CLINICAL OUTCOMES OF GUIDED TISSUE REGENERATION PROCEDURE UTILIZED WITH TWO DIFFERENT SURGICAL APPROACHES
- A COMPARATIVE STUDY-

D. Veljanovski[1], T. Tasevski[1], D. Tasevski[1], V. Spirov[2], B. Stefanovikj[3], D. Baftijari[4]

[1]Endomak Dental Clinic, Skopje/Gevgelija, Macedonia
[2]University Dental Clinic, Skopje, Macedonia
[3]Optimum Dental, Skopje, Macedonia
[4]Vita Dent, Skopje,Macedonia

BACKGROUND AND AIM

The guided tissue regeneration (Nyman et al. 1982) is a well-established surgical technique which main goal is to reconstruct the periodontal ligament with functional collagen fibers inserted into a newly formed cementum and alveolar bone. Teeth with periodontal disease resulting in deep infrabony pockets are successfully treated with this technique. Its main prognostic factors from clinical and biological standpoint include: blood clot stabilization, primary closure of the defect, space provision and exclusion from the gingival tissues. Several surgical techniques have been proposed for utilization of GTR. Lately these techniques have been aiming at minimal invasiveness for optimal wound closure and lesser postoperative morbidity. The aim of this presentation was to compare the clinical outcomes of two different techniques for GTR:modified papilla preservation flap (Cortelinni et al, 1995) vs. single flap approach.

Data analysis

The aim was to compare 2 treatment modalities in terms of their effect to clinical attachment level(CAL), probing depth (PD) and gingival recession (REC).

Variable	Test group N=10		Control group N=10		P value
mean values	baseline characteristics	1 year after surgery	baseline characteristics	1 year after surgery	
clinical attachment level (CAL)	9.1	5.5	9.2	7.1	p<0.01
probing depth (PD)	7.7	4.3	7.1	5.7	p< 0.01
gingival recession (REC)	1.3	2.8	1.3	3.9	p< 0.01

RESULTS

The obtained data revealed significantly better results in CAL gain (3.6+/-1.3 mm vs. 2.1+/- 1.2), PD reduction (2.7+/- 0.8 vs. 1.4 +/-0.6) and REC (1.5 +/- 0.9 vs. 2.6 +/- 0.8) at baseline and one year post surgery in test group.

CONCLUSION

Results from our analysis suggest that single flap approach as less invasive provides better clinical outcomes, although without big clinical relevance considering the small number of patients.

REFERENCES

1. S. Nyman, J. Lindhe, T. Karring, and H. Rylander, “New attachment following surgical treatment of human periodontal disease ,JournaL of Clinical Periodontology,vol.9,no.4,pp.290– 296,1982
2. Pellegrini G, Pagni G, Rasperini G. Surgical Approaches Based on Biological Objectives: GTR versus GBR Techniques. Int J Dent. 2013;2013:521547. doi:10.1155/2013/521547.
3. Cortellini P, Tonetti MS. Clinical concepts for regenerative therapy in intrabony defects. Periodontology 2000. 2015 Jun;68(1):282-307.doi: 10.1111/prd.12048. Review. PubMed PMID: 25867990.
4. Cortellini P, Pini Prato G, Tonetti MS. The modified papilla preservation technique with bioresorbable barrier membranes in the treatment of intrabony defects. Case reports. Int J Periodontics Restorative Dent. 1996 Dec;16(6):546-59. PubMed PMID: 9242093.
5. Schincaglia GP, Hebert E, Farina R, Simonelli A, Trombelli L. Single versus double flap approach in periodontal regenerative treatment. J Clin Periodontol. 2015 Jun;42(6):557-66. doi: 10.1111/jcpe.12409. Epub 2015 May 29. PubMed PMID:25924545.
6. Farina R, Simonelli A, Rizzi A, Pramstraller M, Cucchi A, Trombelli L. Early postoperative healing following buccal single flap approach to access intraosseous periodontal defects. Clin Oral Investig. 2013 Jul;17(6):1573-83. doi: 10.1007/s00784-012-0838-6. Epub 2012 Sep 9. PubMed PMID: 22961538.
7. Trombelli L, Farina R, Franceschetti G, Calura G. Single-flap approach with buccal access in periodontal reconstructive procedures. J Periodontol. 2009 Feb;80(2):353-60. doi: 10.1902/jop.2009.080420 . PubMed PMID: 19186978.
8. Rasperini G, Acunzo R, Barnett A, Pagni G. The soft tissue wall technique for the regenerative treatment of non-contained infrabony defects: a case series. Int J Periodontics Restorative Dent. 2013 May-Jun;33(3):e79-87. doi: 10.11607/prd.1628. PubMed PMID: 23593632.

