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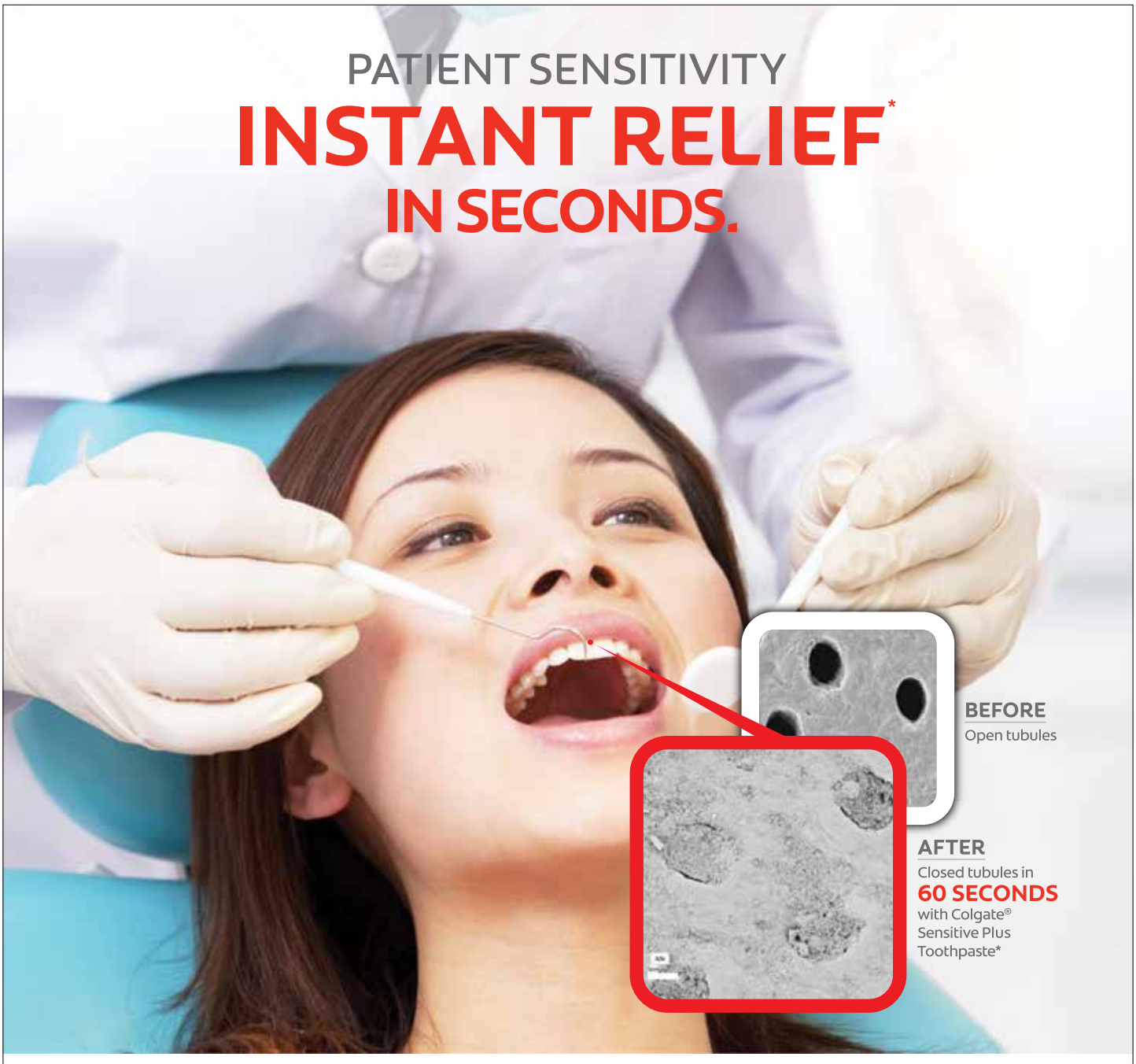

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FROM THE
EDITOR'S DESK

Dear Colleagues,

We wish you all, our dear readers and well-wishers, a very peaceful, healthy and corona-free New Year 2021. I feel indeed happy and pleased to be communicating with you all about how best we can meet the challenge of ensuring quality and substance in the articles being published. Excellence in dentistry, indeed, remains a big challenge, particularly in the field of research.

Everyone across the globe had a dreadful time owing to the pandemic, dental healthcare service providers in particular.The past year has brought unprecedented problems to the dental fraternity that no one ever was prepared for it. Everyone now is in a speculative mood about what the future holds once the pandemic is behind us. It is very difficult to predict what the future holds for dentistry. In all probabilities we have to live with the virus.

We are perhaps looking at a future where there are possibilities of pandemics becoming a part of our life and health becomes a central theme in government policies.

It is our privilege and responsibility as dental healthcare providers to promote good and healthy practice by sharing information and ideas based on our experience and skills. Hence, the role of the clinician as an important member of the research team has never become more important than now.It's our endeavour to ensure that JIDA mirrors effectively the fruits of dental research in the country to contribute to providing quality dental services to the community.

Best Regards,
B.V. Ramana Reddy
Hon. Editor

FROM
IDA Head Office

Ravindar Singh

Ashok Dhoble

Dear Colleagues,

The incidence of oral diseases has been growing on the back of changing lifestyles and apparent neglect of dental hygiene. If experience of Covid-19 pandemic is of any guide, dental hygiene is an important part of preventive measure of infection. A healthy oral cavity acts as a barrier against all kinds of diseases, and this is very true of Covid-19 as well. It has proven that research, and dental research in particular, has a significant role to play in alleviating human sufferings and improving the quality of life. In the shortest period the virus had its sway and with little evidence researchers have come out with the findings that highlighted the importance of improved oral hygiene as being capable of arresting the progression of the deadly virus.It's our endeavour to ensure that JIDA mirrors effectively the fruits of research to contribute to providing quality dental services.

We wish all our readers a Wonderful and Healthy New Year 2021.

Ravindar Singh
President, IDA

Ashok Dhoble
Hon. Secretary General

Letters to the Editor

Sir,

The study on quit rate on tobacco cessation was indeed something quite novel and I must congratulate JIDA for publishing such articles (See "Proactive Telephonic Follow-up Calls by a Tobacco Cessation Clinic (TCC): Optimization for the Number of Calls"by Rakesh Guptaand four others, JIDA, Vol. 14 Issue No.8, August 2020). In fact studies of this type is called for to strengthen the national efforts to improve the quit rate. In fact, despite specific national effort for over a decade, the quit rate as per published reports on tobacco cessation from Indiahas ranged from 2.6% to 28.6%. One of the major challenges faced to achieve a reasonably higher quit rate has been an inability to comprehensivelyfollow-up all those treated for quitting tobacco use either.It was in this respect that the study to determine an optimum number of follow-up telephonic calls to be made proactively post the cessation treatment assumes importance.Achieving a quit rate of 42.9% through the proactive follow-up calls reinforces its perceived utility in tobacco cessation. Integration of the quitmethodology with regular proactive follow ups both in terms of specific days and months respectively reinforces its perceived utility in tobacco cessation.

- Dr. Prerana

Sir,

The Study on "Evaluation of efficacy of chemo-mechanical method of caries removal using Brix- 3000 compared to conventional excavation with burs: A randomized controlled trial" by JananiBalachandran and three others makes interesting reading.The performance of double blind randomized control trial using a split mouth design where patients with bilateral deep carious lesion underwent treatment with BRIX 3000 on one side and high speed bur excavation with aerotar on the contralateral side was done to compare the efficacy of BRIX 3000 with the conventional high speed caries excavation using aerotar. The criteria assessed were the time required for each protocol to be completed and pain perceived by the patient at the end of caries excavation.The current study reveals that BRIX 3000 can be considered as an effective adjuvant for caries removal in deep carious lesions as compared to aerosol inducing high speed rotary techniques.

