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Case Report

Post-tonsillectomy hemorrhage due to pseudo-aneurysm of the facial and lingual arteries successfully managed by multidisciplinary approach: a case report

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ABSTRACT

Post-tonsillectomy hemorrhage (PTH) is a potentially life-threatening complication, often arising from arterial injury. We report a rare case of massive bleeding from the left tonsillar fossa following tonsillectomy in an 18-year-old male, secondary to a pseudo-aneurysm involving the lingual and facial arteries. The patient was successfully managed with endovascular covered graft placement due to the presence of an Aberrant ophthalmic artery, which precluded embolization. This case highlights the importance of early recognition of vascular injuries and individualized endovascular strategies in managing severe oronasal hemorrhage.

Keywords: Post-tonsillectomy hemorrhage, Pseudoaneurysm, facial artery, Lingual artery, Aberrant ophthalmic artery, Endovascular stenting, Oropharyngeal bleeding

INTRODUCTION

Tonsillectomy is a surgical procedure which involves removal of a tonsil or tonsils.[1] It is the most common procedure for treatment of pediatric recurrent acute tonsillitis and tonsillar enlargement that contributes to obstructive sleep apnea hypopnea syndrome.[2] Various complications may occur after tonsillectomy, including hemorrhage, infections, pain, nausea, vomiting, and dehydration. Post-tonsillectomy hemorrhage (PTH) is one of the most serious complications that may occur at any time in the postoperative period. PTH is often divided into primary (within 24 hours of surgery) and secondary (24 hours after surgery).[3] Older age, chronic tonsillitis, excessive intraoperative blood loss and high postoperative mean arterial pressure are common risk factors for PTH.[1] Postoperative hemorrhage of Tonsillectomy is a life-threatening complication. Sometimes surgery can be needed to stop bleeding as PTH can cause airway obstruction or in rare cases hemorrhagic shock.[4] Pseudo-aneurysm formation of the external carotid artery or its branches is an exceedingly rare cause. Here, we present a unique case of post-tonsillectomy pseudo-aneurysm managed with endovascular stenting due to anatomical variations that prevented conventional embolization.

CASE REPORT

An 18-year-old male was brought to the emergency department with profuse oral cavity bleeding. He was referred to our hospital from a nursing home due to life threatening uncontrolled bleeding to the magnitude of 3-3.5 L. He had been diagnosed with chronic tonsillitis and was scheduled for a tonsillectomy. Following the left-

sided tonsillectomy, the patient developed severe hemorrhage from the left tonsillar fossa.

Initial assessment

Upon arrival patient was intubated-Pulse rate: 145 bpm, blood pressure: 80/50 mmHg (on noradrenaline 8 mg/50 ml at 15 ml/hr), SpO_2: 100% (on mechanical ventilation with FiO_2 100%), venous blood gas (VBG): hemoglobin: 2.4 g/dl, pH: 7.25, pO_2: 47 mmHg, pCO_2: 25 mmHg, HCO_3^- :20 mmol/l and lactate: 4.7 mmol/l.

Emergency oral packing was performed with absorbable hemostat (Oxidised regenerated cellulose-ORC) and roller gauze to control bleeding by ENT surgeon. The patient was stabilized with aggressive resuscitation and transfusion of blood products by Intensive care unit team. 04 Packed red blood cell transfusion was done.

CT angiography was planned, and the patient was transferred to the radiology department. However, the procedure could not be performed due to a sudden episode of profuse oral bleeding. Hence emergency oral packing was performed in the radiology department. Consequently, the patient was shifted to the cath lab for Angio-embolization.

Angiography revealed a post traumatic pseudo-aneurysm involving the left lingual and facial arteries at their origin from the external carotid artery (ECA) (Figure 1). Additionally, an Aberrant left ophthalmic artery was found arising from the ECA (Figure 2). In order to preserve the Blood supply of face as the patient was young and also the aberrant ophthalmic artery, the embolisation was avoided.

