

Implantology Aesthetics in Dentistry

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ABSTRACT:-

Background: People have understood the value of physical attractiveness and appearance since ancient times. Greek art meticulously examined the "divine proportion" connected to aesthetics and harmony in the disciplines of architecture, sculpture, music, and the human body and face in order to address the concept of beauty. The golden ratios also assist modern societies in defining ideal beauty. Levin introduced the golden ratios to teeth and the anterior aesthetic region in 1978. Esthetics are portrayed in the media as being connected to wellbeing and social success. In today's world, facial attractiveness is especially significant since it affects social possibilities, professional performance, and employment chances in addition to self-esteem. Restoring function and meeting patients' aesthetic needs are the primary objectives of plastic surgery around teeth and implants. Many research have discussed plastic surgery methods and surgical results (surrogate end points), and dentists have assessed aesthetic outcomes in certain trials. However, relatively few studies have included patient requirements and wishes.

Keywords: Aesthetics, Periodontics, Implantology

INTRODUCTION: -

The smile is a crucial focus point for drawing attention and a crucial component of a person's overall aesthetic appeal. In a face-to-face interaction, a person's eyes first look to the other person's eyes before moving on to their mouth and grin. As a result, many patients now frequently request orthodontic and other types of dental treatment for reasons related to facial aesthetics and having a beautiful smile. According to the American Academy of Cosmetic

Dentistry, between 86 and 89% of dental patients requested treatment to boost their physical beauty and self-esteem in 2013 and 2015. Fixing a previously unsuccessful aesthetic procedure, future events (like weddings), restorative or health-related events (such accidents or injuries), and a desire to look and feel younger were among the justifications given for dental treatment.

The connections between teeth, lip framework, and gingival scaffold, according to Garber and Salama, are what make a smile distinctive. The dental factor involves the position, colour, and shape or profile of the teeth. The aesthetic zone, which includes the lip form and the frame of a smile, is referred to as the lip framework. Based on how much of the upper lip covers the teeth, three levels of lip lines were defined: high, medium, and low. The periodontal tissues' health and integrity are restored and maintained by the gingival scaffold. However, the aforementioned mile criteria are not always sufficient in terms of aesthetics. Even if the gingival margin is healthy, it might still look unattractive, so it may be vital aesthetically to restore the harmony and continuity of the free gingival margin.

Surgical approaches have improved aesthetic outcomes and functional restoration over the past few decades as the aesthetic smile has grown in importance to periodontal and implant therapy. The clinical advice and technical details of periodontal and implant surgical techniques applied to the aesthetic zone are provided in this edition of Periodontology 2000. The most recent research and developments on the following topics are reviewed by seasoned researchers and clinicians from various sub disciplines of periodontology: gingival recession treatment with or without papilla elevation; clinical crown lengthening in the natural dentition and in a restorative context; periodontal regeneration around natural teeth; and soft-tissue augmentation in edentulous areas. In a similar manner, specialists in several fields of implant science address aesthetic outcomes with single and multiple implant rehabilitation, alveolar ridge preservation, implant positioning, and instant implant insertion in the aesthetic zone. Additionally included are peri-implant soft-tissue dehiscence covering as well as horizontal and vertical bone augmentation.

Cosmetic periodontal surgery

Periodontal therapy known as mucogingival therapy is used to repair problems in the position, quantity, and/or shape of the soft tissue and underlying bone around teeth and implants. [6] Mucogingival treatment as an idea has evolved over time. When Friedman coined the term "mucogingival surgery" in 1957, it referred to all surgical procedures, without regard to aesthetics, intended to preserve or enhance healthy soft tissue (maintenance of attached gingiva, removal of aberrant frena or muscle attachments, and increase in vestibulum depth). The term "periodontal plastic surgery," which later evolved from "mucogingival surgery" [13] and was embraced by the international scientific community in 1996, refers to surgical procedures done to prevent or treat anatomical, developmental, traumatic, or disease-induced defects of the gingiva, alveolar mucosa, or bone. Gingival augmentation, root covering, crown lengthening, correction of cosmetic defects around

implants, gingival preservation at ectopic tooth eruption, excision of aberrant frena, avoidance of alveolar ridge collapse, and augmentation of the edentulous ridge were all surgical goals.

How do patients perceive the rootcoverage procedure?

Which surgical approach is best?