- Dr. Fernandes

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These should aim to provide the reader with a balanced overview of an important and topical subject in dentistry. These should be systematic and critical assessments of literature and data sources, emphasizing factors such as cause, diagnosis, prognosis, therapy, or prevention. Systematic Reviews and Meta-analysis would be preferred over narrative reviews.

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JIDA

Esthetics

Essentials of Esthetic Dentistry

Sneha R. Nair[1]

1. BDS
Mumbai

Access this article online

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Abstract

Aesthetic dentistry is a complex subject. In many ways it requires different skills from those needed for disease-focussed clinical care. Yet, in other ways,aesthetic dentistry is a part of everyday dentistry. The team which has created this series shares the view that success in aesthetic dentistry requires a broad range of additional skills. Dentistry can now offer improved shade matching through to smile design to reorganising the smile zone.I intend this to challenge your thinking and approach to the growing subject area of aesthetic dentistry, particularly by showing different management of common clinical situations. We do not need to rely on a single formula to provide a smile make-over, promoting only one treatment modality where both the dentists and their patients are losing out; the patient losing valuable irre-placeable enamel as well as their future options.

Key Words

Aesthetic dentistry, minimal intervention, cosmetic dentistry, dentin exposure.

Introduction

Aesthetic dentistry is a global phenomenon that continues to grow and expand. To practise successful aesthetic dentistry, practitioners must understand the art and science of the discipline and be up to date and competent in the use of modern materials and techniques. In addition, the successful practice of aesthetic dentistry requires good communication skills, empathy with the aesthetic con-cerns expressed by patients, and the ability to build a good rapport between the patient and the various members of the dental team.

Patients contemplating changes to their dental appearance, in particular their smile, wish to have their treatment provided by a practitioner they can trust, in an environment that they find reassuring and that gives them confidence. It is an important foundation on which to build the knowledge and understanding required to practise effective, patient-pleasing, minimal intervention aesthetic dentistry. If you do not know the difference between aesthetic and cosmetic dentistry, need to know how to carry out a comprehensive examination and assessment of a patient seeking aesthetic dental care, harbour uncertainties about the different approaches to enhancing dental attractiveness and about related ethical considerations, and have unanswered questions in respect to the application of contemporary materials and techniques in aesthetic dentistry, then this book will be of great value to you.

Being able to consistently provide high-quality aesthetic dentistry that pleases patients, will survive the test of time and, as described in the introductory chapter to this book, makes others smile is very rewarding. Realising this goal requires good knowledge and understanding, meticulous investigation, planning and execution of all relevant procedures, strong team working and excellent patient relationships, as well as professionalism and clinical acumen in all aspects of aesthetic dentistry.

Materials and Methods

Aesthetics versus Cosmetics

What is the difference between aesthetic and cosmetic dentistry? The terms 'cosmetic' and 'aesthetic' dentistry ('esthetic' being used more widely on the international stage than the 'aesthetic' spelling) have been and continue to be employed interchangeably, causing much confusion in the profession and the population in general. The

Fig.3: An example of a young patient with an esthetic problem. The problem could be managed with: (a) post, core and crown, or (b) internal bleaching and possibly a composite veneer, Which is likely to suit in earlier tooth loss?

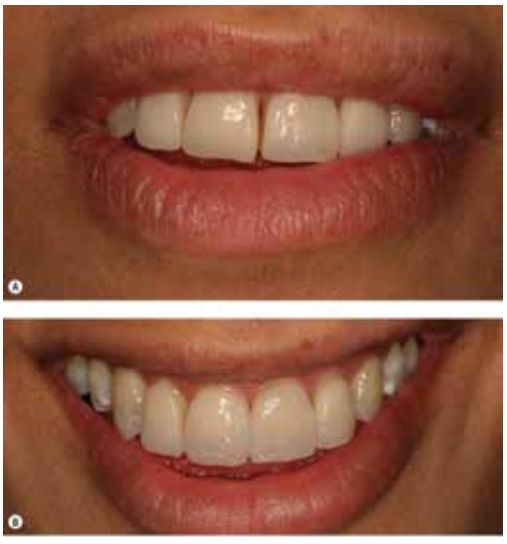

Fig.4: Using mock-ups. A. Preoperative view of a patient with esthetic concerns in relation to the anterior maxillary dentition. B. Completed intraoral mock-up as part of the information provided to the dental technician.

Fig.5: An example of a reverse smile arc associated with tooth wear

situation is compounded by the overlap between various aesthetic and cosmetic treatments and by the fact that all aesthetic and cosmetic procedures in medicine and surgery are considered to fall under the single umbrella of 'cosmetic practice'.

Cosmetic: This encompasses reversible procedures to attain a so-called optimal appearance that is sociological, cultural, geographic and time-dependent. Trends are time-dependent; what is acceptable and fashionable today can and will often-times be considered unacceptable and old-fashioned tomorrow.

Aesthetic: This demands tailoring and customisation to individual preference. It is a fluid and dynamic entity, but it is based on the patients' expectations, psychology and subjective criteria.

Patient history

The taking of a patient history should commence by recording essential data such as name, gender, date of birth, address and contact details, together with any information in respect of special needs when attending for dental care.

Presenting complaints and concerns

The goals of aesthetic dental care include the need to:

- Meet the realistic expectations of the patient
- Attain long-term functional and aesthetic stability
- Achieve the treatment goals through the application of minimal intervention approaches.

In order to begin to fulfil these goals, a comprehensive and contemporaneous patient history must be carefully obtained and appropriately documented. Above all else, it is of paramount importance that the practitioner listens attentively to the complaints and concerns of the patient, and complements the proposed history and examination procedure as necessary, so that all the issues raised by the patient are fully investigated. Treatment planning should not be commenced until such time as all investigations and related enquiries have been completed.

Spend sufficient time finding out why your patient is seeking aesthetic change. According to Chalifoux, there are three categories of 'dental aesthetic imperfections that encourage patients to seek aesthetic intervention.

These relate to anomalies in tooth:

- colour
- position
- shape.

Aesthetic imperfections in colour may be caused by, amongst other factors, the presence of stains, craze lines, dentine exposure, discolouration of residual tooth tissue by pre-existing and existing restorations, and alterations in the optical properties of the remaining tooth tissues associated with ageing and wear, together with tooth discolouration associated with dental caries and loss of vitality of the tooth. The discolouration was multifactorial, including that acquired from the presence of stained restorations with secondary caries and leakage. While many practitioners would, in all probability, consider the defective restorations, possibly together with the incisor crowding, to be the most likely causes of the patient's aesthetic concerns, careful assessment revealed that it was actually the relatively trivial circular area of white opacity present in the incisal third region of the upper right central incisor (UR1) that was causing dissatisfaction, highlighting an obvious difference in perception between the patient and the dentist.

Positional concerns may be associated with the presence of dental diastema, rotations and tipping of teeth, crowding, supra-eruption or intrusion, anomalies in arch shape and size, and, of course, loss or absence of teeth from the dental arch.

Unilateral positional anomalies that adversely affect symmetry tend to give rise to more aesthetic concerns than bilateral anomalies, particularly if the bilateral anomalies are symmetrical.

Morphological anomalies that may be associated with aesthetic concerns include the presence of fractures, cracks, tooth wear – abrasion, abfraction, attrition and erosion, dental caries, surface defects such as hypoplasia, and variations in surface texture that may vary from limited to severe, as may be seen in patients with congenital conditions such as *amelogenesis imperfecta*. Other congenital anomalies that may contribute to aesthetic dissatisfaction include unusual crown dimensions – macrodontia and microdontia, and variations in root diameter dimensions. Congenital malformations of the

teeth, including peg shape, dilacerations, fusions and germination, are further examples of morphological anomalies that may give rise to aesthetic concerns.

How pleased/satisfied are you with your smile?

