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Treatment of gingival lichen with free palatal grafts

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BACKGROUND: Recalcitrant gingival erythematous lichen planus/lichenoid lesions comprise a considerable therapeutic problem. The objective of this study was to evaluate the therapeutic effect of grafting keratinized oral palatal mucosa to the sites of gingival lichen.
METHODS: In 12 patients 20 grafts were transplanted to buccal gingival lesions. Mean age of the patients was 59.8 ± 7.1 years (range 46–71 years). The mean observation time was 32 ± 32.7 months (range 5–97 months).
RESULTS: On a 4-point clinical grade scale (0–3), 12 (60%) transplants showed complete healing grade 3, six (30%) grade 2 and two (10%) grade 1.
CONCLUSIONS: Using oral mucosal grafts from the palatal mucosa for the treatment of recalcitrant erythematous gingival lichen planus/lichenoid lesions seems to be a promising treatment modality.
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Keywords: grafting; lichen planus; oral mucosa; surgery; transplantation

Introduction

Oral lichen planus and lichenoid reactions (OLP) are prevalent oral mucosal conditions presenting in various clinical forms and patterns (1). The etiology is not known but pathogenicity studies suggest crucial involvement of the immunological system and also point at dental filling materials as triggering or releasing factors (2). Some recent findings suggest that psychological stress may play an important role in the etiology of OLP (3). OLP runs a chronic clinical course with recurrent aggravations. Treatment modalities are manifold but some common traits are recognized such as removal of local irritants including dental plaque and filling materials and modulation of inflammatory response primarily with the use of steroids, topically and systemically (4–7). Moreover, most treatment agents used in dermatology have been applied to oral lichen planus, e.g. use of PUVA (Psoralen-ultraviolet radiation A [Long Wave]), tacrolimus, thalidomide and others.

One erythematous clinical form of OLP appears predominantly on the buccal gingivae and is often referred to as desquamative gingivitis (8). This form of OLP can be treated by standard therapeutic modalities (9). However, some of them are extremely resistant to therapy. Such recalcitrant lesions may be especially considered for alternative therapeutic attempts (7). One case of such an attempt using a gingival graft and with a successful outcome has been described previously (10).

The objective of this study was to evaluate the therapeutic long-term effect of grafting keratinized oral mucosa to the sites of recalcitrant erythematous gingival lichen lesions.

Patients and methods

Twelve patients (three men and nine women) were selected for the study. Their mean age at their first operation was 59.8 ± 7.1 years (range 46–71 years). All showed clinical oral lichen planus lesions (11) with gingival manifestations (Fig. 1). Lichen planus efflorescences or lichenoid reactions were also seen in locations other than the gingiva in all patients, predominantly in the buccal mucosae but also on the dorsum of the tongue and, in one case, in the hard palate. Biopsies were taken only in a few cases. One woman had cutaneous lichen ruber planus as well.

In all, 20 transplantations were carried out. Before any such procedure was performed, extensive treatment modalities had been attempted including topical and in many cases also systemic antimycotics and steroids. Removal of possible triggering drugs was also considered.

Transplantations were carried out when there was no considerable improvement after these attempts and also after compliance taking the drugs had been convincingly secured. Standard surgical procedures were as follows.

1 Local anesthetics in gingival and palatal mucosa using two carpules of lidocaine 2% with 1:80 000 adrenaline.
2 Whenever there was a lip frenulum interfering with the gingival margin a Z-plastic operation was carried out in the upper lip and a vestibular correction inside the lower lip.

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Figure 1 Gingival erythematous lichenoid reaction proven recalcitrant to treatment with topical steroids.

Figure 2 Excised gingival tissue at recipient site.