Buccal gingival recession, which is more common in people who practise good oral care, can make their roots sensitive and raise aesthetic concerns. Using photographs or an outcome rating scale to assess colour match, tissue texture, contour and contiguity, and keloid scar tissue, Mounssif et al. [16], in this volume of Periodontology 2000, describe surgical techniques to achieve complete root coverage, reduce gingival recession, or increase keratinized tissue. The choice of therapy was mostly based on the dentists' expertise and practical experience, as well as economic considerations. [17] In professional practise, patients' perceptions of their appearance and their actual need for treatment are frequently underestimated, and they are hardly ever acknowledged in periodontal literature. [1-5]

The main concern of patients regarding periodontal plastic surgery seems to be the second surgical site (palatal donor site). Surgical harvesting techniques using primary wound closure, smaller and thinner connective tissue grafts [15] or substitute materials (allograft or xenograft) can help minimize postoperative pain and discomfort. Shorter surgical intervention time and use of analgesics seem also to reduce postoperative complications.

Gummy smile cosmetic procedure; modified passive eruption

A mucogingival deformity surrounding teeth has been identified by the American Academy of Periodontology as altered passive eruption. [18] Gummy smiles can result from altered eruption and indicate visible gingiva that is more than 2 millimetres exposed from the inferior edge of the upper lip. [11] The aesthetics of the smile and the patient's self-esteem may both benefit from the correction of excessive gingival show. [13] In this volume of Periodontology 2000, Mele et al. describe two primary types of changed passive eruption, each with two subgroups. The height of the keratinized tissue varies between Types 1 and 2, and between Subgroups A and B, there are variations in the distance between the cemento-enamel junction and the alveolar bony crest. The mucogingival junction is placed coronally near, or at, the level of the cemento-enamel junction in type 2, whereas type 1 has keratinized tissue that extends apically beyond the cemento-enamel junction. [19] In subgroup A, the alveolar bone crest must be sufficiently separated from the cemento- enamel junction in order for connective tissue to be able to attach to the root cementum; in subgroup B, there is no room for connective tissue attachment because the bony crest is located at or coronally to the cemento- enamel junction. [17]

Crown lengthening for cosmetic purposes: a restorative and surgical theory

A popular surgical treatment in periodontal practise is clinical crown lengthening. According to a recent survey by the American Academy of Periodontology, 10% of all periodontal surgical treatments were carried out to lengthen the clinical crown. Crown lengthening for aesthetic purposes in the anterior area, however, has gotten comparatively little attention compared to crown lengthening in the posterior area, which has been the subject of numerous research. Only a few controlled clinical trials on aesthetic crown lengthening were found by Marzadori et al. [9], and there was no systematic review. This makes it more difficult for clinicians to make decisions. Designing the vestibular and palatal flaps, the quantity of ostectomy and osteoplasty, and flap suturing are all important factors to take into account during surgical and prosthetic procedures for aesthetic crown lengthening. The surgical techniques involve thinning of soft and hard tissues to reduce soft tissue rebound and installation of a temporary restoration during healing to guarantee the desired aesthetic result. Three weeks after surgery, tooth preparation and temporary relining are typically carried out.

Why, when, and how to use streamlined techniques for treating intraosseous abnormalities in aesthetic regions

Deep intraosseous deficiencies should be treated in order to enhance the prognosis of the impacted teeth, ideally by regenerating the destroyed periodontal tissues. Combining these two therapeutic end ends can be difficult in areas that are aesthetically sensitive since the maintenance (or enhancement) of pre-existing aesthetics is just as crucial as the regenerative objectives. Intraosseous abnormalities have been treated in a "simplified" manner over the years, promising less postoperative pain and suffering, fewer negative results, and reduced costs.

Soft tissue augmentation in edentulous areas: aesthetics

When teeth are lost, the surrounding area may develop functional and aesthetic flaws, such as deformities of the hard and soft tissues in the apicocoronal and buccolingual directions, which may make prosthetic rehabilitation in aesthetically delicate locations more challenging. Although prosthetic devices like gingival-like porcelain or apicocoronal expanded pontics may be functionally acceptable, they frequently look artificial, which is obvious when smiling.

Another crucial area for research is the creation of connective tissue replacements to lessen the morbidity associated with collecting soft tissue grafts from a donor site. The results of three-dimensional detection are encouraging despite the lack of consistency in the current technologies for morphologic and metric assessment of tissue changes following surgery (141). But their application in clinical settings is constrained by their high price and radiation exposure (in the case of cone-beam computed tomography).