In light of the above findings, a decision was made to proceed with stenting. A 2.8×19 mm covered stent was placed across the aneurysmal segments. Post-procedural angiography showed good flow through the stent with successful exclusion of the pseudo-aneurysm. The left ophthalmic artery remained patent (Figure 3). Two packed red blood cell, 4 fresh frozen plasma, 4 random donor platelet was transfused during the procedure.

Post procedure, the patient was shifted to the ICU, kept intubated, and remained hemodynamically stable. Low molecular weight heparin was initiated to maintain stent patency.

On the following day, the patient was taken to the operating theatre for planned procedure. The oral pack was removed, and the left tonsillar fossa was inspected-no active bleeding was noted (Figure 4). The fossa was closely examined and the probable site of bleeding from lower pole was identified (Figure 5). The pulsations of external carotid artery could be visualized. The fossa was packed with a absorbable hemostat (ORC) and sterile hemostatic absorbable gelatin sponge sandwich, and the anterior and posterior tonsillar pillars were sutured. The lower pole of the tonsillar fossa was left open (Figure 6).

The patient experienced two episodes of massive bleeding post-operatively, which were managed with oral packing. Human prothrombin complex-1000 IU was given. Anticoagulation (low molecular weight heparin) was temporarily discontinued. Two packed red blood cell transfusion was done. The pack was removed the next day and no further active bleeding observed. The patient was then started on dual antiplatelet therapy with aspirin and clopidogrel to maintain patency of stent placed in external carotid artery.

The oral pack was removed on next day as there was no active bleeding. The patient was successfully extubated on the fifth day and tolerated the procedure well. Oral feeding was gradually initiated and well tolerated. He was discharged on the seventh day in stable condition, with instructions to continue aspirin 75 mg and clopidogrel 75 mg once daily, along with dilute betadine gargles.

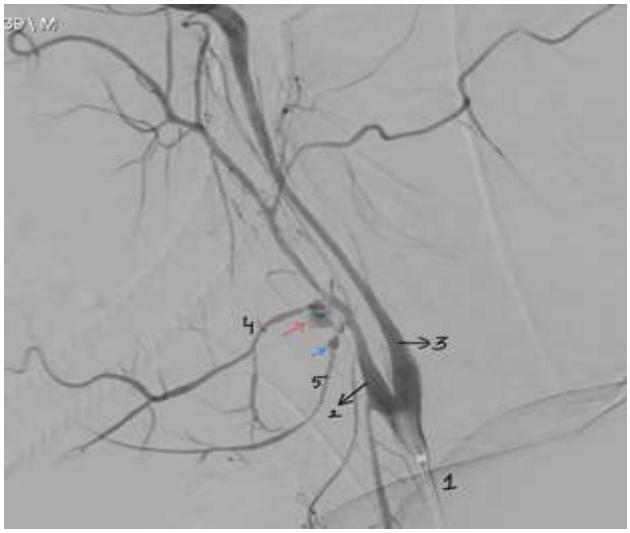

Figure 1: Angiography showing pseudoaneurysm from facial and lingual artery (red and blue arrow respectively).

*1-Common carotid artery, 2-external carotid artery, 3-internal carotid artery, 4-facial artery and 5-lingual artery.

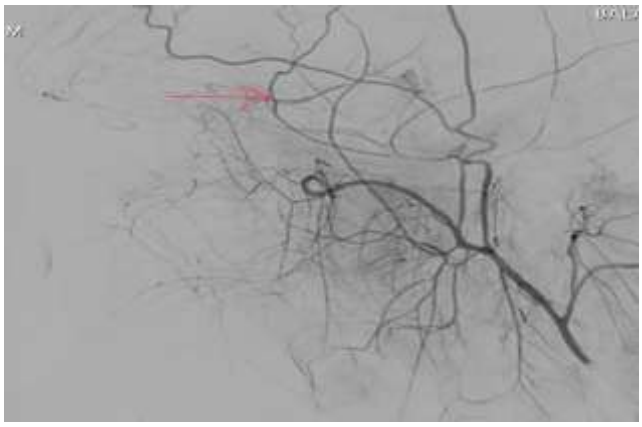

Figure 2: Aberrant ophthalmic artery arising from external carotid artery (red arrow).

