



Short Communication

Stent repair of an anastomotic pseudoaneurysm of the carotid artery after free fibula transplantation

A. Kreeft*, P.J.F.M. Lohuis, L.E. Smeele

Department of Head and Neck Oncology and Surgery, The Netherlands Cancer Institute/Antoni van Leeuwenhoek Hospital, Plesmanlaan 121, 1066 CX Amsterdam, The Netherlands

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Abstract

We describe an anastomotic pseudoaneurysm of the carotid artery as a complication after free fibular transplantation. The treatment of choice was endovascular placement of a stent, although this could have occluded the arterial supply to the graft. In our case, the graft remained vital. © 2008 The British Association of Oral and Maxillofacial Surgeons. Published by Elsevier Ltd. All rights reserved.

Keywords: Free fibula transplant; Carotid artery; Anastomotic pseudoaneurysm

Introduction

Reconstruction of the mandible with a free revascularised fibular transplant is a well-known method of treating osteoradionecrosis of the mandible.^{1,2} We present a rare complication an anastomotic pseudoaneurysm, which developed 11 days after end-to-side anastomosis of the peroneal artery to the external carotid artery.

Case

A 55-year old white woman had an osteoradionecrotic right hemimandible after radiotherapy and ipsilateral neck dissection for a T2N2 tonsil carcinoma. This was reconstructed in a two-staged procedure. First the mandibular bone and overlying skin were resected and an AO-plate secured. In the second stage the defect was reconstructed with a free revascularised osseocutaneous fibular transplant. As she had previously undergone a neck dissection on the right side, the peroneal artery was anastomosed end-to-side to the opposite

external carotid artery just distal to the carotid bifurcation. On the fourth postoperative day she developed an upper airway infection with *Pseudomonas aeruginosa*, which was cultured from both blood and sputum, and she was treated with appropriate antibiotics. On the 11th postoperative day, a progressive pulsating swelling in the neck was noted. Ultrasound scan and computed tomogram showed a pseudoaneurysm of the left external carotid artery at the site of the arterial anastomosis. Subsequently she had an angiogram with placement of a covered stent (Fig. 1). Directly after stenting there was still some leakage in the aneurysmal sac (Fig. 2). The next day, however, the pseudoaneurysm looked totally thrombosed on ultrasound whereas the external carotid artery was obstructed distal to the stent. Despite the stenting, the skin flap remained vital. Vascularisation of bone was confirmed by scintigraphy 10 days after stenting (Fig. 3). After one year of uneventful follow-up, magnetic resonance image and an orthopantogram showed permanent vitality of the fibular bone.

Discussion

Reports of anastomotic pseudoaneurysms of the carotid artery after free flap transfer to the head and neck region

* Corresponding author. Tel.: +31205122548; fax: +31205122508.

E-mail addresses: a.kreeft@nki.nl (A. Kreeft), p.lohuis@nki.nl (P.J.F.M. Lohuis), l.smeele@nki.nl (L.E. Smeele).

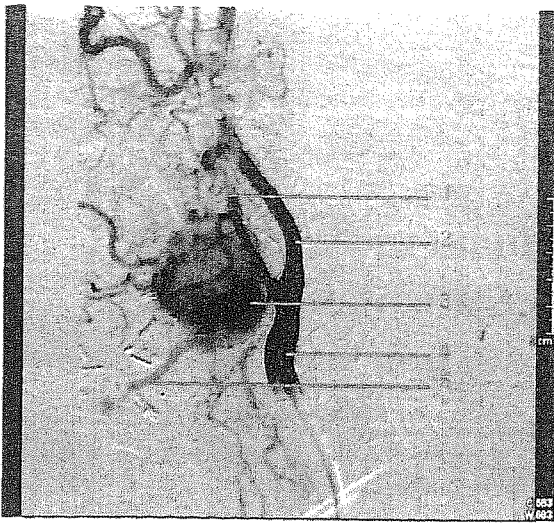


Fig. 1. Angiogram of the pseudoaneurysm of the left external carotid artery with arterial supply to the graft evolving from the pseudoaneurysm. 1 = external carotid artery; 2 = internal carotid artery; 3 = pseudoaneurysm; 4 = common carotid artery; 5 = arterial supply to fibular graft.

