Scholars Journal of Applied Medical Sciences (SJAMS) **ISSN 2320-6691 (Online)**
Sch. J. App. Med. Sci., 2013; 1(6):990-993 **ISSN 2347-954X (Print)**

(An International Publisher for Academic and Scientific Resources)
www.saspublishers.com DOI: 10.36347/sjams.2013.v01i06.0075

Review Article

Smile Enhancement by Perioplastic Surgeries: A Review

Dr. Munaza Shafi[1], Dr. Reyaz Ahmed Mir[1], Dr. Prabhati Gupta[1], Dr. Nawal Khan[2], Dr. Mir Yasser Abdullah[2], Dr. Humaira Nazir[3]

[1]P.G. Student, Dept. of Periodontics, Govt. Dental College, Srinagar, India
[2]Junior Resident, Govt. Dental College, Srinagar, India
[3] P. G. Oral and Maxillofacial Pathology, Sree Sidhartha Dental College, Tumkar, India

***Corresponding author**
Dr. Munaza Shafi
Email: drmunaza.shafi@gmail.com

Abstract: Advancements in restorative dentistry have resulted in people keeping their teeth for longer, and an increase in gingival recession as the gums recede due to age, periodontal disease, thin gingiva, or other factors. The demand for periodontal plastic surgery appears to be increasing. As the demand for the esthetic dentistry is increased, dentistry has developed new techniques to meet this demand. Periodontal plastic surgery is a part of this effort. This article outlines the scope of periodontal plastic surgeries in the treatment of esthetic dental cases.
Keywords: gingiva, esthetic dentistry, dental cases, plastic surgeries, smile

INTRODUCTION

There has been a metamorphosis of sorts since Friedman's proposition of the term"mucogingival surgery" over half a century ago. This type of surgery was originally supposed to involve three key elements, namely preservation of the attached gingiva, frenectomy/frenotomy, and vestibuloplasty [1]. The last two decades, however, have seen the development of these initial criteria into a definite field of periodontal plastic surgery with the aim "to regenerate form, function and aesthetics of teeth, implants,and hard and soft tissues" [2].

Esthetics is a need for today's generation and for better acceptance in the society patient needs dental treatment. Recession is defined as the exposure of the root surface by an apical shift in the position of the gingiva. It implies the loss of periodontal connective tissue fibres along with the root cementum and alveolar bone [3]. Periodontal plastic surgery has its primary goal in restoration or enhancement of esthetic component of the supporting components of the teeth or their substitutes. Along with gingival recessions, the excessive gingival displayduring smiling is a frequent condition impairing smile esthetics [4]. This condition is frequently related with an altered passive eruption (APE) of teeth mostly due to developmental or genetic factors that may lead to the persistence of excessive soft tissue amount over the enamel surface. In fact, after the completion of active eruption phase, a passive eruption with an apical migration of soft tissue generally occurs. The long-term success of treatment will be determined by how well the etiologic factors are identified and eliminated. For example, the etiology of gingival recession must be addressed or the successof root coverage procedures will be compromised.It is important that the cliniciancombine current knowledge of the literature with personal clinical experience to determine the best treatment plan for each individual patient based on the diagnosis of the specificproblem. The elimination of gingival inflammation should always be the first step in periodontal therapy.

In patients with a high lip line at smile, excessive gingival display is often observed. It may be due to skeletal reasons or be associated with maxillary prognathism, a short upper lip, and/or altered passive eruption (APE) [5]. The first cause can be corrected if orthognathic surgery is indicated, while the last cause can be managed by aesthetic crown lengthening. In addition to the amount of gingival display, the gingival line is an equally important parameter [6]. Ideally, the gingival line should be parallel to both the interpupillary line and the incisal line. The gingival margin of the lateral incisor is often found to be in a slightly coronal position. Discrepancies of the gingival line can also be altered by orthodontic extrusion or intrusion, gingival augmentation, or aesthetic crown lengthening.

Altered Passive Eruption (APE) has been sub classified into 2 types [7]. Type I APE is characterized by an excessive amount of attached gingiva with shorter crowns while type 2 is a gummy smile associated with a normal gingival dimension. Two possible subclasses were also suggested, A and B, depending on the relationship of the osseous crest to the CEJ of the tooth (OC-CEJ). In subcategory A, OC-CEJ is greater than 1mm leading to adequate space for the insertion of the connective tissue attachment in the root surface, while in subcategory B this space is minimal and does not allow a correct biological width [8]. Possible treatment options of APE type I include gingivectomyand apically positioned flap (APF) plus osseousrespective surgery

[4]. Conversely, APE type 2 showingexcessive growth of the maxillary process generally implies amultidisciplinary treatment plan including prosthodontics,orthodontics, and periodontal surgery [4]. Type 1 APE is achallenge for the periodontist since bone resection in uppernatural anterior teeth is a risky and demanding procedure. On one hand, excessive bone resection may lead to residualgingival recession, on the other hand a limited resection andflap management may determine only a partial resolutionof APE. Furthermore, a coronal regrowth of the gingivalmargin following APF may frequently happen reducing thelength of postsurgical clinical crowns. Therefore, the lack ofa properly planned surgical procedure may cause an esthetic failure when treating APE.

