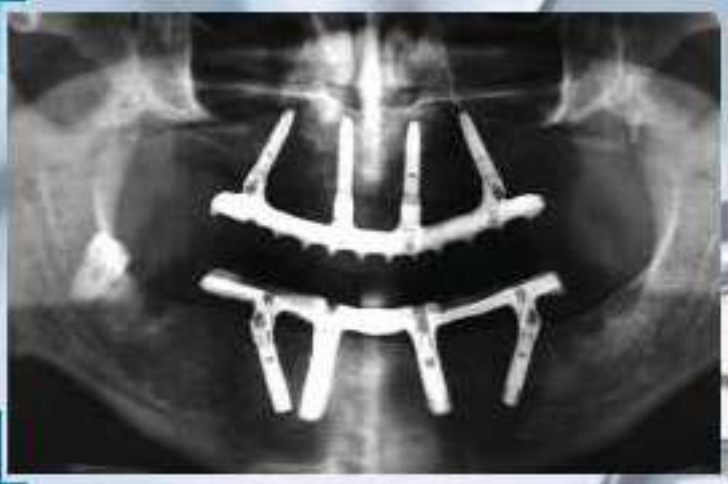
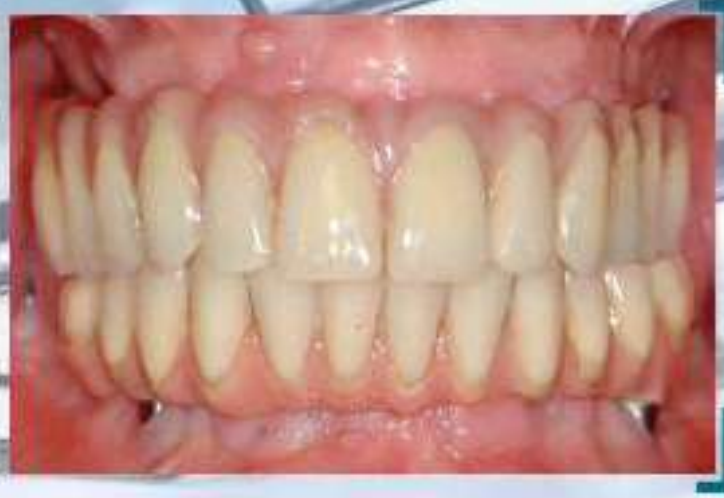
TAPER

Journal of Indian Dental Association Thiruvalla





VOLUME 01

NOVEMBER 2016

DONATION OF DENTAL CHAIR

WITH VIOLINIST JAMES MASTER

EXECUTIVE COMMITTEE

CDE PROGRAMME

FAMILY BOAT RIDE

TAPER

JOURNAL OF INDIAN DENTAL ASSOCIATION THIRUVALLA

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Pushpagiri College of Dental Sciences

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Editorial

Greetings!

Hope this issue finds you all in the best of health and spirits.it is my pride and privilege to present to you the first ever issue of "TAPER", Journal of the Indian Dental Association, Thiruvalla branch. The journal is mainly intended for educating and improving the knowledge of the general dental practitioner who finds it difficult to keep up with recent advances in dentistry and allied fields due to his/her busy work schedule and other commitments.At this juncture I would like to thank the Executive Committee members of Thiruvalla branch for their constant encouragement and unstinted support in bringing out this journal. I would also like to specially thank Dr Simon George, Hon.Secretary, IDA Thiruvalla without whose untiring efforts this issue would have been impossible to complete in time. Looking forward to receiving your valuable suggestions for improving the content of this journal,

Thanking you

Dr Akhilesh Prathap
MDS, FIBOMS,MBA
Oral & Maxillofacial Surgeon

President's Message

Dear members and friends

Dr. Saji Kurian
President
IDA Thiruvalla

Let me thank all our members for the confidence bestowed upon me to be the president of this prestigious organization which is Indian Dental Association Thiruvalla branch.

