

Massive and recurrent post tonsillectomy bleeding and iatrogenic injury of ascending pharyngeal artery: A case report

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Abstract

Uvulopalatopharyngoplasty (UP3) is the most commonly performed surgical procedure for obstructive sleep apnea syndrome (OSAS). Bleeding from the tonsillar fossa is one of the complications of this procedure that can be rarely caused by iatrogenic vessel injury. Therefore, it should be considered in repetitive bleeding despite frequent surgical interventions. In this case report, we present a 36-year-old male who underwent UP3 due to OSAS and experienced seven episodes of bleeding after surgery. Angiography was performed due to massive and recurrent bleeding that demonstrated pseudoaneurysm of the ascending pharyngeal artery. Eventually, it was successfully managed with endovascular embolization, and no further bleeding episodes were reported in this case.

Keywords

post-tonsillectomy bleeding; ascending pharyngeal artery; iatrogenic injury; angiography; embolization.

Introduction

Uvulopalatopharyngoplasty (UP3) is one of the most commonly performed surgical treatments for obstructive sleep apnea syndrome (OSAS). Bleeding is regarded as one of the complications in this procedure [1]. It can occur due to pseudoaneurysm formation and iatrogenic vessel injury, although it is infrequent [2]. This case report presents a case with seven episodes of post-tonsillectomy bleeding due to the pseudoaneurysm of the ascending pharyngeal artery that was successfully managed with endovascular embolization.

Case Presentation

A 36-year-old male with unremarkable underlying diseases underwent uvulopalatopharyngoplasty

(UP3) due to OSAS in a private hospital. He suffered from three episodes of bleeding on the first post-operative day. The first and second episodes of bleeding were controlled using conservative attempts; however, the third episode was massive. Subsequently, he was returned to the operating room, bilateral tonsillar beds were cauterized, followed by the over sewing of the anterior and posterior pillars under general anesthesia. Hemoglobin level dropped from 12 to 7 gr/dl, two units of packed red blood cells were transfused, and he was discharged after three days with no recurrence of bleeding. On days 6 and 11 post-surgery, bleeding recurred from the left tonsillar fossa. The tonsillar bed was electrocauterized under general anesthesia in each episodes. On the 15th day after surgery, he experienced a small bleeding from the left tonsillar bed again that was resolved spontaneously. Afterward, the patient was referred to our department for additional workup. Upon admission, he was alert and hemodynamically stable (Hb: 9.1gr/dl PR: 64 bpm RR: 14 bpm BP: 130/70 mmHg) with no signs of bleeding from tonsillar fossae. The platelet count (287000) and coagulation tests including prothrombin time (PT=13), partial thromboplastin time (PTT=33), INR (=1), bleeding time (BT=4), and clotting time (CT=10) were all within normal limits.

One day after admission, severe bleeding began from the left tonsillar fossa following coughing, and he was transferred to the operating room immediately. The vessels near the left upper pole were electrocauterized under general anesthesia, and he was transfused two units of packed red cells again.

Due to the massive and recurrent episodes of bleeding from the left tonsillar fossa, he was regarded as a candidate for angiography. The angiography was performed by an endovascular neurosurgeon under general anesthesia. The patient was positioned supine, and a 6F sheath was inserted into the right femoral artery.

Moreover, right and left common, as well as right and left external and left internal carotid arteries were catheterized by vertebral 5F. There was a blush in the left tonsillar bed supplied by the ascending pharyngeal artery (Figure 1). Embolization was performed using a 0/5 methylene-vinyl alcohol copolymer [squid-18] within 7 min (Figure 2). No complications occurred during the procedure. One day after embolization, the oral diet was initiated, and the patient was discharged two days after embolization without further bleeding recurrence.

Discussion

Post-tonsillectomy bleeding is a common and life-threatening complication with primary and secondary types. The primary type is characterized by bleeding within the first 24 h after the procedure, while the secondary bleeding that is more common occurs at any time after 24 h post-tonsillectomy. The prevalence rates of primary and secondary hemorrhage are within a range of 0.2%-2.2% and 0.1%-4.8%, respectively. The bleeding averagely occurs on days 5.7-7.8 post-surgery. However, patients can experience bleeding at any time after surgery.

Age is regarded as a major risk factor for bleeding, which is more common in older ages [3]. Other risk factors include chronic tonsillitis, excessive bleeding during surgery, elevated postoperative mean arterial pressure, inexperienced surgeon, and coagulopathy disorders (especially-treated or undiagnosed Von Willebrand disease) [3,4]. Traumatic vessel injury and pseudoaneurysm formation are among the rare causes of post-tonsillectomy bleeding. Sutures, aggressive dissection and cauterization damage the arterial

layers. Subsequent bleeding into perivascular soft tissue and liquefaction of hematoma create the pseudoaneurysm during or after surgery [2,5,6]. Pulsatile mass or rupture are rare manifests of pseudoaneurysm following tonsillectomy, it usually presents with recurrent massive or self-limited bleeding [6].