Please indicate along the neighbouring line

|----------|

Not pleased Very pleased

How pleased/satisfied are you with the shape of your lips?

|----------|

How pleased/satisfied are you with the shade (whiteness) of your teeth?

|----------|

How pleased/satisfied are you with the evenness of your teeth?

|----------|

How pleased/satisfied are you with the looks of your gums?

|----------|

Are you aware of having receding gums? Please circle

Yes / No

If you have answered yes, how much does it affect your smile? Please indicate along the neighbouring line

|----------|

(Not at all) (Very much affected)

Do you have crooked teeth? Please circle Yes / No

If you have answered yes, how interested are you in having orthodontic treatment to correct the crooked teeth?

|----------|

(Not interested) (Very interested)

Section 2

How important are the following features for an attractive face? Please indicate along the neighbouring line in each case

Hair

|----------|

(Not important) (Very important)

Hairline |----------|

Eyes |----------|

Eyebrows |----------|

Nose |----------|

Skin |----------|

Ears |----------|

Lips |----------|

Teeth |----------|

Chin |----------|

Shape of head |----------|

Discussion

Nature of treatment

There are three factors that determine the direction that the treatment plan takes:

1. patient factors, including expectations and attitudes, socioeconomic factors, ability to control disease risk factors, medical history and ability to attend and pay for treatment
2. dentist factors, related to experience, training, type of practice and ethical philosophy, together with ability to understand the needs of the patient
3. dental factors, including periodontal status, endodontic status, quantity and quality of remaining tooth structure, length of span of any edentulous spaces, and angulation and position of any abutment teeth. If patients cannot or will not comply with a prevention programme, then they may be unable or unwilling to maintain complex aesthetic dentistry. Your work may fail and you may be responsible, not having informed or educated the patient suitably prior to providing the treatment.

Periodontal factors

Periodontal assessment is mandatory, even in what might seem to be a straight-forward case involving simple changes to one or more teeth. Bleeding on probing and deep probing depths are indicative of the presence of periodontal disease.

Approximately 20% of the population are susceptible to attachment loss of the supporting tissues, with half of these people able to reduce the damage through meticulous oral hygiene. The risk factors for periodontal disease are:

- plaque
- smoking
- medical conditions affecting the immune system, such as diabetes.

The ability to control these risk factors will affect the progression of the periodontal disease. Control of plaque will have the most important effect on the prognosis of periodontal breakdown.

Anatomical difficulties, such as furcation involvement and deep probing depths, can make access difficult for the patient and it will be hard to maintain good levels of plaque control. Aesthetic restorations, such as labial veneers, often demonstrate a combination of poor marginal fit with small overhangs, bulbous contours and emergence angles, exposed composite lute and rough edges. All of these features provide a safe haven for bacteria, which oral hygiene measures cannot reach. Many photographs in dental magazines illustrate this: showing images of patients with good preoperative gingival health and a mild aesthetic problem are shown side by side with postoperative images showing multiple bright uniform veneers, potential over-treatment and a loss of gingival health.

Recession also affects the appearance of the teeth and is more likely with thin gingival biotypes. Crown preparation on such elongated teeth is difficult and more destructive. Minimal intervention (MI) techniques are more appropriate.

Margins should always be carefully chosen and patient consent must be given prior to tooth preparation. All oral tissues should be free from disease prior to complex restorative work.

Overhangs and poorly fitting crowns should be removed, or trimmed as a short-term measure, to aid the patient to clean more effectively supra- and subgingivally.

Endodontic status

Aesthetics can be dramatically affected by non-vital teeth, both restored and unrestored. Determining the apical and pulpal status of teeth is therefore an important part of the oral assessment.

Non-vital teeth restored with posts make unpredictable abutments and often compromise aesthetics. Colour change is usually present, including darkening visible through the gingival tissues. Moreover, there is evidence to suggest that approximately 13% of teeth prepared for full-coverage crowns became non-vital postoperatively, compared to approximately 5% for partial-coverage restorations. Cheung et al.[9] reported that over 50% of anterior bridge abutments had loss of pulp vitality – another good reason to adopt MI techniques. However, endodontically treated teeth often require occlusal protection. This is the focus of Volume 3 in this series.

The marginal ridges of posterior teeth are important in maintaining the strength of teeth undergoing endodontic procedures. The loss of one marginal ridge reduces tooth rigidity by approximately 5%, whereas the loss of both marginal ridges reduces rigidity by approximately 60%.[10]

Where post and cores cannot be avoided, it is best not to use such teeth as abutments in bridge design. In single, post-crowned tooth units, as much sound tooth as possible should be retained as a ferrule. Parallel-sided serrated cemented posts allow for maximal retention with the least stress induced to the remaining root. Approximately 3–5 mm of guttapercha should be left in the root canal to prevent leakage into the peri-radicular tissues.

Where the pulp status is questionable and extensive restorative work is planned, it may be prudent to carry out root canal treatment beforehand – elective endodontics – to prevent opening up of the tooth afterwards. It is known that coronal seal is more important than the technical quality of the endodontic obturation.

Conclusion:

Overview of techniques for aesthetic tooth correction Non-invasive options. Aesthetic dentistry can sometimes be non-invasive, although there are only a few examples of this:

- Tooth-whitening – the provision of 6% hydrogen peroxide and 10% carbamide peroxide gels in close-fitting trays for home use is a proven and popular technique.
- Orthodontics – the use of aligners is popular, although fixed appliance therapy remains the gold standard.
- Adhesive restorations – this includes resin-bonded bridges without tooth preparation.
- Direct bonding of composite resin to reshape teeth, close spaces and cover defects – this is increasing in popularity as adhesives, composites and techniques improve.

- Clip-on acrylic resin overdenture-type devices, such as the Snap-On Smile (Denmat) – these can be effective where existing teeth are small or spaced.
- Removable prostheses without tooth preparation.

Minimal intervention options

In many cases, some irreversible tooth reduction is required but is considered to constitute minimal damage:

• correctly designed veneers, using a variety of techniques – direct composite,

laboratory composite, ceramic or semi-direct systems

• adhesive bridges on minimal preparations

• removable prostheses with tooth preparation.

Significant tooth reduction

Conventional aesthetic dentistry requires significant tooth reduction.

Prepared ceramic veneers

The tooth will require some reduction to accommodate the cervical 0.3 mm ceramic edge; otherwise, a ledge will be created. On many teeth, this cervical reduction will breach the enamel–dentine junction (EDJ). Full labial coverage is required, as matching ceramic to enamel on a visible surface is close to impossible. Veneers are less destructive than crowns and offer aesthetic control of labial and incisal surfaces. Where a slice preparation is carried out, the clinician can also control the proximal surfaces and alter tooth width, as well as contour to eliminate gingival black triangles.

Crowns

These are much more destructive of tooth tissue and should rarely be placed on teeth not already crowned. Pascal Magne has, for the past decade, stated in lectures that there are no indications for the initial placement of crowns on teeth, and the author tends to agree with this view. There is almost always a better, more conservative restoration (for example, a veneer) or treatment (for example, orthodontics). Massive tooth reduction of the type necessary for a crown will increase the likelihood of devitalization and the need for endodontics and a post, greatly reducing the tooth's chances of survival. A clinician may be tempted to crown an anterior tooth if every surface requires contour change; however, this can be achieved by the MI approach (see Fig. 5.5).

Conventional bridges (fixed prostheses)

These are less often indicated nowadays, given the risk of failure and poor salvage potential. Design should be minimal wherever possible, observing the published data, which indicate that two-unit bridges – one pontic and one retainer – offer the best survival in most cases.

Implant-retained restorations

These are often seen as the treatment of choice for a missing tooth in an intact healthy arch, provided local and systemic factors permit. However, implant failure and its devastating implications and high cost of salvage must be taken into account at the initial treatment planning stage.

In aesthetic dentistry, maintenance care is important to long-term clinical success.