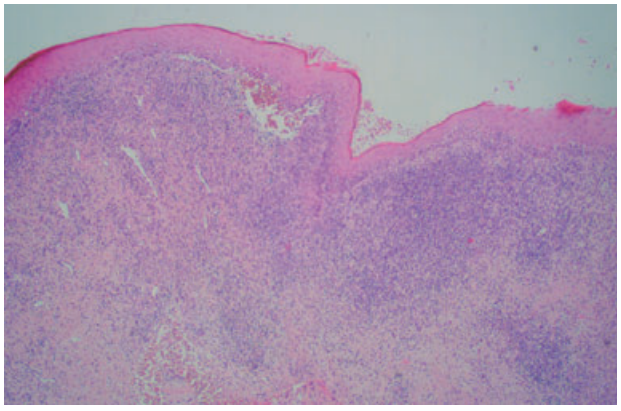

Figure 3 Histological specimen from tissue in Fig. 2. Heavy lymphocyte infiltrate in the connective tissue–epithelium junction area. 'Mixture' of lichenoid and plaque induced gingivitis reaction. Htx-E ×200.

3 Preparation of gingival recipient site, where epithelium and connective tissues were excised down to the periosteum (Fig. 2). In a few cases a specimen was sent for histopathological analysis (Fig. 3). The operation wound was covered by gauze soaked in saline.

Figure 4 Graft donor site in the hard palate. Note some bleeding arteriolae in spite of the shallow excision.

Figure 5 Graft trimmed and applied. Note Z-plastic of median lip frenulum.

4 The graft was sliced from the hard palate (Fig. 4) with the aid of scalpel, forceps, and scissors. In most cases there was some bleeding which was controlled by compression, suturing or, in a couple of cases, using an electrotome.

5 The graft was trimmed on a paper or glass plate soaked in saline and adapted to the anatomy of the gingival site.

6 The graft was sutured in position (Fig. 5) and covered by a dressing of Coe-Pak® (GC America Inc., Alsip, IL, USA) (Fig. 6a).

7 The dressing and sutures were removed after 3–4 weeks (Fig. 6b). During these weeks the patient rinsed the mouth twice a day with a solution of 0.1% chlorhexidine.

8 Checking was done after about 3 and 6 months and thereafter every sixth month (Fig. 7a,b).

The grafts were transplanted to the maxillary incisive area in 16 cases, to the maxillary premolar/molar area in three cases and to the mandibular incisive area in one case. The grafts covered areas from one to five teeth.

The mean observation time was 32 ± 32.7 months (range 5–97 months) Eight transplants were observed for 5–12 months, eight for 13–36 months and four for over 36 months.

Figure 6 (a) Coe-Pak® dressing 4 weeks after application. Discoloration by chlorhexidine. (b) Dressing removed. Epithelium almost normal or somewhat thin. Superfluous necrotic graft tissue in the graft upper margin.

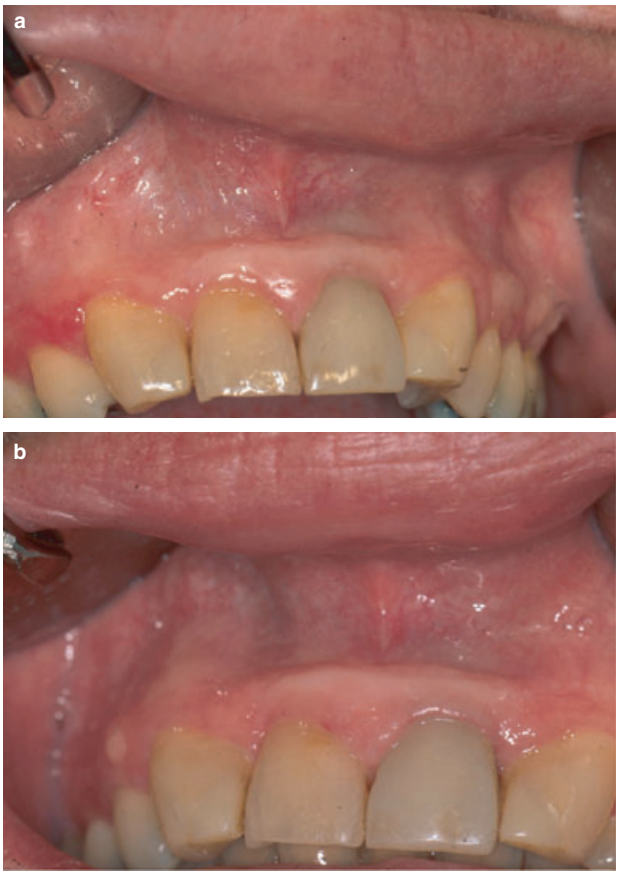

Figure 7 (a) Gingival graft after 1 year. Note erythematous lichenoid lesion in the first quadrant. (b) Nine years after transplantation. Graft now also applied in the first quadrant.

