Traumatic Internal Maxillary Artery Pseudoaneurysm with a Malunited Mandibular Fracture

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Abstract Post-traumatic external carotid artery pseudoaneurysms are very uncommonly encountered in clinical practice. We present the case of a young man who developed pseudoaneurysm 5 weeks after a maxillofacial injury treated elsewhere.

Case Presentation

A 23-year-old male presented with a history of swelling over the left side of face since 1 week. He had a history of road traffic accident 5 weeks ago. He was treated elsewhere after the injury by tracheostomy, open reduction and internal fixation of his mandibular symphysis fracture with closed approach for his condylar head fractures. On examination, the patient had left sided facial palsy, tender diffuse swelling over left side of face and neck, trismus and dental malocclusion. A computed tomography (CT) scan with angiography was performed which revealed a pseudoaneurysm of the terminal branch of external carotid artery about $6.6 \times 4.9 \times 8.9$ cm in diameter AP/RL/CC (Fig. 1). Bilateral sagittally fractured condylar heads and left coronoid process fractures were noted with lateral flaring of the left mandible. Symphysis was fixed using plates and screws (Fig. 2). The radiologist interpreted on CT scan that the origin of the pseudoaneurysm was most likely to be the superficial temporal artery.

The treatment plan was surgical repair of the superficial temporal artery pseudoaneurysm and correction of the malocclusion by mandibular repositioning. A preauricular

incision was made, the pseudoaneurysm identified and the superficial temporal artery was doubly ligated. On opening the pseudoaneurysm wall, to our surprise, there was a torrential bleed from within, thus raising the possibility of another source of the pseudoaneurysm origin. With pressure applied locally, an extension of the incision in the neck to a parotidectomy type was made. The external carotid artery (ECA) was identified and a vascular control sought. ECA control was then tightened to minimize the bleeding and 5-0 polypropylene (Prolene, Ethicon) was used to suture repair the rent in distal part of internal maxillary artery from within the pseudoaneurysm cavity. Hemostasis was confirmed after releasing the ECA. The symphyseal fracture was re-osteotomized using an existing chin scar, and the entire left mandible mobilized medially at the ramal angle to correct the flaring, two 2.5 mm miniplates were secured with eight screws at the symphysis. A satisfactory neocclusion was achieved. A suction drain was applied and closure was done in layers. The post-operative course was uneventful (Fig. 3).

Discussion

In the head and neck, blunt, penetrating or surgical trauma can infrequently lead to damage of vessels resulting in pseudoaneurysms. The diagnosis of these vascular complications is made easy with the availability of CT angiography [1, 2]. A CT scan also is advantageous in assessing the artery of origin and relation of the pseudoaneurysm with the bony fractures and planning the treatment strategy. In our patient depending on the CT angiography, we however misinterpreted the pseudoaneurysm in the pre-auricular area to be arising from the superficial temporal artery.

Surgical treatment is considered an effective option for superficial temporal artery pseudoaneurysms as the artery

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Fig. 1 Pseudoaneurysm—6.6 × 4.9 × 8.9 cm in diameter (AP/RL/CC)

Fig. 2 Malunited mandibular fracture

of origin is superficially located [3]. In our patient, the access to superficial temporal artery was through a pre-auricular incision. However, after ligation of the proximal and distal parts of the artery, and on opening the pseudoaneurysm, we encountered torrential bleeding. The internal maxillary artery was thus the true culprit vessel, a fact we

Fig. 3 Reduced fracture

diagnosed intra-operatively. This emergency situation was tackled by exposing and controlling the external carotid artery in neck with suture repair of the rent of internal maxillary artery from within the sac of the pseudoaneurysm. The repair was facilitated by the already laterally flared mandibular condyle, thus giving us some space to take sutures.

Most of the reported internal maxillary artery pseudoaneurysms have been treated by endovascular methods as the artery is deeply located within the facial bones and difficult to access surgically. Endovascular embolisation can be performed initially and the definitive operative fixation of facio-maxillary fractures done subsequently [4].

In conclusion, clinicians should keep a differential diagnosis of pseudoaneurysm in mind especially in cases of delayed onset of swelling and pain, post trauma or surgery. Although CT angiography is diagnostic, further evaluation by selective or supra-selective angiography is recommended to identify the origin of the aneurysm. In the present era, endovascular embolisation with micro-catheters and various embolic agents is the treatment of choice. But when faced with surprises or challenges, surgery can be performed as a bail out procedure.

Conflict of Interest None.

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