



Assessment of various treatment modalities for isolated gingival recession defect - A retrospective study

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ABSTRACT

Esthetic demands among the patients have increased markedly over the past few years. The Gingival recession is one of the prime esthetic concerns, and there are various treatment modalities in managing recession defects. Most often, esthetic outcomes following root coverage procedures are not assessed. Thus the current article aims to determine the aesthetic outcome following various treatment modalities for root coverage procedures using Recession Esthetic Score (RES). In the present study, seventeen patients with Miller Class I, II and III recession defects treated with root coverage procedures were evaluated retrospectively. Esthetic outcomes were assessed using the root coverage esthetic score (RES) postoperatively. Among 17 managed recession sites, 6(35%) had complete root coverage. Three of six patients who attained complete root coverage had a perfect score (RES-10). Free Gingival Graft showed better root coverage and recession esthetic score (RES); however, there was no significant association between root coverage, RES and various treatment modalities used for recession coverage ($p>0.05$).



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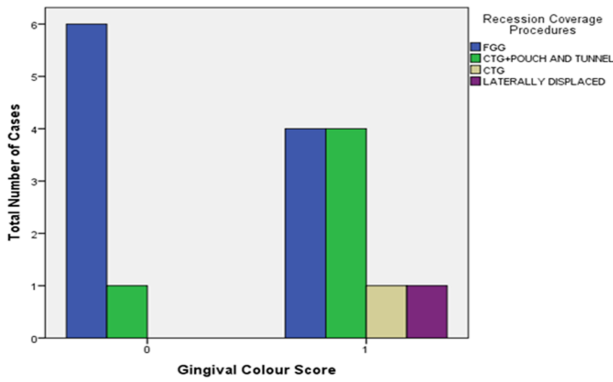
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INTRODUCTION

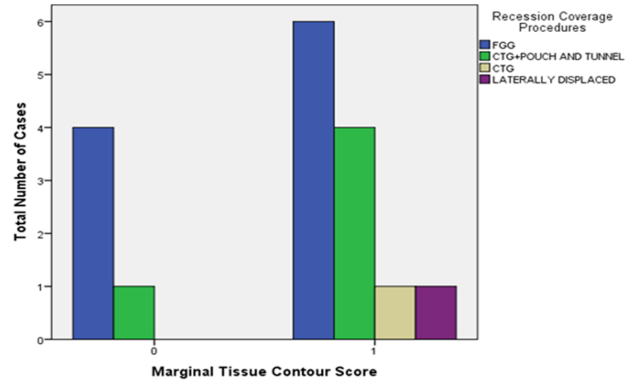
Periodontal diseases that have evolved over the years and have transformed from periodontitis being considered an almost ubiquitous condition (Ramamurthy and Visha, 2018). Periodontal disease is a chronic inflammatory disease which is one of the major causes for tooth loss in adults (Varghese, 2015; Mootha *et al.*, 2016; Avinash *et al.*, 2017; Khalid, 2016; Ramesh *et al.*, 2017).

Periodontitis is characterised by a bacterial infection which leads to inflammation of the gums thereby destroying periodontal tissues and alveolar bone (Ramesh *et al.*, 2016; Priyanka, 2017; Kumar and Varghese, 2019; Murthykumar *et al.*, 2019). It also results in the breakdown of the collagen fibres of the periodontal ligament, resulting in the periodontal pocket between the gingiva and tooth (Panda, 2014; Khalid, 2016). Periodontal disease is as such a slowly progressing disease, but the tissue destruction is irreversible (Ravi *et al.*, 2017). Historically treatment of periodontitis has been primarily directed at the elimination of causative factors and maintenance of a functional and healthy dentition (Kavarthapu and Thamaraiselvan, 2018; Ramesh, 2019; Thamaraiselvan *et al.*, 2015). Periodontal therapy includes both surgical and nonsurgical management of disease processes (Ramesh, 2016). Anatomical landmark consideration is essential during periodontal therapy (Kavarthapu and Thamaraiselvan, 2018).

