



# The Use of Acellular Dermal Matrix in the Closure of Oronasal Fistulae after Cleft Palate Repair

Lorenzo Cali Cassi, MD  
Alessandro Massei, MD

**A**lthough the management of cleft lip and palate has improved significantly during the last years, repairing oronasal fistulae is still a challenge. Reports of the incidence of postoperative fistulae following palate repair range from 10% to 20%.<sup>1</sup>

Several techniques are reported for the treatment of oronasal fistula, such as local mucoperiosteal flap, V-Y 2-layer repair, superior lip mucosal or myomucosal flap, buccal myomucosal flap, superiorly based facial artery myomucosal flap, tongue flap, free flap, free cartilage graft, and distraction osteogenesis. The great number of different techniques is the demonstration that there is not any particular technique that provides satisfactory results.

Usually, the fistula occurs at the junction of the hard and soft palate, a defect in this location is frequently associated with hypernasality of the speech, velopharyngeal incompetence, and nasal regurgitation of food and liquids with consequent impairment of the quality of life. Repair of existing fistula is also prone to failure because prior palatal surgery inevitably creates scars, altered vascularity, and tension.

## METHODS

This study was conducted on 30 patients who had oronasal fistulae secondary to prior cleft palate repair. In group 1, 20 patients underwent fistula repair using local mucoperiosteal flap or local mucoperiosteal flap and free cartilage graft between January 2010 and January 2012. In group 2, 10 patients underwent fistula repair with local mucoperiosteal flap

and acellular dermal matrix (Protexa, AFS Medical GmbH, Seedorf, Germany) between January 2012 and June 2013.

All the patients were subjected to closure of the fistula under general anesthesia with oral endotracheal intubation. In 12 patients of group 1 and 6 patients of group 2, a lipofilling of the scar around the fistula was made to ameliorate the contracture of the scar.

Two mucoperiosteal flaps based on the palatine artery and 2 mucosal flaps on the nasal plane were harvested. After rehydration, the dermal matrix was cut to size and sandwiched in the middle of the mucoperiosteal flap and the nasal flaps.

## RESULTS

The age of the patients ranged from 1 year to 10 years; there were 18 female and 12 male patients. The mean diameter of the fistula was 12mm. In group 1, there were 5 dehiscence of the wound with consequent recurrence of the fistula; in group 2, there was only one partial dehiscence with partial exposition of the dermal matrix but with no recurrence of the fistula.

## CONCLUSIONS

The repair of oronasal fistulae is often made difficult by the preexisting scarring and the altered vascularity resulting from the primary palatoplasty. Although different techniques are described to repair oronasal fistulae, no single procedure has proved to be ideal.

The dermal matrix is believed to act as a scaffold for migration of the host fibroblast and retains its basement membrane complex to facilitate attachment of surface epithelium.

In only one case in group 2, there was a dehiscence of the oral wound with a partial exposure of the dermal matrix, but it healed completely in 4 weeks with a complete mucosalization of the graft (Figs. 1–4).

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**Fig. 1.** Preoperative view of a 5-year-old girl.



**Fig. 3.** Preoperative view of an 8-year-old girl.



**Fig. 2.** Postoperative view of a 5-year-old girl after 2 months.



**Fig. 4.** Postoperative view of an 8-year-old girl after 3 months.

In our study, we reported a 100% closure rate of oronasal fistula in the group treated with dermal matrix. Similar results are reported by Clark et al<sup>2</sup> and Kirschner et al.<sup>3</sup> Losee et al<sup>4</sup> reported only a 3.6% recurrence rate of the fistula.

Based on our results and the small literature available on this topic, we believe that the use of the

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dermal matrix is a promising technique to repair oronasal fistula after palatoplasty.

*Alessandro Massei, MD,*  
Casa di Cura Santa Zita  
Lucca, Italy

E-mail: [info@alessandromassei.it](mailto:info@alessandromassei.it)

#### REFERENCES

1. Sadove AM, Eppley BL. Cleft lip and palate. In: Grosfeld JL, O'Neill JA, Coran AG, et al, eds. *Pediatric Surgery*. 6th ed. Philadelphia: Mosby Elsevier; 2006:803–812.
2. Clark JM, Saffold SH, Israel JM. Decellularized dermal grafting in cleft palate repair. *Arch Facial Plast Surg*. 2003;5:40–44; discussion 45.
3. Kirschner RE, Cabiling DS, Slemple AE, et al. Repair of oronasal fistulae with acellular dermal matrices. *Plast Reconstr Surg*. 2006;118:1431–1440.
4. Losee JE, Smith DM, Affi AM, et al. A successful algorithm for limiting postoperative fistulae following palatal procedures in the patient with orofacial clefting. *Plast Reconstr Surg*. 2008;122:544–554.