Face replantation using labial artery for revascularization. Case report

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Abstract

Introduction: Restoration of facial function and cosmesis after a traumatic complex wound is a challenge for the plastic surgeon. Worldwide, few cases have been reported about face replantation. We undertook this study to present the case of the first partial face replantation reported in the national literature, using the labial artery for revascularization.

Clinical case: On June 19, 2011, a 7-year-old male presented to the emergency room of the Mexican Institute of Social Security (IMSS) hospital in Monterrey, Mexico, 4 h after a partial face amputation secondary to a dog bite. The amputated segment was comprised of 75% of the upper lip, 33% of the lower lip and oral commissure and 75% of the left cheek. The labial coronary artery and vein were anastomosed with 11-0 nylon sutures. Myorraphy of the orbicularis oris, the depressor anguli oris and the depressor labii inferioris was done with 4-0 vycril sutures. Six months after surgery, functional and aesthetic outcomes were excellent with reestablishment of total labial continence and total recovery of speech articulation.

Conclusions: Amputations of any facial component should be initially managed with replantation. Functional and cosmetic results are better than any other reconstructive technique. The labial coronary artery is an excellent choice for revascularization of up to 25% of the face (lips and cheek).

Key words: face replantation, supramicrosurgery.

Introduction

Restoring function and facial cosmesis after complex trauma is a challenge for the plastic and reconstructive surgeon. At the global level, there have been few reported cases of total or partial face reattachment. Most are secondary to dog bites. We report the case of a patient with partial face amputation who was treated with reattachment using supramicrosurgical techniques.

Clinical Case

During June 2011, a 7-year-old male was admitted to the Plastic Surgery service within 4 h after having suffered a partial amputation in the face by the bite of a pitbull dog. The fragment that was amputated corresponded to 75% of the upper lip, 33% of the lower one and the oral commissure and 75% of the left cheek (Figures 1 and 2). The affected muscles were the orbicularis oris, depressor oral angle and lower lip depressor. Total ischemia time was 8 h. The avulsed fragment was explored and the facial artery was not found. Labial artery was found in the free edge of the upper lip with signs of tearing; therefore, it was dissected and debrided proximally until revealing a good status, leaving a 1-mm long stub.

Surgery was begun with a tracheostomy for airway management and protection of the fragment reattachment postoperatively. The plane of dissection in the patient’s face was superficial to the facial artery; therefore, no anastomosis was performed. The labial coronary artery was anastomosed with 11-0 simple nylon sutures. We used an Opmi-Neuro NC4 microscope (10X; Carl Zeiss). We later identified the vein with better flow and it was anastomosed with 11-0 nylon. We did not repair any terminal branch of the facial nerve because at this level recovery can be expected due to neurostimulation.
Myorraphy of affected muscles (orbicularis oris, depressor of oral angle and lower lip) and the mucosa was performed with 4-0 simple sutures. The skin was sutured with 5-0 nylon sutures (Figure 3). During the surgical procedure, we administered only one dose of heparin (40 U/kg) after the arterial anastomosis.

Postoperative treatment included application of molecular weight heparin at a dose of 1 mg/kg, acetylsalicylic acid at 100 mg/24 h, i.v. fluid therapy, antibiotics (cephalotin 50 mg/kg and clindamycin 20 mg/kg) and analgesics (ketorolac, metamizole).

In our experience, dextran does not offer any advantage in the success of microvascular anastomoses or heparin in intravenous infusion because it increases the risk of bleeding and hematomas, unlike low molecular weight heparin, which does not increase these complications.

The patient remained in intensive care for 3 days. The tracheostomy tube was removed on the fifth day. The nasogastric tube was removed after 2 weeks and oral feeding was then begun. The patient was discharged to home 15 days after surgery where he began physical therapy exercises and rehabilitation with local heat, infrared rays, electrostimulation, laser, muscle re-education and sensitization techniques.

Six months after the reattachment, the patient showed sufficient orbicularis function to drink liquids without spilling. Diction and speech were completely normal (Figures 4 and 5).

**Discussion**

Although in the international medical literature there are reports of facial reattachment, ours is the first to be published in Mexico. In most reported cases, the facial artery is used as a vascular supply. In our case, this artery was not found in the avulsed fragment, so we instead used the labial artery.

In various publications reporting about lip reattachment, the labial artery was used for revascularization. In some cases there is no vein large enough for anastomosis so leeches were used for drainage.4,5 We found no previous reported cases of this type of reattachment in children. In
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In our case, labial vessels were in good condition to be anastomosed. Most reported cases of reattachment of facial components are lips, nose, ear, eyelid, cheek and tongue. In our case, the avulsed fragment included a large proportion of the upper and lower lip and left cheek. This showed that the labial artery flow which, in children, is very small (<0.5 mm in diameter) is sufficient to revascularize large facial fragments despite the damage caused by the secondary avulsion to the dog bite. Six months after the surgery, functional and aesthetic result was excellent with restoration of orbicularis function sufficient to achieve complete continence of fluid and articulation of words.

The importance of reattachment of any facial fragment is unquestionable. The functional and cosmetic result is much better than any skin fragments for reattachment. If the patient had not recovered the amputated fragment, the most appropriate treatment would be a skin fragment based on the radial artery with preservation of the palmaris longus tendon as a static hold to achieve oral continence as described by Sakai et al. However, this is a very aesthetic and functional measurement. Other skin fragments commonly used in facial reattachment surgery are those obtained from the pectoral muscle and the latissimus dorsi, with unsatisfactory aesthetic results.

In conclusion, microsurgery has significantly evolved during the last 10 years. At the present time, with supramicrosurgical techniques it is possible to carry out very small anastomosis in vessels <0.5 mm. Therefore, in any facial fragments that have been amputated, it is imperative to try, as a first option, reattachment because functional and cosmetic results surpass any skin fragment flap.

References