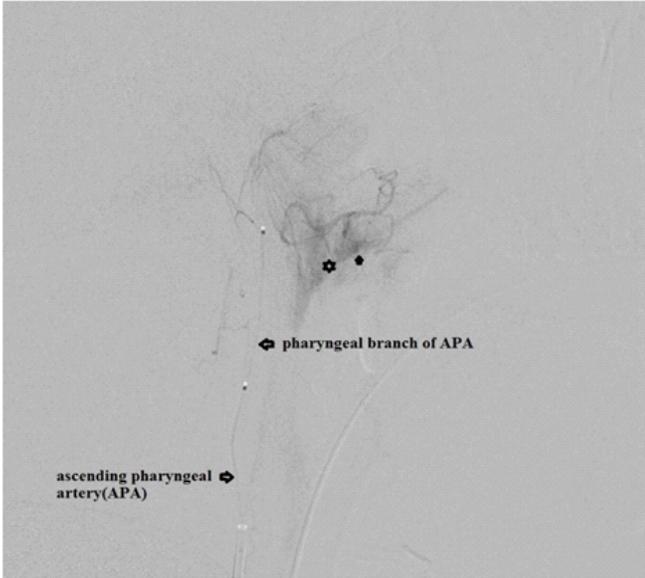


Figure 1: Digital subtraction angiogram showing the contrast extravasation (asterisk) and pseudoaneurysm (arrow) of pharyngeal branch of ascending pharyngeal artery.

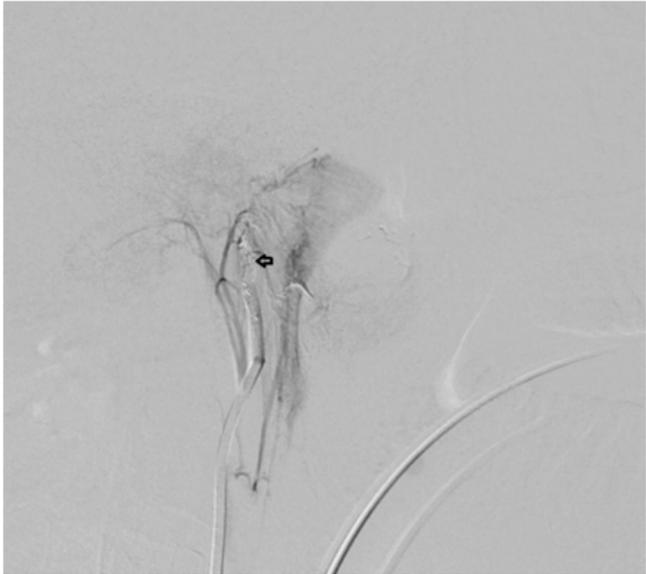


Figure 2: Post-embolization angiogram showing the occluded pharyngeal branch of ascending pharyngeal artery (arrow) and no more contrast extravasation.

Post-tonsillectomy bleeding has been reported due to an iatrogenic injury of lingual, facial, and external carotid artery. Most cases are lingual artery pseudoaneurysm [2]. To the best of our knowledge, this study presents for the first time a bleeding case after tonsillectomy due to an ascending pharyngeal artery pseudoaneurysm.

Complete hemostasis after tonsillectomy is difficult and challenging because of the various arterial supply of palatine tonsils including descending palatine, ascending pharyngeal, dorsal lingual artery originating from internal maxillary, external carotid artery, lingual artery respectively and ascending palatine, and other tonsillar branches of the facial artery [7].

The treatment options for bleeding after tonsillectomy include the surgical ligation and endovascular embolization of the bleeding vessels. Ipsilateral ligation of the external carotid artery is a good option for severe bleeding, as well as unstable and emergent cases. However, this procedure is accompanied by significant risks, including nerve structure injury, stroke, and procedure failure due to significant collateralization of the head and neck vasculature [2,5].

Endovascular embolization of pseudoaneurysms that was first described in 1975 is preferable in stable patients with many benefits, compared to other surgical procedures. It is more selective and less harmful to the surrounding structures in terms of causing injuries to nerves. It should be mentioned that it is simultaneously a diagnostic and therapeutic intervention [8].

The probable complication following embolization include inadvertent embolization of other vessels, pain, vasospasm, ischemic injury to the surrounding tissues, extravasation of embolic material, failure,

and the need for adverse procedures [5].

Conclusion

Iatrogenic vessel injury is a rare but life-threatening complication after tonsillectomy that should be considered in repetitive bleeding despite frequent surgical interventions. There are a few reported cases of pseudoaneurysm related to tonsillectomy. This is the first case presentation of ascending pharyngeal artery pseudoaneurysm due to tonsillectomy, manifests with recurrent bleeding episodes. Suture ligation, excessive cauterization and tissue dissection are among the significant risk factors that should be avoided possibly during a tonsillectomy.

Angiography and embolization are good options for the detection and management of iatrogenic vessel injury following tonsillectomy particularly in non-emergent cases.

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