Aesthetic restorations and prostheses, in a similar manner to all other forms of restorations and prostheses, should be monitored and refurbished or repaired to delay, if not prevent, replacement. The need for ongoing maintenance of aesthetic restorations and prostheses must be explained to and accepted by the patient prior to embarking on initial provision. Typically, once an aesthetic dental care patient, always an aesthetic dental care patient, but hopefully a patient who can be managed on an ongoing basis by minimal intervention approaches and

procedures.

Conflict of Interest: None

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Periodontics

Efficacy of Ozone Oil in treating Chronic Periodontitis as an Adjunct to Scaling and Root Planing as compared to Scaling and Root Planing alone

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Abstract

Introduction

Ozone is a colourless gas form of oxygen and is present in the atmosphere. It effectively kills bacteria, fungi, viruses and parasites at a lower concentration. It is a powerful oxidizer. Ozone has been proposed as an alternative oral antiseptic in dentistry. There are many known actions of ozone on human body such as immunostimulating, analgesic, antihypoxic, detoxicating and antimicrobial properties. Because of these Antibacterial, Anti-inflammatory and Healing promoting factors of Ozone, it was conceptualized to be used in a dissolved form as Ozonated Olive Oil to treat patients suffering from Chronic Periodontitis.

Aim

- To compare the clinical efficacy of local delivery of ozone oil as an adjunct to scaling and root planing versus scaling and root planing alone in the treatment of chronic periodontitis.

Study Design

- The study was a split mouth study (Randomized Controlled Clinical Trial). In each recruited patient, teeth with probing pocket depth of 5mm to 7mm was allotted to either:

1. Group A - 15 Test sites (Treated with scaling and root planing + ozonated oil)
2. Group B - 15 Control sites (Treated with scaling and root planing only)

Results

Results were compiled and data analysed using SPSS software.

Conclusion

This study helped evaluate the efficacy of ozonated olive oil as an adjunct (locally delivered drug) for non surgical treatment of Chronic periodontitis. Ozonated olive oil is effective and would add as a treatment medicament in our already expanding arsenal of locally delivered agents used for combating Chronic Periodontits.

Key Words

Chronic Periodontitis, Ozone, Ozonated olive oil, Non surgical periodontal therapy , Local drug delivery.

Introduction

Periodontitis is a chronic infection involving destruction of the tooth-supporting apparatus, including the periodontal ligament and alveolar socket support of the teeth. Periodontal disease is initiated by a local accumulation of bacteria and their metabolic products that leads to apical migration of the junctional epithelium along the root surface, deepening the gingival crevice to produce periodontal pockets and associated attachment loss, which is the hallmark lesion of periodontal disease.[1]

The microbiology of periodontal infections is quite complicated, and numerous bacterial agents have been implicated in their aetiology. P. gingivalis has been implicated as a major aetiologic agent in the development of adult periodontitis. P. gingivalis is a highly adapted pathogen that is armed with a number of putative virulence factors that enable this organism to cause disease. Among such putative virulence factors are fimbriae and lectin-type adhesins, a polysaccharide capsule, lipopolysaccharide, hemagglutination and hemolysing activities, toxic products of metabolism, outer membrane vesicles, and numerous enzymes.[2]

Moreover, neutrophils play a pivotal role in host defence and are the first line of defence against this infectious periodontal disease. Neutrophils have several selective mechanisms for controlling bacterial invasion, including both intracellular and extracellular oxidative and non-oxidative killing mechanisms. The oxidative killing mechanism of neutrophils and other phagocytes involves the formation of reactive oxygen species.[3]

While most ROS have extremely short half-lives, they can cause substantial tissue damage through ground substance degradation, collagenolysis either directly or indirectly or as a result of oxidation of proteases, stimulation of excessive pro-inflammatory cytokine release, prostaglandin E2 (pG-E2) production via lipid peroxidation and superoxide release, both of which have been linked with periodontal inflammation, subsequent attachment loss and bone resorption.[4,5,6]

The, primary objectives of therapy for patients with chronic periodontitis are to halt disease progression and to resolve inflammation.

Currently, ozone therapy is gaining popularity as a modern non-invasive method of treatment, it is a powerful oxidizing agent with a high antimicrobial power against oral pathogens, without resistance development has been reported not only for gaseous ozone, but also for ozone in aqueous, gel and oil forms as well.[7]

Ozone therapy has been used for infectious diseases such as conjunctivitis and keratitis, peritonitis, and surgical sepsis.[8]

Moreover, it is a powerful antioxidant and radical scavenger, where direct contact of Ozone gel with host cells leads to decrease release of reactive oxygen species. [9]

Ozone has been used in the treatment of early carious lesions; for the sterilization of cavities, root canals and periodontal pockets; to enhance epithelial wound healing, such as that caused by ulceration and herpetic lesions; as a rinse for avulsed teeth; and as a denture cleaner.[10]

The routes of ozone administration are topical and regional for both gaseous, aqueous, gel forms as well as dissolved in olive oil.[11]

A systematic review indicated good evidence for biocompatibility of ozone with oral epithelial cells, periodontal cells and gingival fibroblasts.[12]

Furthermore, the biocompatibility of ozone and its effect on oral epithelial wound healing have been studied on oral cells in comparison with other antiseptic agents ozone was found to be highly compatible and effective when used at certain concentrations.[13]

Therefore, this study was undertaken to evaluate effects of Ozonated Olive Oil on Gingival Index, Modified Papillary Bleeding Index, Probing Pocket Depth and Relative attachment levels when used as an adjunct to scaling and root planing.

Materials and Methods:

Twenty five patients were screened at O.P.D. of Terna Dental College, Navi Mumbai.Patients were interviewed and examined for eligibility for inclusion in the study. Patients were included in this study if they were diagnosed with chronic periodontitis. All of the patients which were selected fell in the age range of 20 to 60 years of age. Patients were included in the study, if they met the criteria that is as follows: Patients who had at least 20 permanent teeth, patients with generalized chronic periodontitis having true pockets with probing pocket depth of 5 to 7 mm in 2 teeth in the contralateral quadrants and those who gave informed consent to be a part of given study.

Patients who were excluded were patients with any

systemic disorder affecting periodontal health or who's systemic conditions made it difficult for them to be a part of the study, patients who consumed tobacco in any form that is chewing, placing it in their vestibule as well as patients who smoked or used vaporizers or e-cigarettes.

Also among those excluded from the study were patients who have undergone periodontal therapy in the last 6 months, those who received antibiotic therapy in the preceding three months, patients consuming alcohol and pregnant females and lactating mothers.

Fifteen patients met the inclusion/exclusion criteria and all agreed to enroll in the study.

Sites were randomly assigned to one of the two groups with envelopes which contained allotment letters C for control site and T for site. Operator was thus blinded to allocation of patients thus limiting the bias.

Fig.1: 1 month follow up

Fig.2: 3 month follow up

Fig.3: Baseline probing

Fig.4: Flowchart

Fig.5: Periodontal Dressing

Fig.6: Placement of Ozonated Olive Oil

Fig.7: Tin Foil Placement

Examination:

All clinical parameters were measured using a Hu-friedy's UNC 15 Probe (Hu-FriedyTM Mfg. Co., LLC 3232 N. Rockwell St. Chicago, IL 60618-5935) calibrated in millimetres. Each participant was examined before treatment (T0) and 3 mo after treatment (T1).Complete history was taken and comprehensive periodontal examination performed again at T0 and T1.

Gingival Index, Probing pocket depth, Modified Papillary Bleeding Index and Relative Attachment Levels were measured at six sites of each tooth (mesial, distal, and the middle sites of the buccal and lingual sides).

Ozonated Olive Oil:

Commercially available Ozonated Olive Oil manufactured by ADC inc's DENTOZONEINDIATM (ADC INC. DENTOZONE INDIA™ Navi Mumbai) was used in this study.