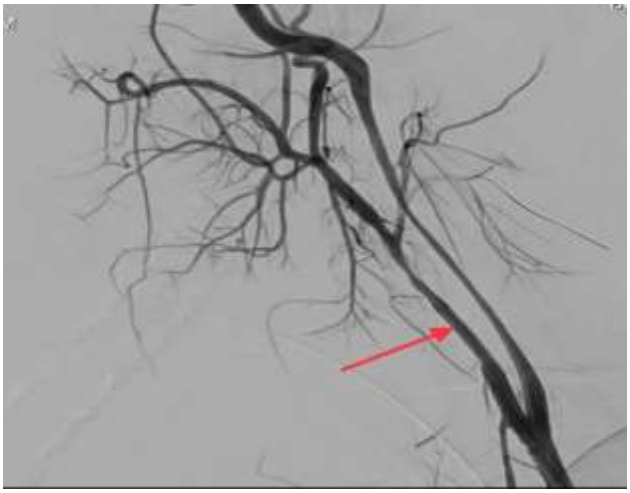

Figure 3: Post-procedural angiography.
*Good flow through the stent (Red arrow) with successful exclusion of the pseudoaneurysm and the blood flow through other major vessels remain patent.

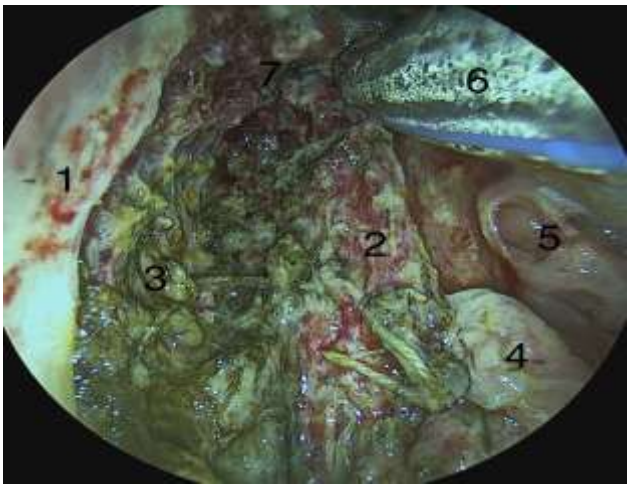

Figure 4: Endoscopic view of left tonsillar fossa.
*1-left anterior pillar, 2-left posterior pillar, 3-left tonsillar fossa post oral pack removal, 4-uvula, 5-right tonsil, 6- endotracheal tube, 7-lower pole of left tonsillar fossa.

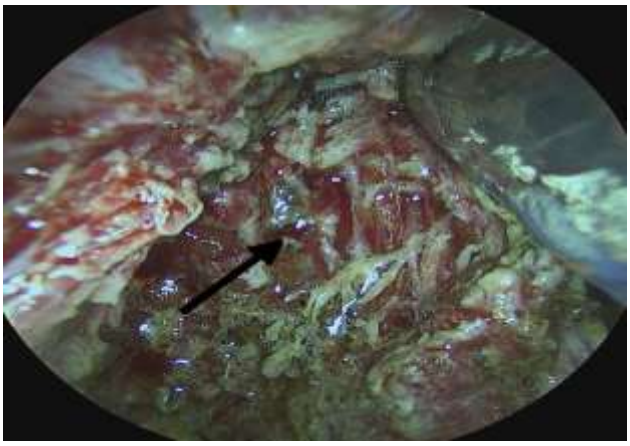

Figure 5: Probable site of bleeding from lower pole of left tonsillar fossa.