Thiruvalla is known to all and is ahead of many other places in Education, Commerce, Health and Development. Thiruvalla is very much popular amongst many pilgrims who come to visit centers such as Sabarimala, Parumala church, Chakkulathu Temple, Maramon Convention, Aranmula Temple, Hebron Convention and many more. Thiruvalla also has a large number of International and nationalized banks which caters to its considerable NRI population.

As members of Indian dental association our practice is just a tip of the ice berg, we have immense opportunities to promote Dental Tourism in our area. Lets join together to give awareness to our dear brothers and sisters, friends and relatives who are abroad that we are also capable of delivering world class treatment at minimal expense as compared to the treatment abroad.

My priority will be to develop good relationship among our fellow dentists, their family members and to show our commitment towards the neediest in our society.

I am very happy and lucky to take charge as president at the time when our branch has reached new heights being led by young and energetic Dr. Rajeev Simon as president, experienced and socially committed Dr. Sunil Roy Koshy and the perfectionist and specialist in mobilizing the fund for running the branch and it functions, Dr. Simon George as treasurer. I would like to specially thank Dr. Akhilesh Prathap Editor, IDA Thiruvalla for his untiring efforts to bring out this journal. Happiest moment was when all our members joined together for the community services especially those which included providing financial help for the cancer patients and old age homes.

I really look forward to fulfill my dream with the permission of executive members and general body.

1. A permanent office for our branch.
2. Dr. Binny Oommen memorial beneficiary fund for cancer patients.
3. Dr. Umesh Nambiar memorial beneficiary fund for kidney care and dialysis.
4. To strengthen and improve the functioning of ladies wing.
5. To continue state CDH program mukthi to save the new generation.

We have great challenges and opportunities ahead of us and with the help and co-operation of all members we can make tremendous progress.

No one achieves anything alone, together everyone achieves more (Team).

FROM THE SECRETARY'S DESK

Dr. Simon George
Hon. Secretary
IDA Thiruvalla

Dear Colleagues

Warm greetings to you

At the onset let me congratulate Dr Saji Kurian and his team of office bearers. This year we plan to strengthen Friendship and unity among our members. The Bible says "Behold, how good and how pleasant it is for brothers to dwell together in unity".

Last year we were able to conduct CDE programmes with excellent attendance. This year also we plan to conduct CDE programmes on current topics. Your cooperation is a must for the success of these programmes .The family tour conducted last year at Waterscapes Kumarakom was an un forgettable experience. Those memories still linger in our minds.

It is with immense pleasure and pride that I announce the launch of our very own Journal- TAPER. I request all members to send case reports, reviews and articles for our future Journals also. I congratulate Editor Dr. Akhilesh and the editorial board on this occasion. May this journal be an asset for IDA Thiruvalla. I thank Dr. Thomas Jacob for suggesting the name for our journal.

This year we plan to bring out a directory with all member details including photographs. I request you all to send us the details as per the format given at the end of this journal. This Directory will certainly bring us more closer and help us work as one big family. "Family means no one gets left behind or forgotten"

This year also we plan to continue with our community project. Kindly lend a helping hand for serving the underprivileged.

Our Ladies wing is back with a bang under the leadership of Dr. Maya Mathai and Dr. Susan Joseph. You can except a lot of programmes from their side. I humbly request you to support all their endeavours.

I am grateful to our Immediate Past President Dr. Rajeev Simon for his untiring efforts to bring out a new website for IDA Thiruvalla and for his leadership in the last year. Special thanks to Dr. Sunil Roy Koshy for the stupendous efforts done for our branch in the last two years. I am grateful to all the office bearers and members for their corporation. Let us strive harder to make IDA Thiruvalla reach greater heights.

"With the new day comes new strength and new thoughts"

GOD BLESS YOU ALL.

ORAL LICHEN PLANUS – A REVIEW

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Introduction

Oral lichen planus a common mucosal disorder which is an immunologically based chronic, inflammatory mucocutaneous disorder of undetermined etiology.

