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Short communication

Glue embolisation of a bleeding pseudoaneurysm related to surgically-assisted rapid palatal expansion

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Abstract

Vascular injuries after orthognathic surgery are rare, and mainly occur in young adults after Le Fort I osteotomies. We report the case of a 14-year-old girl who presented with life-threatening epistaxis one week after a surgically-assisted rapid palatal expansion (SARPE) followed by activation of a transpalatal distractor. Definitive treatment was superselective, catheter-directed, glue-embolisation of a bleeding bilobar pseudoaneurysm, which was located at an end branch of the left sphenopalatine artery.

Keywords: surgically assisted rapid palatal expansion; hemorrhage; postoperative; embolotherapy; glue

Case report

A 14-year-old girl had a surgically-assisted rapid palatal expansion (SARPE) followed by activation of a transpalatal distractor for the management of transverse maxillary hypoplasia associated with dental malocclusion. We used a Le Fort I type osteotomy including release of the nasal septum, bilateral pterygomaxillary disjunction, and a midpalatal osteotomy, before the transpalatal distractor was placed in the palate.

One week later, she presented with massive epistaxis and limited oral blood loss. Conservative management, including intravenous fluids and anterior nasal packing, initially stopped the bleeding. However, the epistaxis recurred the next day and the haemoglobin concentration dropped to 67 g/L despite our attempts to stop the bleeding surgically, which included mucosal incision through the Le Fort I approach and electrocoagulation of an oozing buccal arteriole. She was kept under general anaesthesia and transferred for computed tomography (CT). Contrast-enhanced CT showed clear extravasation of contrast during the early arterial phase that was posterior to the left nasal cavity and medial to the pterygoid process (Fig. 1). After discussion with the interventional radiologist, the patient - still intubated - was immediately referred for urgent catheter-directed embolisation.

Access was gained through the right common femoral artery, followed by selective catheter angiography of the left external carotid artery, which showing a bilobar pseudoaneurysm of an end branch of the left sphenopalatine artery (Fig. 2). After superselective catheterisation of the sphenopalatine artery using a microcatheter, the pseudoaneurysm, efferent and afferent part of the injured artery, were embolised with a mixture of ethiodised oil and n-butylcyanoacrylate (ratio 1:3). She became haemodynamically stable, was extubated two days later, and discharged from the hospital on postoperative day 16. During follow up we found no ischaemic damage in the maxilla or any other part of the face.

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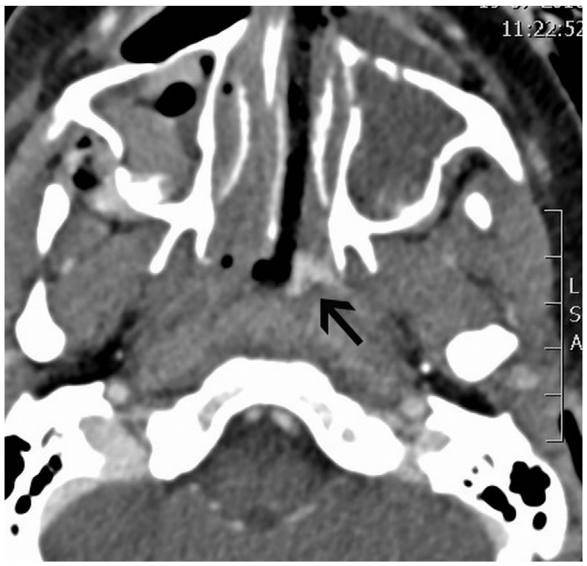

Fig. 1. Axial contrast-enhanced computed tomographic images showing an amorphous contrast blush posterior to the left nasal cavity and medial to the pterygoid process (arrow), indicating the site of active bleeding.

Discussion

Haemorrhagic complications after orthognathic surgery are more common after Le Fort I than after SARPE procedures, but Politis did not encounter one bleed after 376 such procedures.[1] The pathophysiological mechanism of haemorrhage is still not clear. However, the septum was not fully separated and the posterior part was still adherent to the left side of the maxillary bone. Activation of the distractor one week postoperatively might have transferred the expansion forces over the back part of the maxilla towards the entrance side of the sphenopalatine artery into the nose. Management of bleeding complications after orthognathic surgery includes giving intravenous fluids or blood products, and nasal packing.[1] If this is insufficient or if the bleeding recurs, ligation of the external carotid artery or revision of the procedure might be attempted,[2,3] although interventional, catheter-directed techniques have become the standard way of managing this type of vascular complication in many hospitals. It is a minimally-invasive procedure that avoids repeat dissection of the operated area; embolisation can be done during the same session as the diagnostic angiographic procedure, and it is an effective way to stop the bleeding. Potential complications include mucosal ischaemia and ulceration,[4] mainly when small-sized microparticles that result in too distal an embolisation are used, and there is a paradoxical stroke[2] related to the opening or overlooking of collateral vessels between the circulation of the external and internal carotid arteries.

Embolisation using glue (a mixture of ethiodised oil and n-butyl-cyanoacrylate)[3,4] with the tip of the microcatheter in the afferent segment of the injured artery seems to be effective, and can be considered as a good alternative to a coil.[5–7]

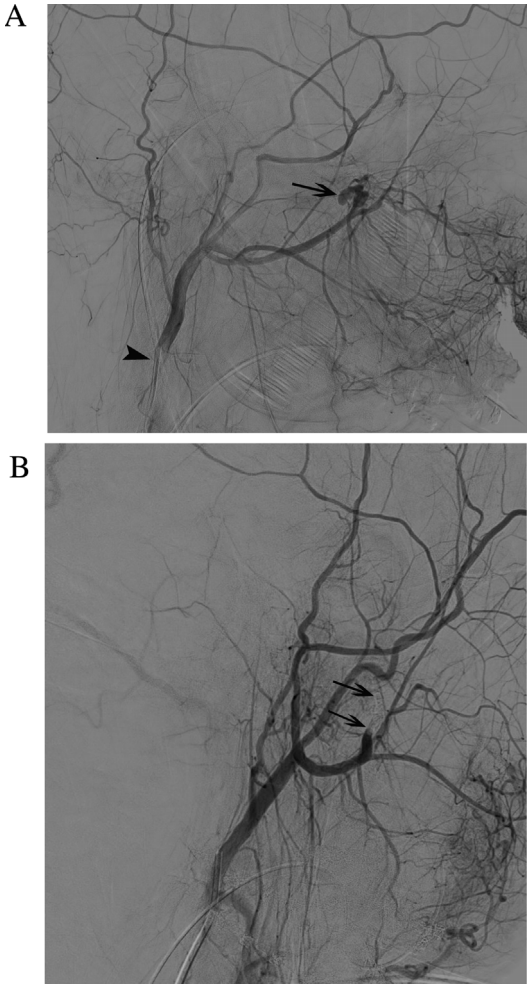

Fig. 2. (A). Selective angiogram of the left external carotid artery through the guiding catheter (arrowhead), showing a bilobar pseudoaneurysm (arrow) at a side branch of the sphenopalatine artery. (B). Control selective angiogram after embolisation showing the cast of glue (arrows) in the excluded pseudoaneurysm.

In conclusion, we have described a rare case of delayed, life-threatening, nasal haemorrhage after SARPE in a 14-year-old girl. Superselective endovascular embolisation of the bleeding artery was successful using glue as the embolic material, and the patient made a complete recovery.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patient's permission

Ethics approval was not required. As the patient was a minor, parental consent for publication of the case report was obtained.

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