesn't rule out the presence of an aneurysm.

Conflict of Interest

None

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