Erasmus Wilson in 1869 gave the name as the lesion resembles flat lichens.[1]

Epidemiology

Affects .5-2.3% of general population with a female predilection, usually seen in 4th to 6th decade of life. 66% of patients with cutaneous LP have oral lesion, only 15% of patients with LP develop skin lesion.[2]

Etiology: Is unknown **Precipitating factors** includes

Trauma from dental procedures

Heat & irritation from tobacco products

Rough dental prosthesis, Diabetes, Hepatitis C.

Stress, anxiety & depression can cause acute exacerbation of the disease and is widely held to be the main etiologic factor.[1,2,3]

Pathogenesis

The pathogenesis is not clear. It is a T-cell mediated disease process resulting in basal keratinocyte apoptosis, epithelial basement membrane disruption. It is suggested that extrinsic agents altered self-antigens are taken up by the Langherhans cells in the epithelium. During migration to draining lymph nodes the Langerhans cells present antigens to T-cells which become activated to proliferate and recirculate in the oral mucosa to target altered basal keratinocyte → apoptosis.[1,4,5]

Dr. Anuna Laila Mathew

Clinical Features

Common site – Buccal mucosa, tongue, floor of the mouth, gingiva

Lesion – Symmetrical, bilateral and affects multiple oral sites.

- Reticular – most frequent keratotic lines in lacy pattern (Wickham's striae), usually asymptomatic
- Annular
- Erosive – shallow ulcers with keratotic form and is symptomatic
- Atrophic – red or erythematous with keratotic form
- Bullous
- Plaque type[2,5]

Malignant transformation potential is .2% every year[4]

DIAGNOSIS

- By correlating the clinical history with the characteristic appearance of fine white, reticular lacy keratotic appearance.
- Biopsy to confirm the diagnosis. Specimen taken from lesional and normal appearing marginal tissue shows dense sub epithelial band like infiltrate of T-cells, liquefaction of basal cell layer apoptosis of the basal

keratinocyte, focal para keratosis and focal acanthosis. Civatte bodies, and saw tooth rete ridges are also seen. **Direct Immunoflouresence**- Deposition of fibrin & shaggy fibrinogen along the basement membrane.

DIFFERENTIAL DIAGNOSIS

1) Lichenoid reaction
   i) Contact
   ii) Lichenoid drug reaction
2) DLE.[4]

PATIENT MANAGEMENT

- No cure for OLP, explain about the waxing and waning pattern of the disease.
- Treatment directed to low exacerbation
- 10% cases spontaneous remission occurs

TACROLIMUS

Mouthwash with tacrolimus 1 mg per 100 ml of distilled H_2O, 4 times/day for 6 months. To be rinsed for 2 minutes.

RETINOIDS

Isotretinoin gel – Topical retinoid.

Dosage: Topical – 1% isotretinonin gel twice daily for 2 months.

TAZAROTENE

In hyperkeratotic LP tazarotene gel .1% bd applied to the lesion for 8 weeks.

TETRACYCLINE

In erosive oral lichen planus contents of one 250 mg capsule of tetracycline hydrochloride suspended in 100 ml of H_2O and gargled this sol. 3-4 mouthful (20-25 ml) for 3-4 mts. gargled 2-3 times/day after 6 weeks.[1,3,7,8]

TREATMENT OF OLP
MEDICAL – TOPICAL AND SYSTEMIC
SURGICAL- LASER

TRIAMCINALONE	FLUOCINONIDE	BETAMETHASONE	CLOBETASOL
Mild – moderate OLPDosage - .1% cream, ointment and 10 mg/ml suspension.Inj: 2 à .4 ml directly into the lesion.	Mild à moderate LP. 05% cream, gel ointment.	Mild à moderate LP1% cream, ointment, swishes of .5mg tables tid	Mild à moderate LP. skin preparations are only available

CYCLOSPORINE.

It acts as an immunosuppressant. In OLP patients were instructed to rinse with 5 ml of oral cyclosporine (500 mg/ml) rinse for 4 weeks. Rinse for 5 minutes. And then expectorate.