Treatment

At T0, each patient received nonsurgical treatment, including Scaling and Root Planing. The goal of treatment was achieved when tactile sensation detected smooth crown and root surfaces. Subgingival debridement was carried out under local anaesthesia.

Instrumentation was performed using both ultrasonic piezoelectric scalers and hand instruments (such as Gracey curettes and sickle scalers). All patients received the treatment during one or two visits. By the end of the nonsurgical treatment visit, the pocket of each tooth had been irrigated by a blunt-tipped sterile plastic syringe containing ozonatedolive oil (the test group) after which tin foil followed by periodontal pack was placed at the sites. At the end of the treatment session, each patient had received verbal and written instruction.

Statistical analysis

Statistical analysis was performed using IBM® SPSS software (Version 19)

Results:

There were no dropouts in the study and no adverse effects were reported by any of the participants. Differences in clinical parameters at baseline in both the groups were statistically insignificant. Statistical significance was seen in both the groups when baseline and 3 months interval records were compared for Gingival index, Modified

Table 1: Baseline Indices

Groups	Gingival Index	Modified Bleeding Index	Probing Pocket Depth	Relative Attachment Levels
Test Group	2.62±0.494	2.62±0.494	5.24±1.057	7.03±1.295
Control Group	2.55±0.506	1.86±0.833	5.07±0.998	6.69±.217
P value	0.092	0.092	0.196	0.240

Table 2: Intragroup and Intergroup comparison of Gingival Index

Groups G.I.	Baseline	3 months	Mean Reduction	P value
Test Group	2.62±0.494	1.41±.501	1.207±.412	0.077
Control Group	2.55±.506	2.28±.455	0.276±.455	0.084

Table 3: Intragroup and Intergroup comparison of Modified Bleeding Index

Groups M.B.I	Baseline	3 months	Mean Reduction	P value
Test Group	2.62±.494	0.62±.677	2.00±.845	0.157
Control Group	1.86±0.833	1.17±.805	0.690±.660	0.123

Table 4: Intragroup and Intergroup comparison of Probing Pocket Depth

Groups P.P.D.	Baseline	3 months	Mean Reduction	P value
Test Group	5.24±1.057	3.34±1.233	1.897±.860	0.160
Control Group	5.07±0.998	3.97±1.180	1.103±.939	0.174

Table 5: Intragroup and Intergroup comparison of Relative Attachment Levels

Groups R. A. L.	Baseline	3 months	Mean Reduction	P value
Test Group	7.03±1.295	5.21±1.521	1.828±.759	0.141
Control Group	6.69±.217	5.52±1.550	1.172±1.071	0.199

Bleeding Index, Probing Pocket Depths and Relative Attachment Levels.

Statistically significant differences were seen between the Gingival Index and Modified Bleeding index when intergroup comparisons were made between control group and test group at baseline and after 3 months.

But no statistically significant differences were seen between the Probing Pocket Depth and Relative Attachment Levels when intergroup comparisons were made between control group and test group at baseline and after 3 months.

Discussion

Results of the present study showed that, both the test as well as control group had the same oral hygiene and periodontal conditions as evidenced by their mean index scores at baseline.

Statistically significant differences were seen between the Gingival Index and Modified Bleeding index when intergroup comparisons were made between control group and test group at baseline and after 3 months, thiswas explained by antibacterial effect of ozone on the plaque microorganisms as SRP concurrently performed with ozone application enable ozone oil to react directly with the bacteria allowing it to exert its optimal bactericidal effect with 24 hours exposure.

This antimicrobial effect can be explained by examining the studies done by Kshitish D., et al. in (2010), the results of their study showed that the percentile reduction of Aa (25%) using ozone was appreciable as compared to no change in Aa occurrence using chlorhexidine and the antifungal effect of ozone from baseline (37%) to 7 th day (12.5%) was pronounced during the study period, unlike CHX, which did not demonstrate any antifungal effect.[14]

Marco Montevecchi .et. al. in their study, used undiluted antiseptics and the seven dilutions of the same antiseptics against two freeze-dried bacterial strains: Staphylococcus aureus (Sa) and Porphyromonasgingivalis (Pg). Ozone oil showed significantly greater diameters of growth inhibition ($p<0.01$) than Cholrhexidine and Povidine iodine in all dilutions for both tested strains. At the same dilution, the diameters of growth inhibition against Pg were: 19.00 mm for Ozone oil and 13.67±0.58 mm for Povidine iodine. They concluded that, the promising results obtained for the Ozone oil, against the opportunistic Sa, and Pg, one of the main periodontal pathogens, suggest its potential applicability for periodontal treatment.

The results of the test group suggests that SRP is effective in altering the flora. Besides, the use of ozone oil can delay the repopulation of bacteria as it reduce the virulence of certain periodontal pathogen through its antimicrobial action on cells by damaging its cytoplasmic membrane via ozonolysis of dual bonds and induction of modification in the intracellular contents (oxidation of proteins, loss of organelle function).[15]

The results of our study were in agreement with Huth., et al.[16] , Fayek Y., et al.[17] , Montevecchi., et al.[18] , Yılmaz S., et al.[19] ,Hayakumo S., et al.[20] and Hayakumo S.[21]who establish the promising results obtained for the ozone therapy against the opportunistic pathogens suggesting its potential applicability for periodontal treatment.

Thus antimicrobial effect of Ozonated olive oil was reflected as reduction of gingivitis as well as plaque formation and bacterial recolonization, the rate of gingival tissue healing after Ozonated olive oil application was also evident by reduction in gingivitis at 3 month interval. This effect may be due to increased oxygen tension in subgingival tissues.

At the same time, the application of ozone oil did not affect the probing pocket depths and relative attachment levels significantly. This may be because ozone application itself does not eliminate the pocket epithelium.

Further studies must be undertaken with ozone as an adjunct to curettage, exicisional new attachment procedure and laser assisted new attachment procedure to evaluate its efficacy in reducing pocket probing depths and increasing the clinical attachment levels.

Conclusion

In conclusion use of Ozonated olive oil does provide better soft tissue healing as compared to scaling and root planing alone and thus can be used as an adjunct to scaling and root planing.

Ozonated olive oil also reduces the subsequent plaque formation and recolonization of bacteria over period of 3 months and thus could have use in controlling the bacterial load after scaling and root planning.

Further research is needed to evaluate the full extent and potential of ozonated olive oil to be used as an adjunct to Scaling and Root Planing as well as other Periodontal Therapies.

Conflicts of Interest

There are no conflicts of interest.

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Periodontics

Immediate implant placement with simultaneous bone augmentation using guided bone regeneration in the anterior maxillary aesthetic zone: A retrospective study

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Abstract

Objectives

The aim of the present study was to retrospectively evaluate the effect of membrane guided bone regeneration (MGBR) among two groups which underwent dental implant placement with and without MGBR. Effects of vertical bone augmentation were analysed and compared, with particular attention to the health of the corresponding peri-implant hard and soft tissues.

Materials and Methods

In this retrospective clinical study, 57 dental implants were consecutively placed in 50 patients with deficient ridges requiring vertical bone augmentation, divided into two group (Implant placement with and without MGBR). Both the groups were evaluated retrospectively after a period of functional loading varying from 12 to 29 months.

Results

All 57 implants were stable, with adequate secondary stability and osseointegration. In group A, The mean probing depth was 2.5 mm ranging from 1 to 4 mm (SD˝ 1.34), in Group B the mean probing depth was 2.34 mm ranging from 1 to 4 mm (SD˝1.17). The difference in probing depth were statistically non-significant (p>0.005).A comparison of the crestal bone level(CBL) values between group A (1.17mm) and group B (1.64mm) revealed statistically significant difference at 12 month follow-up (p<0.005).

Summary and Conclusions

Within the limitations of the study, our results are in favour of suggesting that vertically regenerated bone with GBR techniques responds to implant placement like native, non-regenerated bone.

Key Words

Dental implant; Guided bone regeneration; crestal bone level.