The results were subjectively assessed according to a 4-point scale where 0 = no improvement or aggravation; 1 = improvement but with extensive erythema and/or symptoms; 2 = improvement but with some erythema and no symptoms; and 3 = healing with neither erythema nor symptoms.

Results

The outcomes as registered at the last follow-up visit are shown in Table 1. Transplantations carried out in men seemed to have a somewhat better prognosis than in women. Thus, all five transplants in three men showed satisfactory results. However, the mean observation time for those five transplants was comparatively short (6.4 months, range 5–12 months).

Table 1 Healing scores according to gender, age, and observation time

	Healing score		
	1	*2*	*3*
Total no. (%)	2 (10)	6 (30)	12 (60)
Gender	2 F	6 F	5 M/7 F
Mean age (range, years)	66 (63–68)	60 (53–67)	54 (46–71)
Mean observation time (range, months)	47 (11–83)	37 (11–95)	28 (5–97)

Discussion

Some patients with oral lichen planus can be extremely difficult to treat. As the etiology is still unknown, symptoms have to be controlled by various remedies. A wide range of such remedies have been suggested and tested (9, 12). Gingival erythematous OLP may be especially difficult to control by means of medicines even if highly potent topical steroids (e.g. clobetasol) are used and combined with systemic steroids and/or azathioprine.

In this study the results of mucosal transplantation are presented. One case of a similar method, transplantation of healthy gingiva to a gingival lichen planus site, has previously been published, describing a successful result after an observation time of 3.5 years (10).

Some doubt may exist concerning the validity of the diagnosis of OLP in the present study as histological evaluation was undertaken in only a few cases. However, it should be emphasized that descriptions based on gingival biopsies may have limitations as in many cases there may be a plaque-induced gingivitis causing a mixture of OLP and simple gingivitis traits, which, to

Figure 8 (a) A 49-year-old woman with a gingival erythematous lichenoid reaction. Recalcitrant to topical steroid treatment. (b) Sixteen months after transplantation showing a somewhat thick graft but free from symptoms and esthetically acceptable.

some extent, is illustrated in Fig. 3. In most cases there were other clinical signs supporting an OLP diagnosis. Furthermore, one of the authors (TA) participated in a clinical validity/reliability evaluation with satisfactory result (13). Even if the OLP diagnosis was not fully satisfactory, all gingival lesions were accompanied by very similar clinical problems, symptoms jeopardizing oral hygiene procedures and/or esthetically embarrassing.

It may also be argued that healing might be spontaneous. However, in all cases, signs of persisting lichenoid reactions were seen on the gingiva or elsewhere in the oral cavity. In some cases, these other lesions aggravated during the observation time without any deterioration in the transplantation area.

In this series of transplantations, the autogenous graft material was obtained from the mucosa in the hard palate. It seems that this site is far less a target for OLP reactions than the gingival mucosa. The choice of palate is also associated with the theoretical background and might explain why the transplantation method may be successful. A case report indicated that healthy gingival tissue transplanted to an area with a lesion remains free of lesions (14). Combined free palatal grafts of connective tissues and epithelium have shown to be successfully transplanted (15). Importantly, new basal epithelial cells without any 'antigenic' properties, suggested to be present in OLP lesions, will grow in the graft (9). Further, there may be a possibly guiding function of connective tissue of the donor area in the differentiation process of the epithelium (16–19) contributing to a healthy looking gingiva after transplantation.

The surgical technique is rather simple. It should however be focused on gentle handling of the tissues and short extraoral time of the graft, which should be trimmed on a plate soaked with saline. One complication which should not be completely overlooked is bleeding, immediate or late (20). Thus, careful palatal compression is necessary postoperatively and in most cases anterior suturing of the bleeding site(s).

In conclusion, this technique using oral mucosal grafts from the palatal mucosa for the treatment of recalcitrant erythematous gingival lichen planus seems promising (Fig. 8a,b).

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