Papilla-free cosmetic surgery in periodontics and implantology

Treatment methods for soft tissue abnormalities using mucogingival procedures are constantly changing. Early study focused on quantifying changes in keratinized tissue or root coverage [20], but more recent research considers patient satisfaction along with qualitative aesthetic success factors such tissue colour, texture, and form. Tunneling flap techniques have been developed for use in periodontal and peri-implant plastic surgery because to the demands of aesthetics, blood supply preservation, and wound stability. In this issue of Periodontology 2000, Zuhr et al. [16] demonstrate how tunnelling surgery can result in quick and uneventful wound healing and excellent aesthetic results by avoiding obvious surface incisions.

Single-tooth replacement in aesthetics

Traditional methods of evaluating the success of a single implant procedure in the aesthetic region relied only on physical tissue measurements; however, more recently, patient feedback and aesthetic assessment have become crucial components of the overall assessment of implant therapy. [13] Perfect fusions of the treated area with the surrounding tissues and the prosthetic crown with the native dentition are necessary for the desired aesthetic result. In this issue of Periodontology 2000, Stefanini et al. examine indicators to ascertain the aesthetic result. Early aesthetic indices only considered soft tissue-related factors, but later, more sophisticated indices (which took into consideration both soft tissue and prosthetic factors) were established. Although the optimum aesthetic measure for implant research is still unknown, the pink/white aesthetic score is widely applied. [7-10] Idealistically, the patient's rating and the dentist's assessment of aesthetics should align, however investigations have revealed a mismatch with no clear explanation.

Does the maintenance of the alveolar ridge enhance the final aesthetic result?

The three therapeutic choices listed below are included in treatment planning, which is best initiated prior to tooth extraction, as stated by Jung et al. in this volume of Periodontology 2000. (i) rapid implant implantation, (ii) immediate tissue healing, (iii) preservation of the alveolar ridge to prevent alterations in both soft and hard tissue Three stages of healing are linked to the preservation of the alveolar ridge: the soft tissues (soft tissue preservation after 6 to 8 weeks of healing after tooth extraction); the hard and soft tissues (hard and soft tissue preservation after 4-6 months of healing after tooth extraction); and the hard tissues (hard tissue preservation after > 6 months of healing after tooth extraction). [3] The goal of soft tissue preservation procedures, which are used during tooth extraction with a flapless approach or a limited coronal-flap advancement, is to increase the amount and quality of soft tissues. To improve wound closure, a resorbable membrane, free gingival graft, soft-tissue substitute, or subepithelial connective tissue graft may be employed.

Research is necessary to ascertain the long-term effectiveness of alveolar ridge preservation in locations with significant alveolar defects and missing buccal bony plates, as well as for implant treatment when alveolar ridge preservation is used or not.

Implant placement in the cosmetic area

For many years, the only indicator of therapeutic effectiveness was the survival rate of the implant fixture. However, as implant therapy advanced, patients began to seek good aesthetics as well. The timing of implant placement and whether immediate, early, or late insertion after tooth extraction is the optimal strategy are topics covered by Testori et al. in this volume of Periodontology 2000.

Immediate implant placement is preferred by patients because it is less stressful, requires fewer surgical operations, and can successfully insert implants even in infected areas. However, instantaneous implant placement needs skilled operators and is technique-sensitive. The soft tissue and bone anatomy are obviously crucial when choosing the type of implant therapy, but other important factors can also include changed passive eruption, altered root shape of neighbouring teeth, and even skeletal growth. The aesthetic result may also depend on the abutment design. Traditional restorative abutments had a wide horizontal preparation finish; however, more recent prosthetic ideas have resulted in the development of abutments with a vertical (shoulder-less) finishing line. [8] Shoulder-less abutments increase the possibility of producing a restoration crown with a cervical contour that is more closely related to that of a natural tooth by allowing the long axis of the implant to point at the incisal edge of the future restoration. The development of new implant treatments that are straightforward, minimally invasive, and yield highly aesthetic results may soon be enabled by novel diagnostic techniques to direct three-dimensional location of implants and novel abutment shape.

With provisionalization and quick implant insertion, how may the aesthetic result be improved?