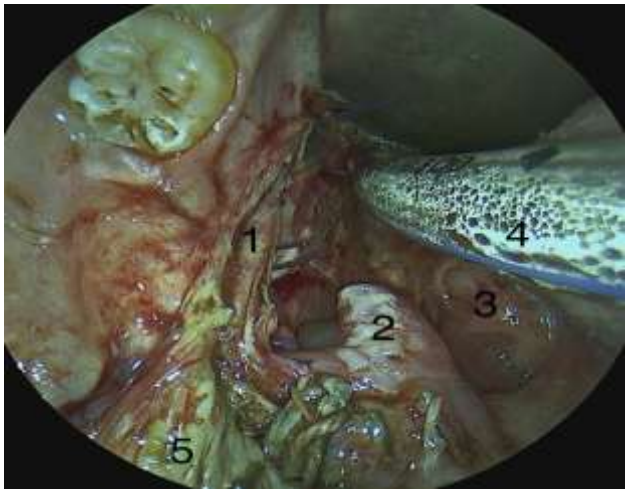

Figure 6: Endoscopic view of left tonsillar fossa post suturing of anterior and posterior pillar.
*1-approximated anterior and posterior pillar, 2-uvula along with TCA stains from previous surgery, 3-right tonsil, 4-endotracheal tube, 5- TCA stain from previous surgery over palate.

DISCUSSION

Life-threatening post-tonsillectomy bleeding requires an aggressive approach with surgical management. PTH occurs in approximately 1 in 20 adults (5.1%), and more than half of patients who bleed are likely to require a procedure of some type of intervention to control their hemorrhage.[5]

Some studies show male gender having a significantly greater risk for PTH.[6] There are also varying reports regarding the influence of age on PTH. Generally, the frequency of PTH is higher in older children or adults.[7] Lee et al reported that the odds of having PTH were six times higher (0.5% vs 3.2%) in patients aged ≥12 years than in those patients aged <12 years.[8] Tomkinson et al patients aged ≥12 years were 3.3 times more likely to have a secondary PTH than patients <12 years of age.[9] Patients undergoing tonsillectomy for recurrent tonsillitis seem to have a higher likelihood of PTH than other indications for tonsillectomy such as obstructive sleep apnoea.[10] Warner proposed a system of standardization for reporting of post-tonsillectomy bleeding.[11] Type I is bleeding, that does not require any intervention or control of the bleeding (except for oral rinses or intravenous administration of fluids). Type II is bleeding that requires control with local measures under topical or local anesthesia. Type III is bleeding that requires control with local measures, suture ligation, and/or aggressive cauterization in the operating room. Type IV is bleeding that requires control that includes external carotid artery ligation or embolization. Type V is bleeding that leads to the patient's death.

According to this study, our patient can be categorised under type IV post-tonsillectomy bleeding.[11]

Pseudo-aneurysm formation following tonsillectomy is extremely rare but can cause life-threatening hemorrhage. Lingual and facial arteries are at risk due to their proximity to the tonsillar bed. In this case, the presence of an aberrant ophthalmic artery arising from the ECA complicated standard endovascular embolization, as inadvertent embolization could lead to blindness. Covered stent placement provided a safe and effective alternative by excluding the aneurysmal segment while preserving vital arterial branches.

The use of antiplatelet and anticoagulant therapy post-stenting requires careful balance in cases involving recent hemorrhage. This case demonstrates that multidisciplinary management and individualized interventional strategies are crucial in such complex clinical scenarios.

CONCLUSION

Massive secondary hemorrhage following tonsillectomy due to pseudoaneurysm is rare but potentially fatal. Endovascular stenting offers a viable alternative to embolization, particularly in patients with anatomical variations. Early recognition and a coordinated, multidisciplinary approach are essential for successful outcomes.

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