INTERFERON

Low molecular weight glycoprotein cytokine.

Dosage: Topical application of human fibroblast interferon – â gel (10^4 or 5 x 10^3 10) was applied for 1 hr twice a week. 10 applications showed improvement.

SYSTEMIC

CORTICOSTEROID

Prednisolone - It is a glucocorticosteroid.

Indication: In cases where topical corticosteroids for 2 weeks didn't produce any results.

Dosage: Oral 40-80 mg as a single morning dose for 7 days.

HYDROXYCHLOROQUINE

Antimalarial.

Dosage: 200-400 mg/daily as a monotherapy for 6 months

HEPARINOID SULODEXIDE

Sulodexide is a low molecular weight product constituted from (80%) heparin and dermatan sulphate (20%) chain from pig intestine.

Dosage: IM sulodexide 600 units (1 vial) followed by oral dose of 250 units twice daily for 1 month.

LEVAMISOLE

Antihelminthic drug

Dosage:150 mg (50 mg tid/day) of levamisole for 3 consecutive days every 2 weeks for 3 months.

THALIDOMIDE

It has been used as an immuno suppressant. **Dosage**: Initial dose of 50 mg/day for 2 weeks and then gradually increased to 100 mg/day for 4 months.

AZATHIOPRINE

It is a purine antagonist, immunosuppressive agent used in cancer therapy.

Dosage: 50 mg/day for first week and then high dose not more than 2.5 mg/kg daily.

ETRETINATE (TIGASON)

Systemic retinoid used in OLP.

Dosage: 75 mg/day i.e. 25 mg tid for 2 months.

GRISEOFULVIN

Systemic antimicrobial therapy for EOLP.

Dosage: 500 mg twice a day for 3-6 weeks.

DAPSONE

Antileprotic .**Dosage:** 50mg/day for 3-9 months.

PHOTOCHEMOTHERAPY (PUVA)

Dosage: Methoxsalen (8-methoxy psoralen) .6mg/kg was administered orally. 2 hrs before irradiation was begun on the assigned side. Control side protected with Al foil. The beginning dose of UVA was .75J/cm^2. The dose increased by.25J/cm^2 every other session. Treatment given 12 times at an interval of 2-3 days and patient received a total average dose of 16.5 J/cm^2[2,6,7,8.]

OTHERS

1) Glycyrihizin – used in treatment of chronic liver dysfunction. IV dose of 40 ml (.2% solution) daily for 4 consecutive weeks.
2) Immunoregulation effect of certain traditional Chinese medicine in OLP.
3) Koukangning gargle for treatment OLP has anti inflammatory. and excellent antibiotic effect.
4) Bovine colostrums –
5) Nicotine gum in OLP.
6) Antioxidants
7) Curcuminoids
8) Aloevera[5]

SURGICAL TREATMENT OF OLP

I. Laser

1) Low dose excimer 308nm laser initial dose of 100 mJ/cm^2 once in a week for 7 treatments.

INITIATION OF THERAPY

Asymptomatic

- No treatment required
- Clinical diagnosis confirmed by biopsy
- Regular evaluation on regular basis (every 6 months)

Symptomatic

- Biopsy to confirm clinical diagnosis
- The extent and severity of the disease will dictate the pharmacological approach to empirical management.
- **In mild symptomatic**:
- May adequately respond to episodic use of an intermediate or potent topical steroid for acute exacerbations.
- **In severe generalized OLP**- May require burst systemic corticosteroid therapy to establish initial control followed by use of an ultra potent topical corticosteroid for maintenance.

- Check for any suspicious change on regular basis.[4]

TREATMENT OF ORAL LICHEN PLANUS

- Primary line of treatment
- Secondary line of treatment
- Tertiary line of treatment
- Adjunctive therapy

Primary line of treatment: Mild to moderately symptomatic OLP topical corticosteroid should be prescribed. Once symptoms are relieved, the ultimate goal is to titrate the dose to the minimum dose necessary to control symptoms. If improvement is not noted within 2 weeks then they should consider (systemic) approach. Choice of steroid will be determined by the lesional presentation, patient preference and practitioner experience.

