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The Guyuron retroauricular island flap for eyelid and eye socket reconstruction in children

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Abstract. A complete loss of palpebral tissue can occur following a congenital malformation, tumour resection or traumatic injury. This article presents the authors' clinical experience with upper eyelid reconstruction in children using the Guyuron retroauricular island flap. Five cases of severe eyelid defects in children aged between 5 days and 10 years of age (three patients following enucleation and two presenting upper eyelid coloboma of approximately two-thirds of the upper eyelid surface) were treated using this technique. In all cases an optimal closure of the eyelid fissure was achieved and corneal exposure clinically improved. On average, 15% of the initial flap surface was lost. Only one major complication (40% flap necrosis) was reported in the postoperative period. This reconstructive technique can provide complete eyelid reconstruction leaving an inconspicuous scar and causing limited morbidity at the donor zone.

Keywords: eyelid; eye socket; orbit; retroauricular flap; Guyuron; coloboma; exenteration.

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Eyelid and eye socket reconstruction are a challenge for facial reconstructive surgeons.

Palpebral tissue may be absent if there is a congenital malformation, or lost due to tumour resection or traumatic injury. The rate of tissue loss in the lower eyelid is greater than in the upper eyelid (5:1), mainly because there are more tumours of the lower eyelid.[2] Consequently, fewer reconstructive techniques have been described for the upper eyelid than for the lower one.

When dealing with major upper eyelid defects in children, such as congenital colobomas, corneal exposure should be prevented. Some defects are related to the contraction of an anophthalmic orbit, following enucleation and/or radiotherapy, for example, after treatment for retinoblastoma. Others may be due to a congenital anophthalmia, when early embryonic defects in the development of the optic vesicle may lead to the absence or orbital contents (rare) or a microphthalmia, as a result of an underdeveloped globe[1,3]. Patients often present with extrusion of their eye prosthesis caused by eyelid and orbital socket contraction.

The use of the retroauricular flap began after Washio's[16,17] first description of a pedicled skin flap from the posterior surface of the ear. In 1984, Guyuron[4]

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described a retroauricular fasciocutaneous flap for eye socket reconstruction. Further studies have described new applications for this technique[8,9,15]. The flap is composed of three distinct parts: cutaneous, subcutaneous and fascial. The flap is rotated and inserted into the defect through a subcutaneous tunnel, to avoid facial scars, which is one of the main advantages of this technique. Generally, the donor site can be closed primarily when the defect is small. A V-Y advancement flap or a rotation flap may be necessary if the defect is larger.

One of the main reasons for using this flap is that it does not interfere with other conventional reconstructive techniques, such as the temporal flap, or other local flaps from the periorbital area.

The authors present their experience of using the Guyuron retroauricular island flap for the reconstruction of isolated eyelid defects (two cases of congenital coloboma), and as an ancillary procedure for eye socket reconstruction (three cases of orbital deformity following oncologic eye globe surgery).

Material and methods

A retrospective chart review was performed. The study was approved by the Ethics Committee at the University Hospital La Paz. All the patients were treated by a multidisciplinary team composed of members of the Oral and Maxillofacial Surgery Department, Ophthalmology Department and the Prosthetic Unit at University Hospital La Paz, in Madrid.

Five patients were treated between 2001 and 2006. Two patients, aged 6 days and 20 days, were referred because of an upper eyelid coloboma, that involved two-thirds of the upper eyelid. Both patients had been treated initially at their referring centers with occlusion and lubrication. Owing to the size of the defect, a retroauricular flap was planned for their treatment.

Three patients, aged 5–10 years, presented with orbital socket contracture after orbit enucleation and radiotherapy as part of treatment for retinoblastoma. In all three, previous treatment with mucosal grafts had been used, and in two of them skin grafts had been used with poor results. The patients presented prosthesis extrusion as well as ulceration or vascular complications of the eyelid, combined with an unaesthetic appearance. Their physical appearance greatly concerned all three patients.