Graph 1 X axis represents the Gingival Colour Score



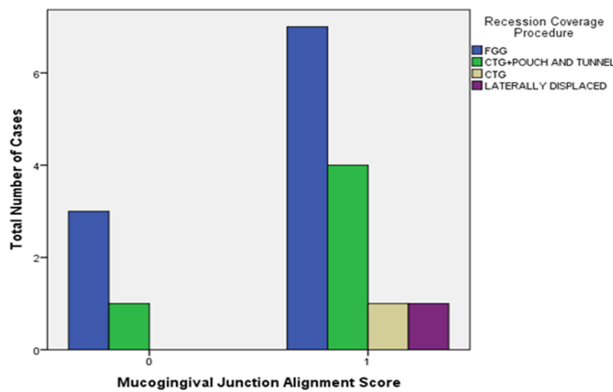
Graph 1: Bar chart representing the association between Gingival Colour Score and various Recession Coverage Procedure



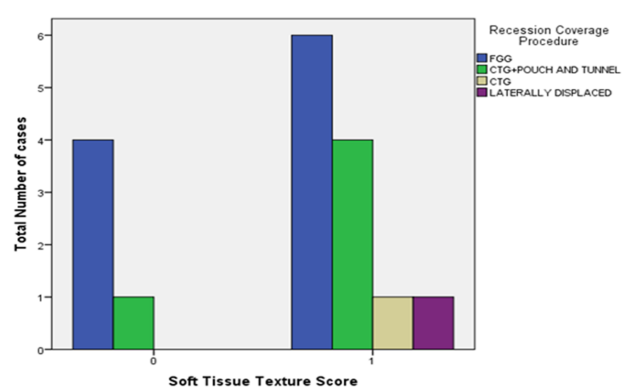
Graph 3: Bar chart representing the association between Marginal Tissue Contour Score and various Recession Coverage Procedure

in the scale of 0, 1 and Y axis represents the number of cases; Blue Colour represents FGG (Free Gingival Graft); Green Colour represents CTG + Pouch and Tunnel Technique; Cream colour represents CTG (Connective tissue graft) and purple colour represents Laterally Displaced Flap). FGG had better Gingival Colour Score than other treatment modalities, however it is not statistically significant. Chi-square test- Pearson Chi-square value: 3.789, p value: 0.285 (p>0.05).

tour Score in the scale of 0,1; Y axis represents the number of cases; Blue Colour represents FGG (Free Gingival Graft); Green Colour represents CTG + Pouch and Tunnel Technique; Cream colour represents CTG (Connective tissue graft) and purple colour represents Laterally displaced flap). FGG had better Marginal Tissue Contour Score than other treatment modalities, however it is not statistically significant. Chi-square test, Pearson Chi-square value 1.587, p value 0.662 (p>0.05).



Graph 2: Bar chart representing the association between Mucogingival Junction Alignment Score and various Recession Coverage Procedure



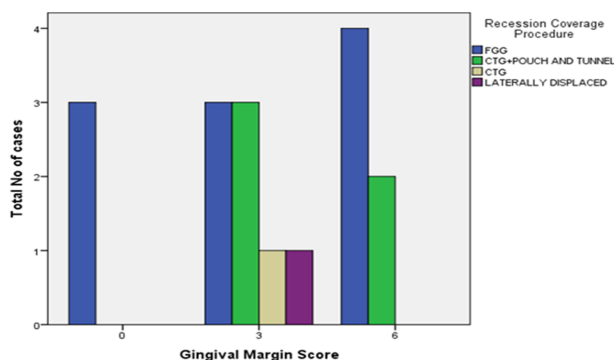
Graph 4: Bar chart representing the association between Soft Tissue Texture Score and various Recession Coverage Procedure

Graph 2 (X axis represents the Mucogingival Junction Alignment Score in the scale of 0,1; Y axis represents the number of cases; Blue Colour represents FGG (Free Gingival Graft); Green Colour represents CTG + Pouch and Tunnel Technique; Cream colour represents CTG (Connective tissue graft) and purple colour represents Laterally Displaced Flap). FGG had better Mucogingival Junction Alignment Score than other treatment modalities, however it is not statistically significant. Chi-square test, Pearson Chi-square value 0.883, p value 0.830 (p>0.05).