Introduction

The application of the principle of guided bone regeneration (GBR) in dental implant procedures paved the way for clinicians with the ability to augment the deficient alveolar ridges. GBR was applied to correct fenestration defects, dehiscence and to perform immediate implant placement in residual osseous defects and post-extraction sites. Basic principle of GBR lies in the creation of a protected space around the deficient site for bone formation and also prevent the soft tissue ingrowth.[1-3] The protected space can, thus, be populated by slow migrating osteogenic cells resulting in new bone formation. Recently developed barrier membrane materials include CPTi foil, bio-osseogenic membranes whichare durable and improved the quality of maintaining the space created thus resulting in bone regeneration of atrophic edentulous sites.[4,5] Simion et al[1] in 1998 presented the first human clinical and histological study to demonstrate vertical bone regeneration with GBR. In the study by Simion et al, treatment of 5 partially edentulous patients with 10 BrÍnemark implants positioned in edentulous ridges with vertical deficiencies were reported. The results demonstrated that vertical bone regenerationwas possible, but to a maximum extent of 4 mm.Results from various earlier studies[6-11] wereencouraging, but they lacked of data about the long term implant stability and resorption pattern of bone regenerated with these techniques. The aim of the present study was to retrospectively evaluate the effect of membrane guided bone regeneration (MGBR) among two groups which underwent dental implant placement with and without MGBR. Effects of vertical bone augmentation were analysed and compared, with particular attention to the health of the corresponding peri-implant hard and soft tissues, after 1 to 1.5 years of prosthetic loading.

Materials and Methods

In this retrospective clinical study, 57dental implants were consecutively placed in 50patients divided into two groups.Group A consisted of 23 patients who underwent placement of 25 dental implants using MGBR for vertical augmentation of ridges in anterior maxillary region. Group B constituted 27 patients who underwentplacement of 32 dental implants without MGBR. Both the groups were evaluated retrospectively after a period of functional loading varying from 12 to 29 months. The study involved 50 partially edentulous patients requiring dental implant placement with deficient ridges requiring vertical bone augmentation(i) to improve the crown–implant ratio, (ii) the implant support, and/or (iii) the aesthetics of the final prosthetic reconstruction. The age of the patients ranged from 22 to 47(mean 34.3) years.In group A, The implants were placed in single stage at the time of GBR. A BIO-OSS collagen membrane/ titanium reinforced expanded-polytetrafluoroethylene (e-PTFE) membrane (W.L. Gore & Associates, Inc., Flagstaff, AZ, USA) was positioned over the ridge following implant placement to protect the bone clot and grafted bone particles. This allowed undisturbed boneregeneration without the interference of competing soft tissues. Details concerning implant sites and length, vertical bone gain and healing features arelisted in Tables. After the final prosthetic restoration the patients were followed up in an organised manner, with recalls for oral hygiene and clinical evaluation every 6 months and periapical X-rays once a year. The annual implant evaluation was carried out according to a standard protocol utilized for long term studies with endosseous implants.[4,5,8] The following clinical and radiographic parameters were assessed for each implant: (i)Suppuration in the peri-implant sulcus, (ii) Probing depth (PD) (iii)Implant mobility (iv) Radiographic status (v) Distance between the top of implant head shoulder and the first visible bone–implant contact. Each implant was classified either as success or failure according to the following criteria (Albrektsson et al. 1986):1. Absence of persistent subjectivecomplaints, such as pain, foreign body sensation, and/or dysestesia. 2. Absence of peri-implant infection with suppuration. 3. Absence of mobility. 4. Absence of a continuous radiolucency around the implant. 5. Vertical bone loss less than 1.5 mm in the first year of function and less than 0.2 mm annually in subsequent years of function.

Results

Data obtained was compiled on a MS Office Excel Sheet (v 2010, Microsoft Redmond Campus, Redmond, Washington, United States). Data was subjected to statistical analysis using Statistical package for social sciences (SPSS v 21.0, IBM).Descriptive statistics including frequencies and percentage for categorical data, Mean & SD for numerical data were depicted. Comparison of frequencies of categories of variables was done using chi square test.In the most recent follow-up, all the patients reported with satisfactory aesthetics and function of the implant supported prostheses, without any foreign body

Table 1: Showing Demographic data, mean probing depth, mean crestal bone loss of impants placed with MGBR (Group A) .

Pt. No.	Age (In years)	Implant site	Implant length (in mm)	m-PD (in mm)	m- CBL (in mm)	Healing
1.	34	12	11.5	2.5	1.34	Uneventful
2	26	11	11.5	2.25	2.7	Uneventful
3	27	11	13	2.5	2.7	Uneventful
4	21	11,12	13,13	2.34	1.7	Uneventful
5	43	21	13	3.25	1.4	Uneventful
6	27	22	11.5	2.34	0.6	Uneventful
7	32	23	13	2.34	1.8	Uneventful
8	33	22	13	3.5	2.3	Uneventful
9	45	11	13	2.25	1.4	Uneventful
10	47	11	13	4	2.1	Uneventful
11	32	11	11.5	3.5	2.4	Uneventful
12	26	11	11.5	2.25	1.4	Uneventful
13	32	12	13	2.32	1.5	Uneventful
14	37	11,21	13,13	2.25	1.7	Uneventful
15	41	21	13	2.34	1.8	Uneventful
16	39	11	11.5	2.17	1.2	Uneventful
17	23	11	13	2.25	0.9	Uneventful
18	45	21	13	2.5	1.8	Uneventful
19	34	12	13	2.25	1.6	Uneventful
20	26	21	13	2.17	2.5	Uneventful
21	27	21	13	2.25	1.7	Uneventful
22	34	21	13	2.34	0.6	Uneventful
23	38	11	13	2.17	1.3	Uneventful
Mean	34.3			2.5	1.5	Uneventful
19	34	12	13	2.25	1.4	Uneventful
20	26	21	13	2.5	1.64	Uneventful
21	27	21	13	2.17	1.3	Uneventful
22	34	21	13	2.5	1.5	Uneventful
23	38	11	13	2.25	1.4	Uneventful
Mean	34.3			2.5	1.64	

sensation,pain or dysaesthesia. The intraoral examination demonstrated healthy peri-implant mucosae without any sign of secondary infection.The follow-up period ranged from 12 to 29 months (mean 18.1 months). All 57 implants werestable, with adequate secondary stability and osseointegration. During the course of the treatment, the patients demonstrated satisfactory oral hygiene and minimalmarginal tissue inflammation. In group A,The mean probing depth was 2.5 mmranging from 1 to 4 mm (SD½ 1.34), in Group B the mean probing depth was 2.34 mm ranging from 1 to 4 mm (SD½1.17) (Table1&2). The difference in probing depth were statistically non-significant (p>0.005).The periapical radiographic evaluation revealed radiopacity around the threads of implants highlighting the osseointegration. A comparison of the crestal bone level(CBL) values between

Table 2: Showing Demographic data, mean probing depth, mean crestal bone loss of impants placed without MGBR (Group B)

Pt No. Patient number after randomisation.
Age – Age of the patient in years.
Implant site – Maxillary anterior region.
m-PD – mean values of Probing depth (in mm)at recent follow up(mean follow-up period – 18.1 months).
m-CBL – mean crestal bone loss(in mm) at recent follow up.
Healing – Soft tissue healing.