The preservation of current osseous and gingival structures is one of the most desirable aspects of rapid implant implantation and provisionalization. According to Kan et al., patient factors (relationship between hard and soft tissues, gingival biotype, and/or sagittal root position in the alveolar bone) and therapeutic factors (three-dimensional position and angulation of the implant, abutment contour, and/or provisional restoration) are all related to the aesthetic success of immediate implant placement and provisionalization. Only experienced clinicians should execute the flapless technique, which lessens discomfort and is typically combined with guided implant surgery templates. Studies demonstrate the significance of bridging the space between the implant and the alveolus to stop bone loss following tooth extraction [14], and soft-tissue augmentation is advised when the patient has a thin biotype. The combination of all the many elements mentioned above determines whether immediate implant placement will be successful in terms of aesthetics. The risks of

mucosal recession are extensively discussed in the literature and this kind of surgery should only be carried out in accordance with stringent clinical guidelines and by doctors with the necessary training. The future of this method is closely related to the diagnostic tools' accuracy and precision as well as their capacity to direct and streamline implant operations.

Treatment of bony ridge deficiencies aesthetically

The emphasis in implantology has recently shifted away from osseointegration [2], which is obviously still essential to ensure adequate implant integration, and toward aesthetic and functional elements of implant treatment [15]. After then, the prosthetic component of implant-supported rehabilitation becomes the focal point for placing the implant and directing subsequent therapeutic stages. According to Chiapasco & Casentini [12], a prosthetic-driven approach to implantology helps choose the optimum reconstructive procedure by clearly defining the size and shape of ridge deficiencies. In a three-dimensional radiograph, different classes of ridge deficiencies can be identified, along with the best course of therapy for each. Implant insertion is typically paired with soft- and hard-tissue augmentation in classes I and II, which have, according to Zucchelli et al., the lowest degree of ridge deficiencies, but can otherwise proceed right away. Ridge atrophy is more severe in Classes III and IV, necessitating bone grafting and delaying implant placement. To identify the type of ridge defect therapy that yields the best long-term beneficial result, research is required.

Aesthetic results after adding vertical ridges

Complex treatment planning is frequently required for implant placement in the aesthetic zone. Vertical alveolar ridge deficits are likely the most difficult instances to treat because prosthesis rehabilitation and implant implantation frequently require ridge repair first. In this volume of Periodontology 2000, Rocchietta et al. cover a number of methods for achieving vertical alveolar bone growth, but guided bone regeneration continues to be the most popular and well studied reconstructive procedure. Guided bone regeneration has fewer downsides than other methods because it enables a three-dimensional restoration, which is essential for proper implant placement and aesthetic results. However, although being widely utilised in clinical practise, the vertical guided bone regeneration approach has a steep learning curve and is extremely operator-dependent. Emphasis must also be placed on the patient's expectations and desires, as well as a correct study of the changes to the hard- and soft-tissue after tooth removal. There are several metrics for categorising the aesthetic results of implant-supported restorations, and interest in how patients feel about implant therapy is gradually rising. Unfortunately, there has not been as much research interest in the treatment of severe bone atrophy.

How can we fix the aesthetically unappealing condition of soft tissue dehiscence surrounding implants?

The most aesthetic issue with implant therapy following tooth loss may be buccal dehiscence, which can lead to a large prosthetic crown and/or implant/abutment exposure, regardless of

whether this is delayed, early, or immediate implant placement and loading. Overall, it can be said that treating soft tissue dehiscence with mucogingival implants results in less tissue coverage than treating gingival recession with natural teeth. However, effective prosthetic management seems to enhance soft-tissue covering before and after mucogingival surgery, similar to what has been observed with teeth. [12-15] To enable readers to verify and contrast study results, evaluation of the effectiveness of treatment for soft-tissue dehiscence surrounding implants should use objective measurements.

CONCLUSION:-

Restoring function and meeting patients' aesthetic needs are the primary objectives of plastic surgery around teeth and implants. Few studies have taken into account patient demands and desires (true end points), while many have reported on plastic surgery procedures and surgical outcomes (surrogate end points) and dentists have evaluated aesthetic results in certain trials. Patients typically assess cosmetic results more favourably than professionals do, therefore clinicians' aesthetic judgement may not always be aligned with patient satisfaction. The few research that are now available on patient satisfaction deal with single-implant placement or gingival recession treatment. In order to measure patient satisfaction with regard to aesthetics, psychological problems, and morbidity after plastic surgery around teeth and implants, there are no good and validated assessment questionnaires available. By evaluating such outcome criteria, dentists and patients may gain a better understanding of crucial elements of periodontal and implant treatments. This evaluation may help strengthen the patient-dentist connection.

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