Buccal or lingual recession exists when the anatomical root becomes visible and exposes cementum. A related or separate entity, papillary recession occurs when the interdental tissue falls short of the contact point [9]. Many therapies exist to cover root surfaces with success; papilla regeneration, on the other hand, is a much more unpredictable undertaking.

The prevalence of recession elevates with age. 90% of people 80 to 90 years old have at least 1 mm of exposure [10]. Recession typically occurs on the buccal in males and in African-Americans, and on maxillary canines, premolars, and first molars along with mandibular central incisors in other individuals. Indications to treat recession involve esthetic disharmony, clearly, but include hypersensitivity and defect progression as well.

Treatment of defects first concerns the arrest of any etiological factors, success relies on choosing suitable cases to treat. Miller classified recession based on the relationship between the soft and hard tissues and, more importantly, correlated each level of recession to an estimated percentage of root coverage [11]. In essence, the higher the level of interproximal bone, the better the result.

Arguably, maintenance of a robust blood supply primarily determines graft survival [12]. The adjacent and underlying bone provides the source, as do patent vessels in the surrounding mucosa. Thus, a substantial volume of bone and soft tissue become equally essential. Thick gingiva holds more intact vascular structures to feed the graft, whether the donor material is a repositioned flap or free tissue. There is no definitive set minimum measurement that denotes “thickness,” but generally, a flap that exceeds 1 mm favors success [13]. Ultimately, if revascularization fails to occur, the graft dies, so close adaptation of the graft to the root and neighboring bone is a requirement.

The final step is the selection of a suitable grafting regimen. What treatments exist? Which methods are best? There are two main types of root coverage procedures: reconstructive flaps (known also as “pedicle grafts”) and free grafts [14]. The first category uses tissue adjacent to the receded area and still attached at the base to cover the defect. This flapped mucosa may be rotated or simply advanced coronally to obscure the recession. This may or may not involve the papilla. Because there is a limitation to the amount of available adjoining tissue and of lateral slide achievable, the rotational flap treats single receded areas with relative ease but multiple sites with difficulty. A coronally advanced flap (CAF), conversely, uses the gingiva immediately apical to the recession and does not compromise tissue overlying adjacent roots, permitting it to cover a more extensive region of recession [15-17]. Processed allograft from human dermis also serves as a free source. With cellular components removed but vasculature, collagen network, ground substance, and elastic fibers remaining, acellular dermal matrix (ADM) bars the need for a second surgical site and, as it is collected from cadavers, has a virtually limitless supply. With respect to defect elimination, case reports demonstrate high cosmetic success, but again, very few controlled trials support its use, as a recent meta-analysis suggested [18]. In a retrospective analysis, Harris compared connective tissue graft to ADM mean root coverage after 4 years and discovered that only CTG sites retained a high percent of coverage at 97% [19].

Bone graft can be used as an adjunct to membranes to encourage hard tissue regrowth over the recession defect, though studies fail to show any added benefit from demineralized freeze-dried bone allograft [20, 21]. Human histology also presents minimal or inconsistent evidence of new bone and cementum from guided tissue regeneration [22]. It is unfeasible to advocate use of membrane technology over traditional techniques, though it certainly remains a viable treatment option.

If therapy failed to cover the recession 100% initially, it is still possible to observe more root coverage over time, under the condition that grafting thickened the tissue. On occasion, a 1 mm coronal displacement of gingiva, dubbed “creeping attachment,” transpires 1 year postsurgery, barring inflammation [23-25]. Contingent to a considerable degree upon thick tissue, the probability of creeping attachment increases for narrow initial defects, isolated defects, a lingual tooth position, good oral hygiene, and younger patients [26].

Fig. 1: Connective tissue graft used to cover the recession on canine

Fig. 2: Excessive gingiva removed in the process of crown lengthening to enhance the smile

Fig. 3: Alloderm used for recession coverage

SUMMARY

Periodontal plastic surgery has been used in several clinical procedures, including those traditionally classified as mucogingival surgery, with little variation in the list. As the demand for esthetic dental procedures has increased, the dental field has responded by improved techniquesand materials to address this demand. Periodontal plastic surgery can support the efforts of restorative dentist by providing healthy and esthetic gingivodental complex.