Pt. No.	Age (In years)	Implant site	Implant length(in mm)	m-PD	m- CBL	Healing
1.	34	12	11.5	2.5	1.4	Uneventful
2	26	11	11.5	2.25	2.7	Uneventful
3	27	11	13	2.5	2.7	Uneventful
4	21	11 12	13 13	2.34 3.25	1.7 2.4	Uneventful
5	43	21	13	2.34	1.6	Uneventful
6	27	22	11.5	2.34	1.8	Uneventful
7	32	23	13	3.5	2.3	Uneventful
8	33	22	13	2.25	2.4	Uneventful
9	45	11	13	4	2.1	Uneventful
10	47	11	13	3.5	2.4	Uneventful
11	34	12	11.5	2.5	1.3	Uneventful
12	26	11 21	11.5 13	2.25 2.34	3.7 3.4	Uneventful
13	27	11	13	2.5	2.7	Uneventful
14	21	11 12	13 13	2.34 3.25	1.7 1.4	Uneventful
15	41	21	13	2.25	1.9	Uneventful
16	39	11	11.5	2.5	1.8	Uneventful
17	23	11,21	13	2.25	1.6	Uneventful
18	45	21	13	2.17	2.5	Uneventful
19	34	12	13	2.25	1.7	Uneventful
20	26	11 21	13 13	3.2 2.34	2.6 3.1	Uneventful
21	27	21	13	2.17	1.3	Uneventful
22	34	21	13	2.5	1.5	Uneventful
23	38	11	11.5	2.5	1.8	Uneventful
24	47	11 21	13 13	2.25 2.34	2.6 2.3	Uneventful
25	32	21	13	2.17	2.5	Uneventful
26	26	11	11.5	2.5	1.8	Uneventful
27	32	12	13	2.25	1.7	Uneventful
Mean	37.6			2.34	2.74	

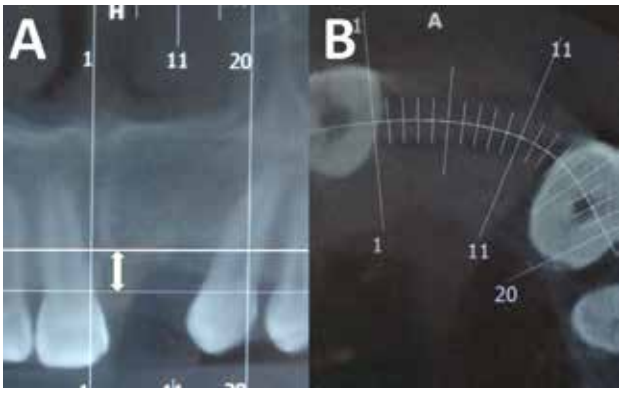

Fig.1: Preoperative dimensions of alveolar ridge.

A. Coronal section. Note the arrow showing amount of ridge to be regenerated by MGBR.

B. Axial section

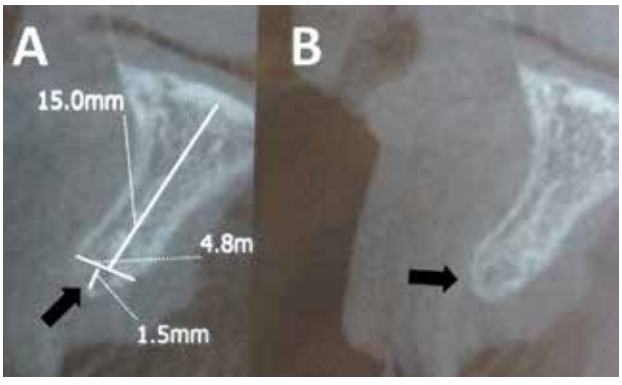

Fig.2: Sagittal section of surgical site. Arrow denoting the resorptive changes in the ridge

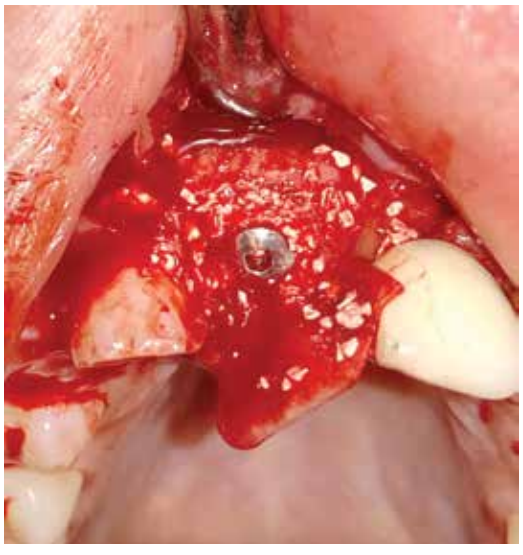

Fig.3: Intraoperative photograph showing MGBR with alloplastic bone graft

Fig.4: Radiograph showing increased vertical height of ridge.

Fig.5: Follow-up radiograph showing osseointegrated implant with augmented crestal bone level.

group A (1.17mm) and group B (1.64mm) revealed statistically significant difference at 12 month follow-up ($p<0.005$). Subsequent examinations at 24 month follow-up demonstrated mean CBL in group A of 1.65 mm and group B of 2.74mm (Table 1&2). At the following examinations, all the implants showed no further crestal bone loss within the limits of the periapical X-ray measurements.

Discussion

GBR proceduresare characterized by high efficacy and predictability for jaw bone augmentation. Several

studies[12-15] presenting long term results on implants inserted in horizontally augmented bone ridges are available in the literature. In the most extensive study available, Nevins et al. (1998)[15], analyzed 526 implants placed andloaded in horizontally regenerated bone of 352 patients. E-PTFE barrier membranes were used in association both with autogenous bone and allogenicbone grafts to regenerate the bone using either a simultaneous or a staged approach.

Eight of the implants were lost for a success rate of 97.5% during the follow-up period from 6 to 74 months post-loading. The mean cumulative radiographic bone loss in their study, as determined over 74 months of loading was 0.64 mm,and occurred during the first year and ahalf after loading. The authors, in agreement with previous studies, concluded that the regenerated bone with GBR technique reacts to the implant placement in a manner that is clinically similar to native bone.

However, no reports exist providing long term data relating the status of implants inserted in alveolar ridges at the time or after vertical bone augmentation with a membrane technique. This retrospective clinical study, provides the first 1 to 2.5 years results on implants inserted in jaw bones with simultaneous vertical ridge augmentation. In a study by Simionet al[16], the possible quantitative augmentation feasible using three techniques were reported. In their study, groups A and B, where the titanium reinforced membrane was combined with the blood clot only or with the demineralized freeze dried bone, a vertical bone regeneration superior to 4 mm was never achieved, whereas in the group C, in which the membrane was associated with autogenousbone chips, it was possible to regenerate the bone up to 8 mm.

The data compared favourably with previous accounts on osseointegrated implantsplaced in horizontally augmented bone with membrane techniques. In fact, the results of this study were similar to ones obtained with submerged titanium implants inserted in native, non-regenerated bone. Peri-implant marginal bone loss data from the casesin this study present also similarity to the ones reported in a prospective longitudinal study on implants placed in native bone (van Steenberghe et al. 1993)[17], demonstrating an incidence of marginal bone loss ±1 mm at 2.5% per year of observation in a partially edentulous population. The mean PD values ranging mainly from 2 to 3 mm can be considered normal according to the above mentioned long term clinical studies on implants inserted in native bone. In this study, however, PD measurements should be considered with caution since the presence of the implant shoulder and of the threads could have influenced the accuracy of the probing procedures.

Due to the absence of clinical signs of marginal inflammationor purulent peri-implant infection, and the stabilization of the crestal bone level at the subsequent examinations it seems to be unlikely that the bacterial infection is an etiologic factor of this resorption. At the last examination all the remaining implants appeared clinically stable, no signs of radiolucency were present at the bone–implant interface, therefore, they could be defined successfully osseointegated according to the criteria of Albreksson et al. (1986)[6]. The CBL values at the first year examination of 1.34 mm depend strictly from the implantshoulder position related to the crestal bone level at the second stage surgery.

The stability or resorptionof the crestal bone is expressed by the M-CBL value, representing the difference in CBL values between the abutment connection surgery and the examinations during the following years of observation. Also this value was influenced by the implant position. In fact, in those sites in which the regeneratedbone crest was located under or at the level of the implant shoulder, the M-CBLvalue was in the normal range of 1 to 1.5 mm. But, when the bone regenerated to a level superior to the implant shoulder, the M-CBL value expressed a higher bone loss (3–4 mm). In the following years the bone crestal level did not show any further resorption.