For localized lesion – ointments, gels

For widespread lesion – elixir

Amount of steroid contact time with the lesion directly imparts effectiveness. So ointment formulation of a steroid and equal parts of Orabase to improve the adhesion to lesion is recommended. Custom made tray or carrier to deliver the drug in case of gingival lesions. For a persistent localized lesion – Intralesional injection of up to .2-.4 ml of Triamcinolone acetonide 10 mg/ml suspension is also useful.

Secondary line of treatment: For moderate to severe OLP or in cases unresponsive to topical therapy, a systemic steroid should be prescribed.

Prednisone: A high-dose short course regimen to maximize therapeutic effect, while minimizing the side effects.

A single daily morning dose of 40-80 mg of prednisone is given for not more than 10 days. Dose depends on severity of the lesion and size of the patient. Once control is established, a topical agent as described in the 1st line of treatment should be introduced for maintenance and reduce the risk of acute exacerbation.

Tertiary line of treatment: For severe cases of OLP that do not respond to short term systemic prednisone therapy, a more protected course of prednisone administration is necessary. The daily dose should be tapered down slowly (5 mg/wk) to determine the lowest dose necessary to manage the lesion.

To reduce the amount of total prednisone necessary, concurrently prescribe a steroid sparing agent such as Azathioprine (50-100 mg/day). It acts synergistically with prednisone to reduce inflammation, and helps in lowering therapeutic prednisone dose.

Adjunctive therapy-Due to the use of corticosteroids, chances of Candida infection is anticipated. So a topical or systemic antifungal agent should be prescribed in conjunction with steroid regimen to preclude this problem. Agents are nystatin, ketaconazole, clotrimazole or fluconazole can be used

CONCLUSION

To conclude oral lichen planus is a widely studied area with various treatment modalities available but in our day to day practice the main line of treatment still remains corticosteroids along with antioxidants and the recurrence of the lesion following withdrawal of the drug is a major concern for both the dentist and the patient.[3]

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UNHOLY WATER

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Proper infection control practices plays a vital role in our daily dental practice to create a safe arena to deliver the best health care to the patient as well as provide safe working environment for the dental team. We must be vigilant in ensuring that proper infection control procedures are carried out in our practices especially that of the dental unit/ chair which constitutes an indispensable part in the functioning of a dental practice. One aspect of infection control that we generally tend to overlook iswhether water fromthe dental unit/ chair is safe.

What are dental unit waterlines?

The dental unit waterlines (DUW) are small-bore plastic tubingthat connect the high-speed handpiece, air/water syringe and ultrasonic scaler to the water supply.Hydrodynamic studies show that the water column within the tubes moves through the center of the tubing, leaving a thin layer of liquid virtually undisturbed along the walls. When combined with the recurrent long term water stagnation during non-working hours and warm temperatures make the DUWs, a favorable environment for growth of micoflora. These waterlines hence becomes contaminated by microorganisms consisting of bacteria, fungi and protozoans. The contaminant bacteria are derived either from incoming water or to a lesser extent from the patients' mouth. They replicate and colonize the inner luminal surface, rapidly leading to the formation of heterogeneous tenacious adherent microbial accumulations termed "biofilms".If the biofilm is allowed to grow undisturbed over a few years and can become visible to the naked eye, clog the tubing and give a foul smell to the water. They are characterized by microcolonies of various bacteria embedded in a matrix of extracellular polymeric substances. The biofilm bacterial community acts as a self-protecting and self-perpetuating unit. Biofilms within the waterlines once formed will act as a reservoir for these organisms thus increasing the number of free-floating microorganisms in the water exiting the waterlines.

