

Surgical Treatment of Mucogingival Alterations in Cleft Lip and Palate Patients: A Clinical Report

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Cleft lip and palate patients usually feature a shallow vestibule with harmful fibre insertion and low gingival margin mobility, interfering with the marginal periodontal tissue health. The following case report describes a vestibuloplasty technique associated with a free gingival graft in an edentulous ridge and posterior root coverage of the adjacent tooth using a semilunar coronally positioned flap at the left superior canine at the cleft area with satisfactory results.

Key words: vestibuloplasty, gingival recession, surgical flaps, grafts

INTRODUCTION

Cleft lip and palate consists of a congenital anomaly which affects both genders with a prevalence rate of 1:650 newborns (Lages et al, 2004). Cleft lip and palate individuals are submitted to a multidisciplinary treatment – including, for example, plastic surgeries, such as cheiloplasty and palatoplasty – resulting in a vestibule depth and other mucogingival anomalies. High muscular insertions at the cleft area may make soft-tissue management difficult, as well as orthodontic and rehabilitative treatment. Besides, the lack of keratinised gingiva associated with gingival margin mobility compromises the periodontal health of the area (Falcone, 1966). These periodontal alterations may be overcome through periodontal plastic surgeries.

Periodontal plastic surgery consists of a group of procedures in order to prevent or correct defects related to gingival, mucosa or alveolar bone - the latter caused by anatomic, developmental, traumatic factors or disease. These procedures vary in complexity from a simple frenectomy to multiple surgeries (Wennström, 1996).

Since the 1970s, many authors have discussed the importance of a minimum of 2 mm of keratinised

gingiva was believed to be necessary to maintain periodontal health, being at least 1 mm of attached gingiva (Lang and Loe, 1972), but today many authors support the idea that periodontal health may be present in situations of less than this measurement. Many variables have to be considered before performing surgical procedures to augment the amount of keratinised gingiva, such as age, presence of gingival recession, inflammation and patient needs. Orthodontic therapy or intrasulcular restorations in thin and/or non-attached gingival areas may cause marginal tissue recessions. These areas, previously stable, must be submitted to surgical procedures in order to augment the amount and width of keratinised gingiva (Miyasato et al, 1977; Hall, 1977; Dorfman et al, 1980; Hall et al, 1993).

The free gingival graft, also known as the onlay graft, was first described by Bjorn (1963) in order to create or augment the zone of keratinised gingiva. This procedure is also suitable to narrow root recession treatment, edentulous ridge correction, as a biological dressing in maxillofacial surgeries and in association with pedicle flaps (Borghetti and Monnet-Corti, 2002).

The gingiva functions as a protective mechanism for the periodontal apparatus, maintaining a seal



against debris and organisms of the oral cavity. As a mechanical barrier, it prevents the elastic tissue and muscle insertions from creating a mobile margin. A lack or a minimal zone of gingiva is seldom accompanied by gingival recession. Gingival recession may be defined as a change in position of the gingival margin, apically to the cementoenamel junction, exposing part of the root to the oral cavity (Wennstrom, 1994). The root exposure may cause an aesthetical problem (elongated tooth) and tooth sensitivity to the patient, impairing oral hygiene.

Gingival graft procedures for root coverage involve pedicle flaps and free gingival grafts. Free gingival grafts require a donor site and may consist of connective tissue with or without epithelium.

Root coverage may be achieved by a two-stage procedure. Bernimoulin et al (1975) proposed a free gingival graft in order to achieve an adequate zone of keratinised gingiva as a first intervention. After a period of two months, a coronally positioned flap was performed for root coverage.

The following case report describes a two-stage technique to overcome some gingival anomalies in cleft lip and palate patients, such as shallow vestibule, lack of keratinised gingiva and gingival recession.

CASE REPORT

A 23-year-old non-smoker cleft lip and palate patient was referred to the Department of Periodontology of the Hospital for Craniofacial Anomalies Rehabilitation (HRAC) for periodontal treatment. The patient was systemically healthy, and no dental treatments were contraindicated.

During clinical examination, the presence of fibrous insertion at the cleft area was diagnosed; a shallow vestibule, margin mobility and gingival recessions at the buccal face of the left central incisor and canine were also noted (Fig 1). A vestibuloplasty associated with a free gingival graft was proposed to deepen the vestibule and augment the zone of keratinised soft tissue and enhance periodontal health. The patient was informed of the limitations and advantages of each procedure and agreed to continue the treatment.

Following local anesthesia, a split-thickness flap was dissected at the recipient area with a horizontal incision, preserving the interproximal papillae of

the adjacent teeth. Vertical releasing incisions were placed at the mesial of the left central incisor and distal of the left canine. During the dissection of the flap an osseous dehiscence was noted at the left canine (Fig 2). A gingival graft from the palate was mobilised with a 15 C blade, thinned to approximately 1.5 mm, contoured and fixed in position with Polyglactin 910 5-0 sutures (Ethicon, Johnson & Johnson®). The flap was sutured apically and the surgical areas (donor and recipient sites) were covered with a non-eugenol dressing (Coe Pak, GC) (Fig 3). At the two-month follow-up visit, a gain of keratinised tissue at the grafted area and Miller Class I recession of 2 mm at the buccal aspect of the adjacent to the cleft teeth (Fig 4) were observed. Root coverage of the canine was recommended due to tooth sensitivity. The proposed technique consisted of a pedicle flap, known as semilunar flap, described by Tarnow (1986) (Figs 5–7). Two-millimetre recessions may be treated by this technique. Some of the advantages of this technique are: no need of suture, tension-free flap, the interproximal papillae remain intact and no consequences on the vestibule depth. Among the contraindications of this technique are: absence of attached gingiva, extensive recession (> 2 mm), presence of bone dehiscence or fenestration. A buccal scar is normally encountered after the healing process.