Graph 4 (X axis represents the Soft Tissue Texture Score in the scale of 0,1; Y axis represents the number of cases; Blue Colour represents FGG (Free Gingival Graft); Green Colour represents CTG + Pouch and Tunnel Technique; Cream colour represents CTG (Connective tissue graft) and purple colour represents Laterally displaced flap). FGG had better Soft Tissue Texture Score than other treatment modalities, however it is not statistically significant. Chi-square test, Pearson Chi-square value 1.587, p value 0.662 (p>0.05).

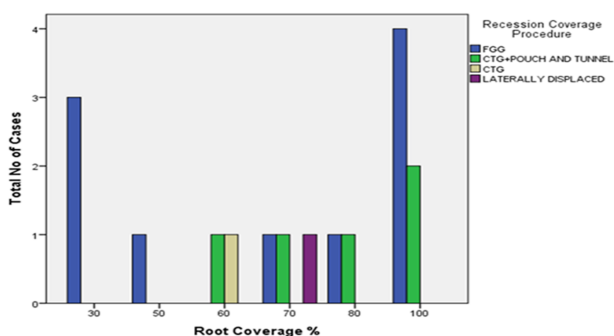
Graph 3 (X axis represents the Marginal Tissue Con-

Graph 5 (X axis represents the Gingival Margin Score



Graph 5: Bar chart representing the association between Gingival Margin Score and various Recession Coverage Procedure

in the scale of 0,3 and 6; Y axis represents the number of cases; Blue Colour represents FGG(Free Gingival Graft); Green Colour represents CTG + Pouch and Tunnel Technique; Cream colour represents CTG (Connective tissue graft) and purple colour represents Laterally displaced flap).FGG had better Gingival Margin Score than other treatment modalities, however it is not statistically significant. Chi-square test, Pearson Chi-square value 4.887, p value 0.558(p>0.05).



Graph 6: Bar chart representing the association between Root Coverage % and various Recession Coverage Procedure

Graph 6 (X axis represents the Root Coverage % ranging 30%-100% ; Y axis represents the number of cases; Blue Colour represents FGG(Free Gingival Graft); Green Colour represents CTG + Pouch and Tunnel Technique; Cream colour represents CTG (Connective tissue graft) and purple colour represents Laterally displaced flap).FGG had better root coverage than other treatment modalities, however it is not statistically significant. Chi-square test, Pearson Chi-square value 4.887, p value 0.558(p>0.05).

The gingival recession defect is a primary esthetic concern. Management of recession defects is indicated for esthetic purposes, to overcome dentin

sensitivity caused due to the root exposure and to increase the amount of keratinised tissue ('Consensus report. Mucogingival therapy', 1996). Most often the clinical outcomes following the management of recession defects are generally expressed in terms of percentage of root coverage and at times in terms of complete root coverage (Cairo *et al*, 2008). Patients demand esthetic management has increased over the days; thus, the gingival recession coverage procedure should provide a soft tissue component which is comparable and indistinguishable from adjacent tissue .

MATERIALS AND METHODS

In this retrospective study, 17 patients who had undergone root coverage for isolated gingival recession defects in the Department of Periodontics, Saveetha Dental College from June 2019 to March 2020 were assessed. Scores were given based on the RES to evaluate the esthetic outcome following recession coverage.

Inclusion Criteria

1. Patient with an age group of 18-30 years.
2. Patient with single tooth recession defects.

Exclusion Criteria

1. Patients who did not report for follow up were excluded.
2. Patients above the age of 30 or below 18 years were excluded.
3. Patients with systemic diseases like diabetes, hypertension, cardiovascular diseases.
4. Patients who are current and former smokers.
5. Patients who underwent any dental treatments in the past six months.