Usually the water that enters the dental unit's waterlines meets the public health standards for potable quality of <500 colony forming units per millimeter of heterotrophic bacteria (CFU/mL) set by the American public health association. But water coming out of dental waterlines may contain up toan alarming 1,00,000 CFU/mL of bacteria. More than 25 different species have been isolated from the DUWs. The majority of the organisms found in the DUWs biofilm are environmental aerobic gram- negative bacteria, which are usually non-pathogenic.

The water entering the DUWs only has very low concentrations of human opportunistic pathogens such as Pseudomonas aeruginosa, Legionella pneumophilia, nontuberculous mycobacteria and Acanthameoba spp. But the presence of biofilms in the DUWs are associated with higher levels of these opportunistic pathogens in the water exiting the dental unit.

How does this affect you and your patients?

There are at least 4 routes through which waterborne microorganisms can cause infection in a patient undergoing dental treatment: hematogenous spread during surgical procedures, local mucosal (oral or conjunctival) contact, ingestion and inhalation. Hematogenous dissemination is considered unlikelybut possible none the less. Dental treatment can lead to transient bacteremia caused by oral streptococci. However, involvement of oral tissue is more likely,

possibly through local infection after tooth extraction or periodontal treatment. Eye infection with Acanthameoba spp. after accidental splatter has also been reported.

The evidence suggests that dental personnel are continually exposed to waterborne microorganisms. For example, the prevalence of antibodies to L. pneumophiliawas significantly higher among dental personnel than in a control population (34% and 5% respectively), and the nasal flora of dentists mayhave a higher proportion of waterborne Pseudomonas spp.

The cell wall of gram-negative bacteria is potent source of endotoxin, which has been found to be associated with inflammatory reactions in periodontal diseases and systemic illnesses such as septic shock. Hence the high bacterial counts results in a high endotoxin concentration and this can stimulate proinflammatory cytokines in gingival tissue during surgery and thus delay the healing process. The infection control guidelines dictate the use of sterile water supplies during surgical procedures to avoid this potential hazard.

A study has also reported on an association between the onset of occupational asthma in dentists and the concentration of bacteria in their DUW. Endotoxins of DUW origin may account for this increase in occupational asthma suffered by dentists.

How significant is the threat?

Despite the presence of potentially pathogenic organisms in the water in much greater levels than that established for drinking water, only a few cases of illnesses associated with pathogens from DUWs have been confirmed. However, this can be due to the fact that most dental clinic work on an out-patient setting, epidemiological links between infection and recent exposure to contaminated dental water can be difficult to establish. This can also be due to the relatively small amount of water entering the patient's mouth during the routine dental treatments. Exposing patients or dental health-care workers to water of uncertain microbiological quality, despite the lack of documented adverse health effects, is not consistent with accepted infection control principles.This exposure of the patient to opportunistic pathogens, while it may not be a concern to healthy individuals, it might place elderly or immunocompromised patients at unnecessary risk.Exposure to aerosols and entrance of contaminated water into open wounds are also possible routes of microbial transmission.

The use of independent bottle water systems further aggravate this issue if the bottles are not disinfected on a daily basis. The bottle water provides a stagnant, room- temperature medium for the development of the biofilm. But one major advantage the independent bottle water system can provide is that they make the unit accessible for waterline treatment regimes. Units can be fitted with automated disinfectant dosing systems which simplifies waterlines maintenance.

How can you test the water in your clinic?

The American dental association recommends the effluent water from DUW should contain<200 CFU/ml of bacteria. This can be tested at water-testing laboratories or with commercially available test kits.

What are strategies to improve dental unit water quality?

The most recent CDC (center for disease control and prevention) infection control guidelines recommend that potable water be used for routine dental care and that sterile water be used for surgical procedures.

Initially, in 1993 CDC advised flushing of the waterlines at beginning of each clinic day to decrease the microbial load. However studies have shown that this doesn't affect the biofilm within the waterlines and is not a reliable technique to improvethe quality of water.

