

SURGICAL APPROACH TO DRUG - INDUCED GINGIVAL ENLARGEMENT IN RENAL TRANSPLANT PATIENTS

Case report

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ABSTRACT

BACKGROUND: The surgical treatment is the definitive therapy of the drug-induced gingival overgrowth, although the recurrence is frequent even with well conducted periodontal maintenance. There are many surgical approaches, but the common surgical technique is the simple excision of the excessive gingival tissue with secondary healing. The apically displaced flaps may possess the advantage to preserve the attached gingiva.

CASE PRESENTATION: It describes a case of a surgical approach with apically displaced flap in the renal transplant patient with severe drug-induced gingival overgrowth (DIGO).

CONCLUSION: Surgical treatment is often the most reliable option and scalpel gingivectomy remains the treatment of choice, but the apically displaced flap may be more suitable surgical approach to the treatment of drug-induced gingival enlargement. Further investigations are required to develop appropriate management strategies to prevent recurrence of DIGO.

There are many factors (causal or modifying) involved in gingival overgrowth (13). Plaque accumulation on teeth causes gingival inflammation and its resultant enlargement. Gingival hyperplasia can be seen in patients with familial gingival enlargement, pregnancy and leukemia.

Recently it is known that gingival overgrowth may be a consequence of the administration of three groups of medicaments – anticonvulsants (2), calcium channel blockers and immunosuppressants - agents used to prevent the rejection of transplants or grafts such as Cyclosporine (**drug-induced overgrowth (DIGO)**) (3, 4, 5, 6, 9, 13). The pharmacological effects of these drugs are specific but the clinical and histological features of the enlargement caused by the different drugs are similar. The clinical appearance of drug-induced gingival overgrowth is usually characteristic, although variants are seen depending on the location of lesions, the irritants involved and the extent of inflammation. As the condition progresses, the marginal and papillary gingiva may develop into a massive tissue and may

interfere with speech, mastication and aesthetics. In the patients with preexisting periodontitis and Cyclosporine-induced gingival enlargement (incidence of approximately 30%) the deepening of periodontal pockets and associated subgingival microbiota may interfere with the progression of periodontal destruction and general health. With time the untreated case may develop into more severe periodontitis with future loss of periodontal attachment and bone loss (7, 8).

Many different types of therapy have been tried to reduce or eliminate deep pockets by gingival surgery. Treatment of drug-induced gingival enlargement is based on the clinical features. DIGO is a common clinical problem that often requires intervention. Non-surgical techniques can limit the occurrence of this unwanted effect, reduce the extent of plaque-induced gingival inflammation and reduce the rate of recurrence. Wherever possible this management strategy should be adopted first (1, 10, 11, 12). Today most periodontists use a surgical blade to incise or excise soft tissue. Classic gingival surgery primarily deals with the treatment of pockets – i.e., gingival sulci that are deepened due to a proliferation or an increase in bulk of gingival tissue in a coronal direction, with or without apical migration of the epithelial attachment.

The surgical treatment is the definitive therapy of the drug-induced gingival overgrowth, although the recurrence is frequent even with well conducted periodontal maintenance. The common surgical technique is the simple excision of the excessive gingival tissue with secondary healing – **external bevel gingivectomy (EBG)**.

The **internal (reverse) bevel gingivectomy (IBG)** often is used instead of an **EBG** if the tissue to be excised is thick and a long external bevel incision would be required to create knife-edged margins. It is accepted that gingival surgery (both **EBG** and **IBG**) is essentially limited to the treatment of pseudopockets.

The surgical approach of the **apically displaced full-thickness flap** is more suitable technique to eliminate periodontal pockets, to improve the alveolar bone morphology, to preserve the attached gingiva and to

improve the esthetics in frontal zone when moderate periodontitis with gingival overgrowth is treated. This technique is especially indicated in the cases with lack of keratinized tissues or in the presence of osseous defects.

CASE REPORT:

A 45 year old male is presented with severe drug-induced gingival enlargement, moderate bone loss and reduced dentition. The patient is kidney transplant and receive immunosuppressive medication (Cyclosporine) for 10 months to prevent transplant rejection. The labial and lingual gingival tissues in the anterior sextants are the most severe involved areas with gingival hyperplasia (**GOI=3** according to Angelopoulos & Goaz index) and severe plaque-associated gingival inflammation (**PBI=3**). The anti-inflammatory therapy involve mechanical treatment and antimicrobial systemic medication (Amoxicillin +

Metronidazole -10d) because of the risk of infections. With the elimination of the inflammation and improving the personal cleaning in one month therapy it was performed surgical treatment in the anterior maxillary area. The surgical approach was apically displaced flap - full-thickness and partial thickness close to the mucogingival junction after excision of excessive gingival tissue with initial internal bevel incision, recontouring of the alveolar crest, displacing and fixing the tissues to periosteum and interrupted suturing of the flaps at the level of the alveolar bone margin. The palatal technique was internal bevel gingivectomy to eliminate the hyperplastic gingival tissue and reduction of periodontal pockets. Periodontal dressing was applied for 10 days.

The good maintenance care with good oral hygiene, chlorhexidine gluconat rinses and regular professional recalls are of critical importance for diminishing recurrences.





Fig 1. The initial clinical status of the patient – note the excessively enlarged gingival tissue in a 10-months Cyclosporine therapy without periodontal maintenance. There is a high risk of infections and future loss of attachment because of the generalized deep pockets and plaque retention. The appearance of the gingival tissues is not esthetic and the hyperplastic gingiva impede with the speech. The surgical approach is the definitive periodontal treatment.