Statistical Analysis

All the data were included in SPSS software IBM version 23.0. The chi-square test was used to analyse the association between RES and various surgical procedures for recession defect. Also, the association between recession coverage and different recession coverage procedures was analysed. A P-value of less than 0.05 was considered statistically significant.

Table 1: Association between RES and various treatment modalities available for recession coverage, FGG had better RES score than other treatment modalities, however it is not statistically significant.

RES	Surgical Procedure					Pearson Chi-square value	p value
	FGG	CTG+ AND TUNNEL	POUCH	CTG	LATERALLY DISPLACED		
0	1	0		0	0	9.690	0.983
2	1	0		0	0		
4	1	1		0	0		
5	1	0		0	0		
6	2	1		0	0		
7	2	1		1	1		
9	1	0		0	0		
10	1	2		0	0		

Chi-Square test, Pearson Chi-Square value- 9.690; p value- 0.983

RESULTS AND DISCUSSION

The current study showed no statistical difference ($p > 0.05$) between RES score and various treatment modality available for recession coverage (Table 1). There was no significant ($p > 0.005$) association among postoperative gingival colour score, mucogingival junction alignment score, marginal tissue contour score, soft tissue texture score, gingival margin score and root coverage in percentage and various treatment modalities available for recession coverage as shown in Graphs 1, 2, 3, 4, 5 and 6.

Esthetic satisfaction following root coverage procedure is most often seldom investigated in clinical trials (Aichelmann-Reidy *et al.*, 2001; Wang, 2001). Esthetic evaluation is more subjective. Thus, esthetic assessment can be useful in the evaluation of recession coverage outcomes.

Present study results showed no statistical significance between RES, Root coverage vs various treatment modalities used for recession coverage. Evidence (Cairo, 2009) report that coronally advanced flap for recession coverage had better root coverage and RES compared to other treatment modalities which were contradictory to the present study were Free Gingival Graft had better root coverage and RES score this would be because of the difference in the ethnic group as well due to less sample size in the present study.

(Prato *et al.*, 2005) showed that there was 100% recession coverage with coronally advanced flap. In contrast, the same results were not obtained in the present study; this could be because of the clinical case selection as well as surgical techniques used.

(Wennstrom and Zucchelli, 1996) in their study also

showed that free gingival graft had lower recession coverage among all the recession coverage procedures whereas in our present study free gingival graft showed to have better results though it was statistically not significant.

The limitation of the present study was that it had a limited sample size, short term follow up. Hence extensive research should be done with long term follow up and by including other parameters that assess the effectiveness of various treatment modalities of isolated recession defects.

CONCLUSION

Free Gingival Graft showed better root coverage and recession esthetic score (RES); however, there was no significant association among root coverage, RES and various treatment modalities used for recession coverage ($p > 0.05$). Thus, future studies need to be assessed in larger sample size as well as standardized esthetic outcome measures are required to evaluate recession esthetic scores.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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REFERENCES

- Aichelmann-Reidy, M. E., Yukna, R. A., Evans, G. H., Nasr, H. F., Mayer, E. T. 2001. Clinical Evaluation of Acellular Allograft Dermis for the Treatment of Human Gingival Recession. *Journal of Periodontology*, 72(8):998–1005.