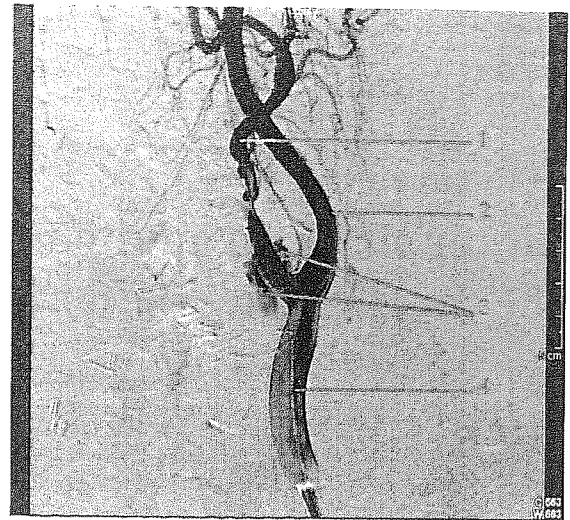


Fig. 2. Angiogram after stenting of the pseudoaneurysm: there is still some leakage present. 1 = external carotid artery; 2 = internal carotid artery; 3 = leak in the pseudoaneurysm. 4 = common carotid artery.

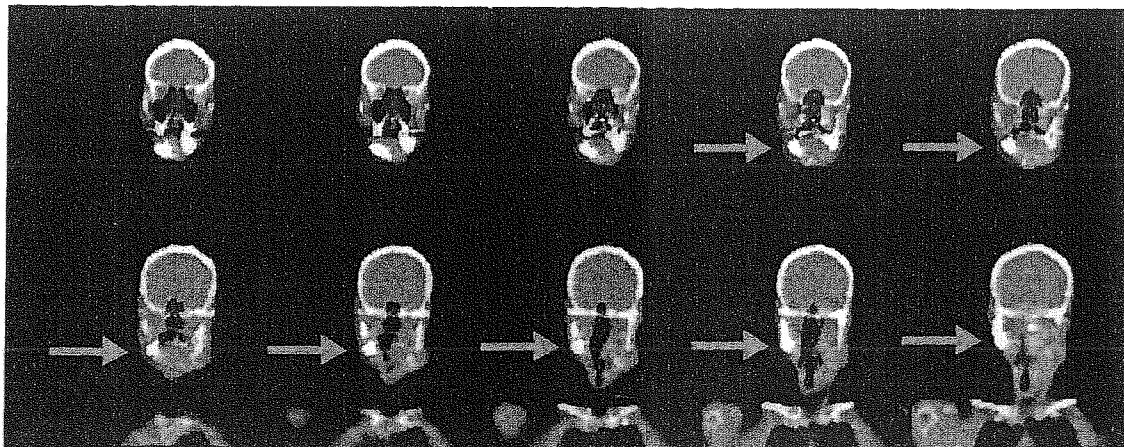
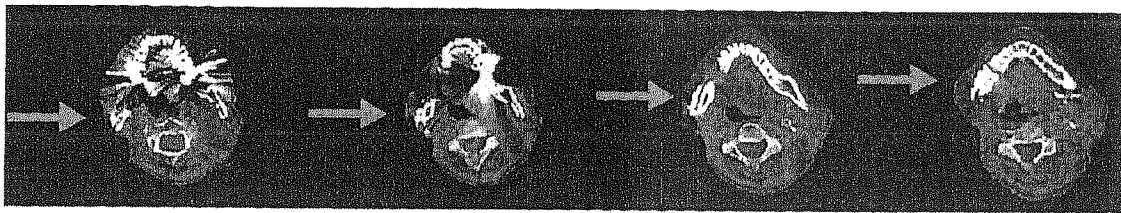


Fig. 3. Scintigram and computed tomogram 12 days after stenting; the fibula bone remains vital (arrows).



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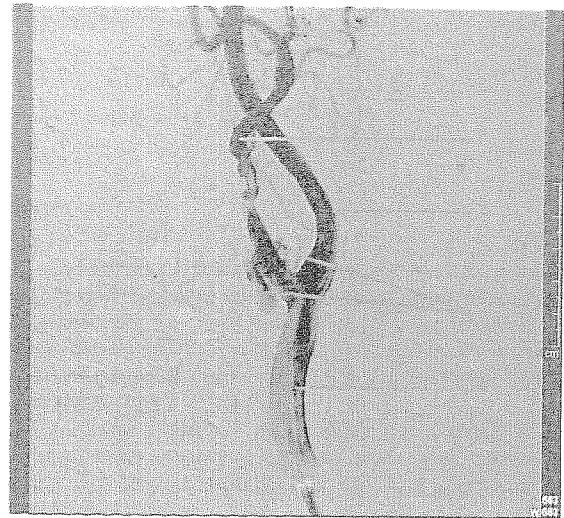