The authors describe three representative cases, one from the coloboma group and two from the eye socket reconstruc-

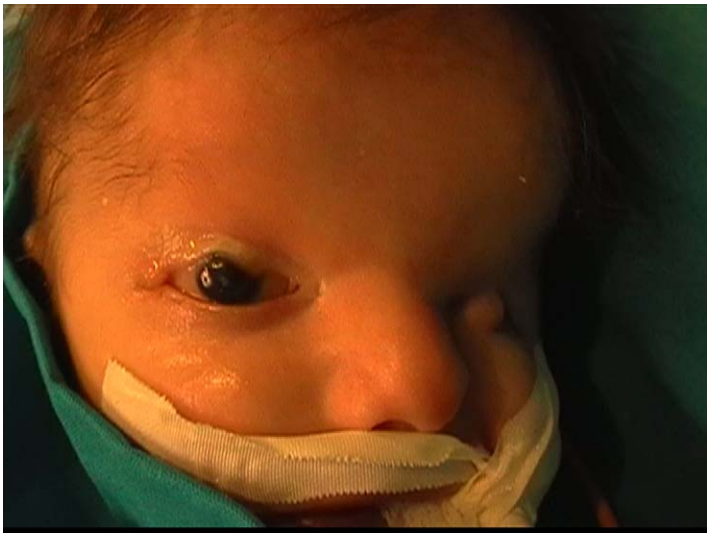

Fig. 1. Close-up of an upper lid coloboma with an extension greater than two-thirds of the total surface area.

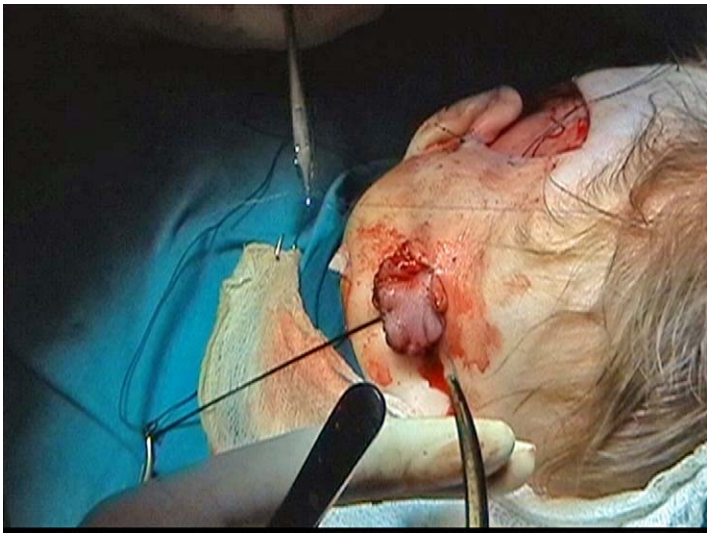

Fig. 2. Flap insetting through a lateral orbitotomy.

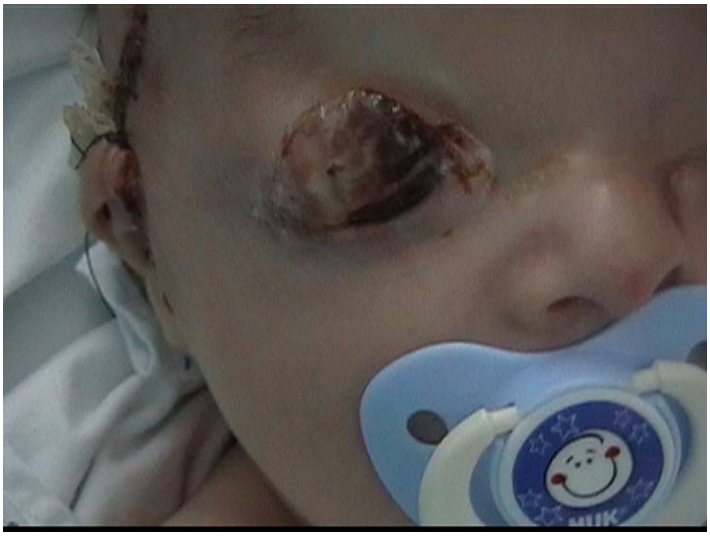

Fig. 3. Postoperative partial flap necrosis.