- Avinash, K., Malaippan, S., Dooraiswamy, J. N. 2017. Methods of Isolation and Characterization of Stem Cells from Different Regions of Oral Cavity Using Markers: A Systematic Review. *International Journal of Stem Cells*, 10(1):12–20.
- Cairo, F. 2009. Root coverage esthetic score: a system to evaluate the esthetic outcome of the treatment of gingival recession through evaluation of clinical cases. *Journal of periodontology*, 80(4):705–710.
- Cairo, F., Pagliaro, U., Nieri, M. 2008. Treatment of gingival recession with coronally advanced flap procedures: a systematic review. *Journal of Clinical Periodontology*, 35(8):136–162.
- Kavarthapu, A., Thamaraiselvan, M. 2018. Assessing the variation in course and position of inferior alveolar nerve among south Indian population: A cone beam computed tomographic study. *Indian Journal of Dental Research*, 29(4):405–405.
- Khalid, W. 2016. Role of endothelin-1 in periodontal diseases: A structured review. *Indian journal of dental research: official publication of Indian Society for Dental Research*, 27(3):323–333.
- Kumar, K. M., Varghese, S. 2019. Effect of Nonsurgical Periodontal Therapy on Serum Lipid Profile-Prospective Study. *Research Journal of Pharmacy and Technology*, 12(8):3664–3664.
- Mootha, A., Malaiappan, S., Jayakumar, N. D., Varghese, S. S., Thomas, J. T. 2016. The Effect of Periodontitis on Expression of Interleukin-21: A Systematic Review. *International Journal of Inflammation*, 2016:1–8.
- Murthykumar, K., Arjunker, R., Jayaseelan, V. P. 2019. Association of vitamin D receptor gene polymorphism (rs10735810) and chronic periodontitis. *Journal of Investigative and Clinical Dentistry*, 10(4).
- Panda, S. 2014. Platelet rich fibrin and xenograft in treatment of intrabony defect. *Contemporary clinical dentistry*, 5(4):550–554.
- Prato, P., Baldi, C., Nieri, M., Franseschi, D. 2005. Coronally advanced flap: The post-surgical position of the gingival margin is an important factor for achieving complete root coverage. *Journal of periodontology*, 76(5):713–722.
- Priyanka, S. 2017. Detection of cytomegalovirus, Epstein-Barr virus, and Torque Teno virus in subgingival and atheromatous plaques of cardiac patients with chronic periodontitis. *Journal of Indian Society of Periodontology*, 21(6):456–460.
- Ramamurthy, J., Visha, M. G. 2018. Comparison of effect of hiora mouthwash versus chlorhexidine mouthwash in gingivitis patients: a clinical trial. *Asian Journal of Pharmaceutical and Clinical Research*, 11(7):84–84.
- Ramesh, A. 2016. Herbs as an antioxidant arsenal for periodontal diseases. *Journal of intercultural ethnopharmacology*, 5(1):92–96.
- Ramesh, A. 2019. Esthetic lip repositioning: A cosmetic approach for correction of gummy smile - A case series. *Journal of Indian Society of Periodontology*, 23(3):290–294.
- Ramesh, A., Ravi, S., Kaarthikeyan, G. 2017. Comprehensive rehabilitation using dental implants in generalized aggressive periodontitis. *Journal of Indian Society of Periodontology*, 21(2):160–160.
- Ramesh, A., Varghese, S. S., Jayakumar, N. D. 2016. Chronic obstructive pulmonary disease and periodontitis-unwinding their linking mechanisms. *Journal of Oral Biosciences*, 58(1):23–26.
- Ravi, S., Malaiappan, S., Varghese, S., Jayakumar, N. D., Prakasam, G. 2017. Additive Effect of Plasma Rich in Growth Factors With Guided Tissue Regeneration in Treatment of Intrabony Defects in Patients With Chronic Periodontitis: A Split-Mouth Randomized Controlled Clinical Trial. *Journal of Periodontology*, 88(9):839–845.
- Thamaraiselvan, M., Elavarasu, S., Thangakumaran, S., Gadagi, J., Arthie, T. 2015. Comparative clinical evaluation of coronally advanced flap with or without platelet rich fibrin membrane in the treatment of isolated gingival recession. *Journal of Indian Society of Periodontology*, 19(1):66–66.
- Varghese, S. S. 2015. Estimation of salivary tumor necrosis factor-alpha in chronic and aggressive periodontitis patients. *Contemporary clinical dentistry*, (6):152–158.
- Wang, H. L. 2001. Comparison of 2 clinical techniques for treatment of gingival recession. *Journal of periodontology*, 72(10):1301–1311.
- Wennstrom, J. L., Zucchelli, G. 1996. Increased gingival dimensions. A significant factor for successful outcome of root coverage procedures?. A 2-year prospective clinical study. *Journal of Clinical Periodontology*, 23(8):770–777.