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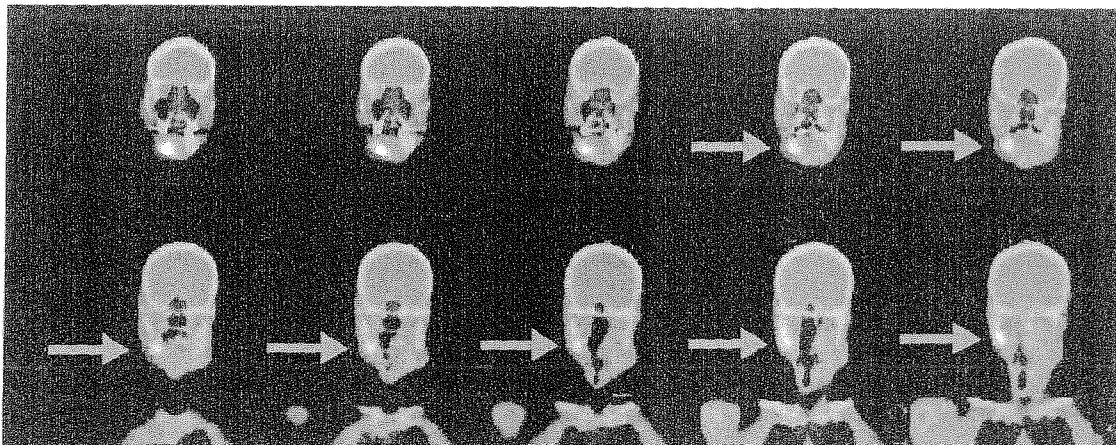
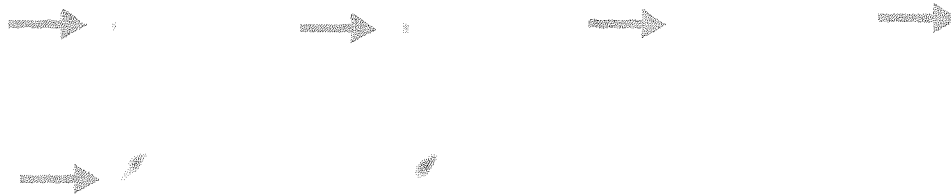
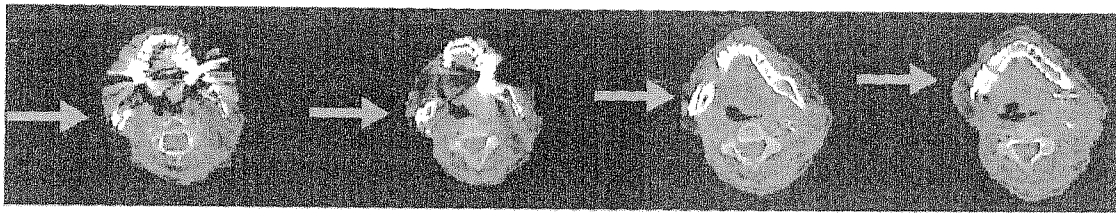


Fig. 3. Scintigram and computed tomogram 12 days after stenting; the fibula bone remains vital (arrows).

are rare, and we found only two previous reports,^{3,4} one after end-to-end anastomosis to the facial artery and one after end-to-side anastomosis to the stump of the external carotid artery.

In the aetiology of an anastomotic false aneurysm, partial or total disruption of the anastomosis between the recipient artery and a vascular graft occurs and there is an anastomotic leak.^{5,6} The leak from the arterial defect is contained by the surrounding soft tissues or adjacent haematoma⁶ or the thin intima bulges through the media and adventitia to form an outer layer of the pseudoaneurysm.

In our patient, we suppose that during operation the media of the external carotid artery was weakened or damaged. Then the intima started bulging through the media, to form the pseudoaneurysm during the postoperative period. The pseudomonial infection that was diagnosed on the fourth postoperative day may have contributed, as infection is often mentioned as a predisposing factor.^{3–5,7}

Placement of an endovascular stent is the mainstay of treatment of such an aneurysm.^{8–10} In the case of an anastomotic aneurysm this includes the risk of failure of the flap because the vascular supply of the flap is likely to be impaired. In our patient the free fibular flap survived, possibly as a result of collateral vascularisation, or perhaps by leakage through the stented original vascular pedicle. One would expect that irradiated tissue would provide a poor-quality bed for capillary revascularisation of a flap only 12 days postoperatively. An osseocutaneous flap is delicate and in constant need of an arterial blood supply. Other authors have shown that a period of 10–14 days of peripheral revascularisation may be sufficient to allow survival of human free flaps.⁴

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