Endovascular treatment of a linguofacial trunk pseudoaneurysm after tonsillectomy

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Keywords: aneurysm, false; embolization, therapeutic; endovascular procedures; tonsillectomy.

INTRODUCTION

Tonsillectomy is one of the most often performed procedures in ear-nose-throat departments. Many different complications may arise after this procedure, including infection, prolonged pain, cranial nerves lesions causing voice alterations or difficulty to swallow. The most common serious one is postoperative hemorrhage involving around 3% of the cases. The most severe hemorrhages are due to arterial dissections or pseudoaneurysms.

Pseudoaneurysms may arise after localized arterial laceration caused by blunt or penetrating trauma, including traction and thermal damage produced by electrocauterity. Post-tonsillectomy hemorrhages (PTH) from pseudoaneurysm located at the lingual, facial and internal carotid arteries have been described²,³. The treatment options include local maneuvers, surgical ligation and endovascular embolization.

We report a case of a 19-year-old female with recurrent severe bleeding caused by a pseudoaneurysm of the left linguofacial trunk.

CASE REPORT

A 19-year-old female underwent a left sided tonsillectomy because of recurrent tonsillitis. There were no perioperative complications and she made an uneventful recovery. After 20 days she presented with oral bleeding arising from the operative site that was managed with suture ligatures and packing with gauze. The day after she experienced other episodes of extensive bleeding.

She was readmitted to hospital hemodynamically unstable, where she was intubated. An emergent angiogram under general anesthesia was performed to exclude vascular injury. The examination showed no internal carotid artery (ICA) injury, but the selective injection from the external carotid artery (ECA) revealed a pseudoaneurysm arising from the left linguofacial trunk.

After the diagnostic studies of the cranioencephalic vasculature, the left external carotid artery was catheterized with a 6F GuidAir catheter (Stryker Co, MI, USA). Coaxially an Excelsior SL10 microcatheter (Stryker Co, MI, USA) was advanced over a 0.014-inch Transend wire (Stryker Co, MI, USA) to a position just beyond the pseudoaneurysm.

It was decided to occlude both the parent vessel (linguofacial trunk) and the pseudoaneurysm. Embolization was achieved with several Guglielmi detachable coils. Final control angiogram showed total exclusion of the aneurysm and retrograde filling of lingualofacial vascular territory via internal maxillary artery anastomosis (Figure 1).

Pseudoaneurysms may arise after localized arterial laceration caused by blunt or penetrating trauma. While these lesions lack the three layers of the arterial wall, they are also called false aneurysms. Luminal blood leaks out through the damaged arterial wall into the surrounding soft tissues and forms a pseudoaneurysm sac that communicates directly to the arterial lumen.

Atraumatic injury can be due to anatomic variability of the great arteries and their close relation to the tonsil, and in part to the generous arterial supply to the palatine tonsils, which includes the descending palatine artery arising from the internal maxillary artery, the ascending pharyngeal artery, the dorsal lingual artery arising from the lingual artery, and the ascending palatine artery and tonsillar artery originating from the facial artery (main supply)⁴,⁵.

Some anatomical features existent at pediatric population as smaller anatomy and thinner pharyngeal muscles determines a higher risk of arterial trauma during tonsillectomy. Pseudoaneurysms after tonsillectomy are very rare in adults².

A literature search yielded 23 additional cases of traumatic pseudoaneurysms after tonsillectomy. The lesions were located at the lingual artery in 10 cases (43.5%), internal carotid artery in three cases (13%), facial artery in two cases (8.7%), external carotid artery trunk in two cases, linguofacial trunk (which is present in up to 20% of cases) in two cases and not specified in three cases⁶,⁷.

In 20 of the reported cases, treatment consisted in endovascular approach in 13, surgical in 6, and combined in one case, with a patient with an internal carotid artery pseudoaneurysm that underwent surgical resection after distal embolization in a 29-year-old patient. Eleven patients underwent internal trapping with coils, one underwent stenting of the ICA and one underwent selective coiling of a linguofacial trunk pseudoaneurysm that resulted in rebleeding and surgical reintervention⁸,⁹.

Treatment options for post-tonsillectomy hemorrhage include local maneuvers, surgical ligation and endovascular embolization. The first one is associated with high failure rates and repetitive bleeding, thus not recommended. Direct surgical access carries the risk of injury to superior lingual or vagus nerves, stroke and diminished vascular reserve in the arterial distribution of the vessels ligated. Moreover, serious bleeding may not stop after proximal ligation of the external carotid artery or its branches⁴.

Endovascular treatment of PTH has three main advantages: first, the diagnostic evaluation can be combined with direct therapeutic intervention; second, embolization is more selective; and third, the method is less mutilating and has less risk of damaging the vagal and accessory nerves⁴,⁵,₁₀. While leading with saccular, true aneurysms, selective treatment is always desired, once it preserves the parent artery. On the other hand, the rich collateral blood supply in this area makes internal trapping the best approach, because the main risk of selective occlusion is that the pseudoaneurysm wall may not provide a permanent barrier to the movement of the embolic agent. Moreover, the durability of this treatment is uncertain and recurrent hemorrhage is possible⁴.

Unilateral proximal occlusion of facial artery and distal occlusion can produce ischemic necrosis of the tip of the tongue⁴.

When facing post-tonsillectomy hemorrhage, emergent angiography to rule out vascular lesions is strongly recommended. Once a pseudoaneurysm is identified, internal trapping shows to be an effective, definitive and safe treatment⁴.

REFERENCES


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Paper submitted to the BJORL-SGP (Publishing Management System - Brazilian Journal of Otorhinolaryngology) on May 18, 2012; and accepted on October 6, 2012. cod. 9212.

Figure 1. A and B: Left external carotid angiography (lateral and AP projections) showing a pseudoaneurysm of the linguofacial trunk (arrows): C: Final control after internal trapping; D and E: Cast of coils. F: Retrograde filling of lingualofacial vascular territory via internal maxillary artery anastomosis (arrowheads).