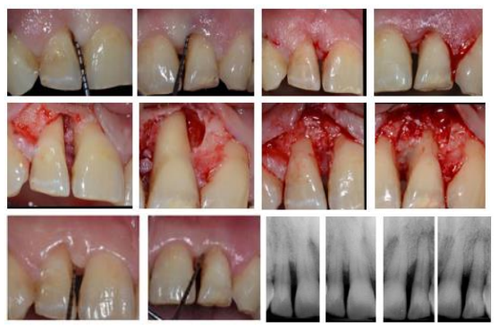
PATIENTS AND METHODS

20 patients diagnosed with chronic periodontitis participated in this study. Heavy smokers (> 20 cigarettes a day) were excluded. All patients underwent scaling and root planning at the initial phase of therapy. One moth after the completion of the initial therapy, a reevaluation was performed. The entry criteria to be met at baseline were: values of probing depth (PD) >= 6 mm, interproximal infrabony component >= 4 mm, two or three walled defects in the upper anterior region, tooth mobility class 0 or 1. All patients were treated with demineralized bovine bone material (MIS 4 Bone) and resorbable collagen membrane(MIS RCM). The wound closure was performed with 6.0 monofilament polyamide suture (Omnia s.p.A), utilizing the modified internal mattress suture.

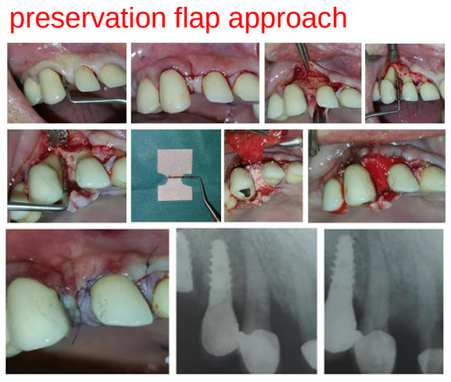
The patients were divided into two groups: control group (10 patients) - treated utilizing modified papilla preservation flap) and the test group (10 patients) treated with single flap approach (vestibular or palatal-depending on the anatomical shape of the infrabony defect. The efficacy of each treatment modality was evaluated by analysis of clinical attachment level (CAL) gain, probing depth (PD) reduction and gingival recession (REC) one year post surgery.

Combination of clavulanic acid and amoxicillin was prescribed (Augmentin) 2 g per day for 7 days). Both groups of patients were instructed to rinse two times a day with 0.2% chlorhexidine solution for the 1st 8 weeks. Professional tooth cleaning was performed weekly for the first 8 weeks. Patients used modified oral hygiene procedures avoiding brushing and using interdental devices, in treated areas during the first 2 months post-op. All patients were then placed on 3month recall visits up to the 1-year revaluation. No attempt at probing or deep scaling was made before the 1-year follow-up. At 1 year post-op, the final measurements were taken.

Single flap approach



Modified papilla preservation flap approach



DISCUSSION

The wound stability and primary intention closure of surgical flaps are of primary importance for the prognosis of regenerative procedures. In order to get blood clot stability and to prevent membrane exposure, the manipulation of soft tissues is very important. Therefore, minimally invasive surgical approaches were proposed. In 1985, Takei et al. proposed a surgical technique for saving the interdental papilla and allowing primary intention closure of the palatal and vestibular flaps. This approach was revised by Cortellini et al. (1995, 1999) who proposed to cut the papilla on the vestibular side in order to facilitate tension-free suturing to the palatal flap. This surgical approach combined with the use of the microscope and microsurgical instrument demonstrated an increased percentage of clinical attachment level gain with minimal recession. In order to reduce surgical trauma, to increase flap stability and to apply microsurgical concepts, surgical approaches were proposed to limit the mesiodistal flap extension and the coronal-apical flap reflection . Blood clot stabilization is increased by elevating a flap only on the buccal or on the oral side according to the defect position. The corresponding oral or buccal portion of the interdental papilla is left undetached to allow easy and more stable flap repositioning and preservation of the blood supply. (Cortelinni &Tonetti 2009, Trombelli et al. 2010, Farina et al. 2014).

Furthermore, coronally Advanced Flaps (CAF) in combination with regenerative approaches have been introduced with the intent of stabilizing the soft tissue and providing a more stable wound for regeneration to occur. With this approach, a decrease in REC can be achieved, thus not only addressing the loss of attachment but also improving the aesthetic appearance of the area (Rasperini et al. 2013).