Fig. 2. Palatal internal bevel gingivectomy is performed to remove the hyperplastic tissues with gingivoplasty for contouring the palatal gingiva

The IBG really is the first step in palatal flap reflection. The paramarginal incision made so that palatal gingival flap can be reflected that always remove the sulcular epithelium and the excessive gingival tissues and thus by definition a “gingivectomy” has been performed. Position the flap against the palatal surfaces is just coronal to the marginal bone. This is important because palatal flaps cannot be apically positioned.



Fig. 3. Facial full-thickness flap is reflected and displaced apically to preserve the attached gingiva. Minimal bone recontouring was performed for appropriate positioning of the flap margin just at the level of the crestal bone

After internal bevel incision to the crestal alveolar bone and two vertical incisions the facial flap is reflected from the alveolar bone beyond the MGJ and displaced apically. This flap design allows protection of the attached gingival tissues.

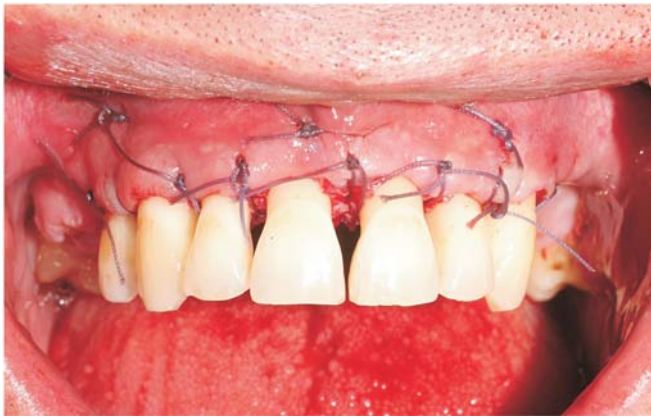


Fig. 4. Apically displaced flap suturing with periosteal sutures and interrupted interdental sutures

Positioning of the facial flap apically and securing with periosteal sutures and suturing of the flap margins just coronal to the alveolar crest after the flap was thinned. This will protect the bone without recreating increased probing depths. To accomplish this the flap must have been reflected past the mucogingival junction (MGJ). It is the alveolar component of mucogingival flaps that permits them to be apically or coronally positioned.

CONCLUSION:

The apically displaced flap may be more suitable surgical approach to the treatment of drug-induced gingival enlargement. This technique eliminates periodontal pockets, preserves attached gingival tissue and establishes proper periodontal morphology for good hygiene in the maintenance phase, which is of great importance in the renal transplant patients.

REFERENCES:

1. Mavrogiannis M, Ellis JS, Thomason JM, Seymour RA. The management of drug-induced gingival overgrowth. *J Clin Periodontol* 2006; 33: 434–439
2. Seymour RA, Smith DG, Turnbull DN. The effects of phenytoin and sodium valproate on the periodontal health of the adult epileptic patient. *J Clin Periodontol* 1985; 12:413.
3. Spolidorio I L.C.; DMP Spolidorio I; M. Holzhausen II; P. O. Nassar II; C. Augusto Nassar II. Effects of long-term cyclosporin therapy on gingiva of rats – analysis by stereological and biochemical estimation. *Braz. oral res.* 2005, Vol. 19 No. 2, Apr./June, Sao Paulo
4. Cotrim P, Martelli-Junior H., Graner E, Sank J. J., Colleta R. D. Cyclosporin A induces proliferation in human gingival fibroblasts via induction of transforming growth factor-beta 1. *J Periodontol* 2003; 74: 1625-33.
5. Hefti A. F., Eshenaur A. E., Hassell T. M., Stone C. Gingival overgrowth in cyclosporine A-treated multiple sclerosis patients. *J Periodontol* 1994;65(8):744-9.
6. King G, Fullinlaw R, Higgins T.S., Walker R.G., Francis D.M., Wiesenfeld D. Gingival hyperplasia in renal allograft recipients receiving cyclosporin-A and calcium antagonists. *J Clin Periodontol* 1993;20(4):286-93.
7. Montebugnoli L., Servidio D., Bernardi F. The role of time in reducing gingival overgrowth in heart-transplanted patients following cyclosporin therapy. *J Clin Periodontol* 2000;27(8):611-4.
8. Seymour R. A., Elles J. S., Thomason J. M. Risk factors for drug-induced gingival overgrowth. *J Clin Periodontol* 2000; 27(4): 217-23.
9. Stone C., Eshenaur A., Hassell T. Gingival enlargement in cyclosporine treated multiple sclerosis patients. *J Dent Res* 1989; 68:285-9.
10. Seymour R. A., Smith D. G. The effect of a plaque control programme on the incidence and severity of cyclosporin-induced gingival changes. *J Clin Periodontol* 1991;18(2):107-10.
11. Ciancio S. G., Bartz N. W. Jr, Lauciello F. R. Cyclosporine-induced gingival hyperplasia and chlorhexidine: a case report. *Int J Periodontics Restorative Dent* 1991;3:241-5.
12. Hernández G., L. Arriba, M.C. Frías, J. de la Macorra, J. C. de Vicente, C. Jiménez, A. de Andrés, E. Moreno. Conversion from Cyclosporin A to Tacrolimus as a Non-Surgical Alternative to Reduce Gingival Enlargement: A Preliminary Case Series. *J Periodontol* 2003;74: 1816-1823.
13. Kurzawski M., A. Drozdziak, E. Dembowska, A. Pawlik, J. Banach, M. Drozdziak. Matrix Metalloproteinase-1 Gene Polymorphism in Renal Transplant Patients With and Without Gingival Enlargement. *Journal of Periodontology* September 2006, Vol. 77, No. 9: 1498-1502.

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