The results of the present retrospective study provide human data on implants placed in jaw bone vertically augmented with GBR techniques following 12 to 29 months of functional load. The mean bone loss was 1.71 mm and the values are in accordance with previous long term studies on implants placed in horizontally regenerated bone.

The vertically regenerated bone showed the same biologic behaviour of non-regenerated bone and its remodelling pattern seemed more related to the apico–coronal implant position than toother intrinsic factors. However, the biometric evaluations of the present study must be considered with caution since annual bone levels were evaluated by means of regular periapical X-rays without individual standardization of the radiographic technique. None of the implants failed and 2 patients demonstrated

bone loss higher than normal, meaning a very favourable overall success rate according to the criteria of Albrektsson et al.(1986)[6].

Conclusion

Within the limitations of the study,our results are in favour of suggesting that vertically regenerated bone with GBR techniques responds to implant placement like native, non-regenerated bone. However, congregating results from future studies are needed that involve large sample size and longer follow-up.

Conflict of Interest: None

Source of Support: None

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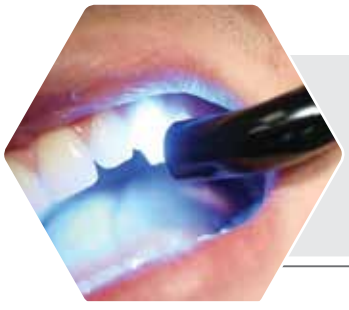

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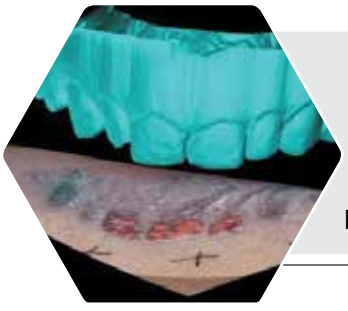

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Quality accreditation of dental clinics: Need of the hour (part 9) Addressing requirements related to Continous Quality Improvement

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Abstract

This is the ninth article in the series of articles 'Quality Accreditation of Dental Clinics – Need of the Hour'. As described in the first article (Published in JIDA, May 2020 Issue) there are 10 chapters in NABH standards for Dental Healthcare Service Providers (DHSP). First chapter 'Access, Assessment & Continuity of Care' (AAC) was described in JIDA June 2020 Issue; Second chapter 'Care of Patients' (COP) is described in JIDA, July 2020 Issue. Third Chapter 'Patient Rights & Education' is described in JIDA August 2020 Issue. Fourth chapter is 'Management of Dental Material Medical & Equipment' described in JIDA September, October & November 2020 Issues. Fifth chapter 'Infection Control' was explained in JIDA December 2020 Issue.

Addressing accreditation standards & implementing them in day-to-day practices is the primary objective in the preparation of DHSP for accreditation. Continuous Quality Improvement (CQI) is the sixth chapter. Intent of this chapter is to provide information about Quality Assurance programme & Key Indicators.

The aim of this article is to provide a brief idea about the criteria required to fulfill in order to address requirements related to the sixth chapter of NABH, i.e.,Continuous Quality Improvement (CQI).

Key Words

Quality Accreditations, Dental Clinics, NABH, Quality Improvement, Key Indicators.

Introduction

Standards of chapter 6: 'Continuous Quality Improvement (CQI)' intents to provide information about structured quality assurance and continuous monitoringprogrammein dental practice.

This chapter is further divided into 2 standards and 7 objective elements specifying various criteria related to quality assurance programme, continuous monitoring and key indicators in dental practice. Each standard is explained in this article based on certain key words in the standard. [1]

Quality Assurance (QA) Programme

- Quality Assurance: It is a part of quality management focused on providing confidence that quality requirements will be fulfilled.
- Quality Assurance programme is developed, documented and maintained in the form of Quality Manual.
- Quality AssuranceProgrammeforthe DHSP is a compounded amalgamation of the whole process of satisfactory patient journey and successful treatment.
- The management must function with the vision and mission to accomplish the goals and deliver the best of care.

Components of Quality Assurance Programme can be

- Mission, vision and quality policy and quality objectives of the organization
- Service standards
- Formulation of Policies
- Standard implementation
- Functioning of different teams
- Monitoring of quality indicators
- Analysis of incidences & sentinel events
- Internal audits
- Safety and risk management program
- Quality assurance of infection control
- Quality assurance of radiology services

Responsibility

❖ There should be an identified individual who can coordinate and implement quality assurance programme in the organization.

❖ This person can be designated as Quality Coordinator or Accreditation Coordinator.

❖ Identified individual should have a good knowledge of:

- Accreditation standards
- Statutory requirement
- Quality assurance principles
- Audit methodologies etc.

Staff Training:

- The designated programme should be communicated and coordinated amongst all staff working with DHSP through proper training mechanism.
- Training types

o On recruitment: Induction training

o In-service training: Periodic

Updating:

❖ Quality improvement is a dynamic process, so it needs to be reviewed at regular intervals.

❖ Team of staff who are trained in NABH standards under the guidance of Quality Coordinator can conduct periodic internal audits in the organization.

❖ The review results and internal audit reports provide inputs for updating of Quality Assurance programme.

Key Indicators:

- **Donabedian Model: [2]:**

o Measures used to assess and compare the quality of healthcare organizations are classified as a structure, process or outcome measure.

- **Structural Measures**

o It reflects healthcare provider's capacity, resources and infrastructure, foe example,

o the ratio of providers to patients.

- **Process Measures:**

o It indicates what a provider does to maintain or improve health, for example, the percentage of people receiving preventive services (such as immunizations).

- **Outcome Measures:**

o It reflects the impact of the healthcare service or intervention on the health status of the patients, foe example, the percentage of patients who developed surgical site infections.

Table 1: Clinical Indicators	
Monitoring	**Example**
Patient assessment	Average time taken for initial assessment, Appropriateness of pain assessment & pain management
Safety and quality control	Percentage of employees adhering to radiation safety precautions while using radiological equipment, Percentage of cases where the organization procedure to prevent adverse event like wrong site / patient / surgery have been adhered to
Diagnostic services	Percentage of reports received within defined turnaround time, Appropriateness of investigations
Infection control activities	Hand hygiene compliance, Percentage of staff provided pre-exposure prophylaxis
Clinical outcomes	Surgical Site Infection rate, Percentage of adverse anesthesia events

- **Clinical Indicators:**
- DHSP should develop appropriate clinical indicators to monitor structure, processes and outcomes, as shown in the Table I below.

❖ **Managerial Indicators:**

- **DHSP should develop appropriate managerial indicators to monitor structure, processes and outcomes.**
- **This may include:**

o Procurement of dental materials and medication essential to meet the patient's needs

o Reporting of activities as required by laws and regulations (Tax, EPF, notifiable diseases etc.)

o Risk management

o Patient satisfaction

o Employee satisfaction

o Data collection for further improvements

Corrective and Preventive Actions:

❖ All key indicators are generally captured monthly and trends analyzed quarterly.

❖ Opportunities for improvement are identified based on trends and implemented in the form of corrective and preventive actions.

❖ For example, hand hygiene compliance rates for the last three months are 89%, 92% and 80 % respectively. This shows there is sudden decline in compliance. So management should take appropriate actions like sensitizing the staff involved aboutthe importance of hand hygiene practices.

Conclusion:

Continuous Quality Improvement (CQI) is the sixth chapter of accreditation standards for dental healthcare service providers. This chapter describes about implementing quality assurance programme in dental practice and continuously monitoring the same through key indicators. Implementing these practices will help in ensuring safe, effective and quality care for the patients, staff and visitorsin dental practice.

Next chapter will be discussed in the next Issue of JIDA.

Conflict of Interest: None

Source of Support: None

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