If "I want a better smile" is the chief complaint of a patient, the practitioner must scrutinize not only the face, lips, and teeth, but also the periodontal drape. Treatment may include all the dental specialties as well as some medical ones to move and reshape teeth, shift the jaws, reconfigure facial structures, and position gingiva. The conscientious dentist realizes that even subtle revision of the soft tissue frame over the teeth causes visual tension and knows that gingival recession in particular ages people. Restoration of ideal mucosal contours via root coverage is crucial to the design of a pleasing smile. Keen diagnosis and elimination of receded areas may, at times, transform a listless face into a vibrant one and, consequently, bolster the patient's self-worth, an incalculable reward .

REFERENCES

1. Friedman N. Mucogingival surgery. Tex Dent J. 1957;75:358–362.

2. Burkhardt R, Hürzeler MB. Utilization of the surgical microscope for advanced plastic periodontal surgery. Pract Periodontics Aesthet Dent. 2000;12(2):171–180.
3. Woofter C: The prevalence and etiology of gingival recession. PeriodontAbstr 1969; 17:45.
4. D. A. Garber and M. A. Salama, "The aesthetic smile: diagnosis and treatment," Periodontology 2000, vol. 11, no. 1, pp. 18–28,1996.
5. Ezquerra F, Berrazueta MJ, Ruiz-Capillas A, et al. New approach to the gummy smile. PlastReconstr Surg. 1999;104:1143-1152
6. Caudill R, Chiche G. Establishing an esthetic gingival appearance. In: Chiche GJ, Pinault A. Esthetics of Anterior Fixed Prosthodontics. Hanover Park, Ill: Quintessence Publishing Co; 1994
7. A. Volchansky and P. E. Cleaton-Jones, "Delayed passive eruption.A predisposing factor to Vincent 's infection?" Journal ofDental Association of South Africa, vol. 29, pp. 291–294, 1974.
8. J. G. Coslet, R. Vanarsdall, and A. Weisgold, "Diagnosis and classification of delayed passive eruption of the dentogingival junction in the adult," The Alpha Omegan, vol. 70, no. 3, pp. 24–28, 1977.
9. Nordland WP, Tarnow DP. A classification system for loss of papillary height.J Periodontol. 1998;69(10):1124-1126
10. Albandar JM, Kingman A. Gingival recession, gingival bleeding, and dental calculus in adults 30 years of age and older in the United States, 1988-1994. J Periodontol. 1999;70(1):30-43.
11. Miller PD Jr. A classification of marginal tissue recession. Int J Periodontics Restorative Dent. 1985;5(2): 8-13.
12. Mormann W, Ciancio SG. Blood supply of human gingiva following periodontal surgery. A fluorescein angiographic study. J Periodontol. 1977;48(11): 681-692.
13. Hwang D,Wang HL. Flap thickness as a predictor of root coverage: a systematic review. J Periodontol. 2006;77(10):1625-1634
14. Bahat O, Handelsman M. Periodontal reconstructive flaps—classification and surgical considerations. Int J Periodontics Restorative Dent. 1991;11(6):480-487
15. Allen EP, Miller PD Jr. Coronal positioning of existing gingiva: short term results in the treatment of shallow marginal tissue recession. J Periodontol. 1989;60(6): 316-319.
16. Bernimoulin JP, Luscher B, Muhlemann HR. Coronally repositioned periodontal flap. Clinical evaluation after one year. J ClinPeriodontol. 1975;2(1):1-13.
17. Prato GP, Clauser C, Cortellini P. Periodontal plastic and mucogingival surgery. Periodontol 2000. 1995;9:90-105.
18. Gapski R, Parks CA, Wang HL. Acellular dermal matrix for mucogingival surgery: a meta-analysis. J Periodontol. 2005;76(11): 1814-1822.
19. Harris RJ. A short-term and long-term comparison of root coverage with an acellular dermal matrix and a subepithelial graft. J Periodontol. 2004;75(5): 734-743.
20. Al-Hamdan K, Eber R, Sarment D, et al. Guided tissue regeneration-based root coverage: meta-analysis. J Periodontol. 2003(10);74: 1520-1533.
21. Oates TW, Robinson M, Gunsolley JC. Surgical therapies for the treatment of gingival recession.A systematic review. Ann Periodontol. 2003;8(1):303-320.
22. Harris RJ. Histologic evaluation of root coverage obtained with GTR in humans: a case report. Int J Periodontics Restorative Dent. 2001;21(3):240-251
23. Harris RJ. Creeping attachment associated with the connective tissue with partial-thickness double pedicle graft. J Periodontol. 1997;68(9):890-899.
24. Dorfman HS, Kennedy JE, Bird WC. Longitudinal evaluation of free autogenous gingival grafts.A four-year report. J Periodontol. 1982;53(6):349-352.
25. Matter J. Creeping attachment of free gingival grafts. A five-year follow-up study. J Periodontol. 1980;51(12):681-685.
26. Matter J, Cimasoni G. Creeping attachment after free gingival grafts. J Periodontol. 1976;47(10): 574-579.