Pseudoaneurysm Following Endoscopic-Assisted Repair of Subcondylar Fracture

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Abstract

Keywords

- mandible
- facial fracture
- endoscopic-assisted ORIF
- pseudoaneurysm

Pseudoaneurysms are a known complication following facial trauma and orthognathic surgery. Few reports exist of this clinical entity following traditional open techniques of repair, and none have been associated with endoscopic-assisted open reduction and internal fixation (ORIF) of a subcondylar fracture. We present a case of a 33-year-old man who developed pseudoaneurysm after endoscopic-assisted ORIF as well as a review of the literature on this topic. While uncommon, this is a potential complication that should be recognized with the use of endoscopic-assisted repair of mandibular fractures.

Pseudoaneurysms are partial disruptions in the wall of a blood vessel leading to collection of blood in the adventitia.¹ They have been reported in the literature following penetrating trauma, as well as following orthognathic surgery, particularly sagittal split osteotomy. A small number of reports describe pseudoaneurysm formation as a complication of open reduction and internal fixation (ORIF) techniques for mandibular fractures, though description of the external approach used and proposed mechanism of injury are limited. There are currently no published reports that describe this clinical entity in association with endoscopic-assisted ORIF. Here, we present a case of pseudoaneurysm following endoscopic-assisted ORIF of a subcondylar fracture as well as a review of the literature.

Presentation of Case

A previously healthy 33-year-old man in the department of corrections (DOC) suffered a right subcondylar fracture following assault with a fist. The patient presented for evaluation 2.5 weeks following the injury and underwent endoscopic-assisted ORIF of the isolated right subcondylar fracture. Following the procedure, he was found to have good occlusion and was returned to the prison infirmary for recovery. While in the

infirmary, he was treated with oral antibiotics given for cheek swelling and possible infection with improvement in symptoms. He then presented for his first postoperative visit at approximately 2 weeks with moderate cheek edema, concerning for a possible hematoma. A panoramic X-ray was obtained, showing mild posterior displacement of the condyle, but good occlusion (► **Fig. 1**). He was instructed to continue a no-chew diet and follow up in 1 month. Two weeks later, the patient developed worsening right cheek swelling and pain. Considering his worsening cheek swelling, incision and drainage were attempted at the DOC infirmary. The swelling did not improve and 3 days later, he was transferred to the hospital for further management. A CT of the neck was obtained which was concerning for right cheek pseudoaneurysm (see ► **Fig. 2**). Ultrasound Doppler was performed which confirmed the diagnosis of a right external carotid artery branch pseudoaneurysm. The patient underwent angiography which demonstrated the pseudoaneurysm at the level of the bifurcation of the internal maxillary and superficial temporal arteries (► **Fig. 3**). This was embolized by interventional radiology. He had no additional swelling and decreased trismus over the next 2 days and was returned to the prison infirmary. On further follow-up, he was found to have malocclusion due to condylar head rotation, possible loss of bony height, and scarring of the masseter.

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Fig. 1 Postoperative panorex.

Fig. 2 CT of the neck with hyperintense homogenous collection in cheek concerning for pseudoaneurysm.

Fig. 3 Angiography demonstrating pseudoaneurysm at the level of the bifurcation of the internal maxillary and superficial temporal arteries.

Discussion/Review of Literature

Pseudoaneurysms following trauma or orthognathic surgery have been described extensively in literature. Reports of pseudoaneurysm following ORIF of mandible fractures are more limited, and there are no prior reports of a pseudoaneurysm as a result of endoscopic-assisted ORIF as described here. Shetty et al² presented a case of large postoperative pseudoaneurysms of the facial artery requiring treatment with sclerotherapy. The patient discussed in their review suffered from a facial artery pseudoaneurysm after traditional ORIF of a condylar fracture. Alonso et al³ described a patient with delayed internal maxillary artery pseudoaneurysm following a gunshot wound to the face with multiple facial fractures and ORIF of ramus fracture. Katakoli and Govindaraj⁴ presented a case of delayed pseudoaneurysm formation of the internal maxillary artery after ORIF of parasymphiseal fracture and maxillomandibular fixation of condylar fractures. Lastly, El et al⁵ described a patient who sustained a pseudoaneurysm of the external carotid artery after a retromandibular approach to a subcondylar fracture. In all the cases reported in the literature, extent of trauma and open approach were noted as likely reasons of the pseudoaneurysms. A unique characteristic of the case we present in this article is the use of an endoscope and a percutaneous trocar in the intraoperative management of the subcondylar fracture.

When reviewing the endoscopic-assisted ORIF literature, studies have assessed the safety and efficacy of this technique, but none have reported this complication.⁶⁻⁹ In a series reviewing endoscopic-assisted ORIF of subcondylar fractures, Kang et al⁹ found that nearly 70% of patients had temporary complications (<3 months) with 23% having long-term (>6 months) complications including infection, open bite, facial paresthesia, and weakness, but there were no reports of vascular injury. In this case, we believe that given the location and timing of the aneurysm, the likely etiology was the percutaneous trocar used to assist with endoscopic screw placement. While rare, this is a new complication to consider and discuss prior to endoscopic-assisted ORIF of subcondylar fractures.

Conclusion

Pseudoaneurysm of a branch of the external carotid artery is a potential complication following endoscopic-assisted ORIF of subcondylar fracture, likely due to percutaneous trocar placement and manipulation during surgery.

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