After 60 days of the second intervention, total coverage of the recession was observed with similar color to the adjacent area (Fig 8).

DISCUSSION

Whenever harmful fibrous insertions, a shallow vestibule and absence or minimal zone of keratinised tissue are present, free gingival grafts may be the choice of treatment with predictable results. According to Matter and Cimasoni (1976), the treatment of mucogingival alterations of the anterior maxilla in cleft lip and palate patients present good results when free gingival grafts are performed. Even though free gingival grafts are recommended to enhance the zone of keratinised gingiva, its root coverage predictability and aesthetic results are still controversial (Hall, 1993). Aesthetic results may be compromised by the fact that the colour of the graft may differ from the recipient site (Borghetti, 1990; Tolmie et al, 1991).



Fig 1 Preoperative view. Anterior maxilla of a cleft lip and palate patient after secondary bone graft. Note the presence of fibrous insertion and a shallow vestibule.

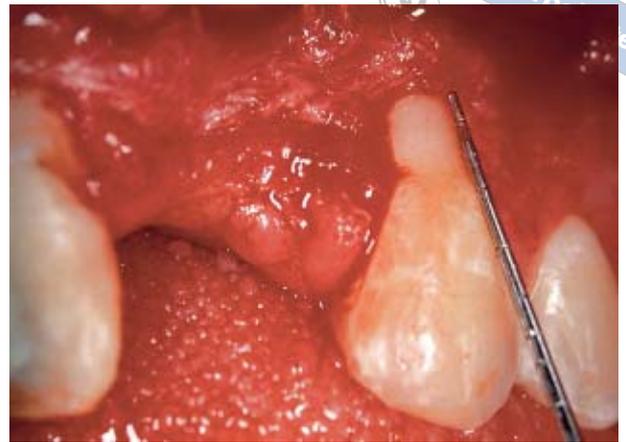


Fig 2 Horizontal incisions, preserving the interproximal papillae. Releasing incision at the mesial of the left central incisor and distal of the left canine, split-thickness flap. Osseous dehiscence at the buccal aspect of the canine.



Fig 3 Free gingival graft sutured at the recipient site.



Fig 4 Sixty-day postoperative view.



Fig 5 Semilunar incision beyond the mucogingival line.



Fig 6 Intrasulcular incision and flap dissection to the semilunar incision.



Fig 7 Tension-free flap.

The reported case presented an osseous dehiscence at the left maxillary canine during the first surgical stage. According to Wennström (1987), thin gingival tissue and dehiscences may represent the least resistant area to the development of soft-tissue recession.

Many factors may be associated with the gingival recession occurrence, such as quality and amount of keratinised gingiva (Ericsson and Lindhe, 1984; Kitchin, 1941; Wennström, 1987), inadequate tooth position, shallow vestibule (Gorman, 1967), periodontal disease, harmful bridle and frenum insertions (Mazdyasma, and Stoner, 1980), osseous dehiscences and fenestrations (Larato, 1972), orthodontic treatment (Coatoam et al, 1981), incorrect hygiene technique (Checchi et al, 1999) or surgical procedures (Snyder, 1982). Smoking habits (Gunsolley et al, 1998) and psychological factors (Stone, 1948) may also be considered predisposing factors to gingival recessions.

Insufficient or thin keratinised gingiva, osseous dehiscences and a shallow vestibule are common features of the anterior maxilla of cleft patients.

Miller (1985) proposed a classification for gingival recessions. This classification made the communication between professionals easy and correlated the success rate. The classification was based on the amount of interproximal periodontal tissues, bone and gingiva and success predictability. According to Miller, the smaller the recession, the better the prognoses of root coverage.

Root coverage can be achieved through various techniques, such as free gingival grafts, pedicle grafts or guided tissue regeneration (Miller, 1993,



Fig 8 Sixty-day follow-up. Note total coverage of the recession at the canine.

Zucchelli et al. 1998). The success of the procedure depends on the amount of soft and osseous tissues remaining in the interproximal areas (Wennstrom, 1994; Wennstrom and Zucchelli, 1996; Zucchelli and De Sanctis, 2000).

The coverage of Miller Class I recession has a high success rate (97%) with a coronally positioned flap (Allen and Miller, 1989). Normally, there is no need for a second intervention, and an aesthetic result is achieved.

Since there was a need for bridle removal and vestibuloplasty, the reported case could not be resolved by a subepithelial graft or pedicle flap. It is the authors' opinion that the best resolution was a free gingival graft of connective tissue and epithelium.

Even though unaesthetic outcomes may result whenever free gingival grafts are used, the main indication in the reported case was the keratinised gingiva augmentation with possible partial root coverage. Before choosing the technique, one may consider some characteristics of the defect: recession size, presence of keratinised tissue, width and height of the interproximal soft tissues, vestibule depth and presence of frenum and bridles.

Cleft lip and palate patients normally present a low lip line, therefore the use of a free gingival graft may be considered, providing good vestibule deepening and an adequate zone of keratinised tissue (Almeida et al, 2005).

After obtaining sufficient amount of keratinised tissue in order to perform a semilunar flap, total coverage of the gingival recession at the canine was achieved, providing better conditions to the patient.

CONCLUSIONS

The association of different surgical techniques may be a successful alternative to extreme cases. The choice of the techniques depends on the necessities of each case. Adequate evaluation and planning, observing the basic requirements, such as zone of keratinised gingiva, in order to choose a surgical technique, are essential. Periodontal plastic surgeries are essential to the treatment of mucogingival deformities in cleft lip and palate patients and present similar success rates as in non-cleft patients.

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