Manufacturers are making an effort to create accessory components that can be retrofitted to dental units currently in use to control quality of source water used in patient:-

1. Alternative water supply that bypass community water supply and dental water lines providing sterile/distilled water directly into water line attachment of the instrument which may also be combined with chemical treatment.
2. Filtration by using in-line filters to remove bacteria immediately before dental unit water enters instrument attachment.
3. Chemical disinfection involving periodic flushing of the lines with a disinfectant followed by appropriate rinsing of lines with water.
4. Thermal inactivation of facility water at a centralized source.
5. Reverse osmosis/ ozonation using units designed for either single chair/ entire practice water lines.

Simply using source water containing <500 CFU/ mL of bacteria (e.g., tap, distilled, or sterile) in a self-contained water system will not eliminate bacterial contamination in treatment water if biofilms in the water system are not controlled.

There are many antibacterial agents marketed for the treatment of DUW. Ideally the biocide should eliminate the biofilm, prevent its re-formation and consistently produce water of drinking standard without being toxic or damage the waterlines or dental equipment. Continuous dosing with a biocide was found to be more effective than intermittent dosing.

Contaminated waterlines should first be cleaned to remove accumulated microbial and extracellular material. While performing this the dental unit's manufacturer's step-by-step instruction procedure should be followed to achieve this removal. For minimizing subsequent colonization may require another series of protocols. The whole dental team needs to be aware of product cost, necessity of compliance, and the time required to reach recommended dental waterline antimicrobial concentrations.

Special precautions when performing oral surgical procedures

Don't use dental unit water when performing oral surgical procedures. Instead, sterile solutions, either sterile saline or sterile water, should be used as a coolant/irrigation. Dental units do not deliver sterile water even when equipped with independent water reservoirs because the water lines cannot be sterilized. Delivery devices (e.g., bulb syringe or sterile, single-use disposable products) should be used to deliver sterile water.

Conclusion

We as dental professional should strive to provide the best care to the patients and this creates the need for improving the quality of dental unit water. We must integrate protocols to eradicate biofilms from dental unit water lines and maintain the quality of water to the best of our abilities. Although most immunocompetent patients treated in the dental office are not at risk from the organisms from the dental unit water lines, in the immunocompromised, elderly and chronically ill patients the infective dose needed to establish infection are considerably less.

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Diabetes and Periodontitis- A two way relationship

Dr. Annie Kitty George,
Reader, Dept of Periodontics, Pushpagiri College of Dental Sciences

Introduction

Diabetes Mellitus is an extremely important disease from a periodontal standpoint. It is a complex metabolic disease characterized by chronic hyperglycemia. Diabetes can occur due to diminished insulin production, impaired insulin action, or a combination of both resulting in an inability of glucose to be transported from the bloodstream into the tissues. This results in high blood glucose levels and excretion of sugar in the urine. Periodontal disease is a chronic inflammatory disease characterized by inflamed gingiva, bleeding on probing, attachment loss, and alveolar bone loss . The severity and progression of periodontal diseases are modified by diabetes mellitus. Conversely, the presence of periodontitis especially if left untreated can alter the glycemic status. Periodontal therapy may help to decrease insulin demand and restore insulin sensitivity.

Classification

The American Diabetes Association issued new classification and diagnostic criteria for diabetes in 1997. These criteria were modified in 2003 and this classification divides diabetes into four general categories: type 1, type 2, idiopathic and gestational diabetes mellitus.[1]

Type 1diabetes mellitus (IDDM), is caused by a cell-mediated autoimmune destruction of the insulin-producing beta cells of the islets of Langerhans in the pancreas, which results in insulin deficiency. Type 1 diabetes accounts for 5% to 10% of all cases of diabetes and most often occurs in children and young adults. This type of diabetes results from a lack of insulin production and is very unstable and difficult to control. It has a marked tendency toward ketosis and coma, is not preceded by obesity, and requires injected insulin to be controlled. Patients with type 1 diabetes mellitus present with the symptoms traditionally associated with diabetes, including polyphagia, polydipsia, polyuria and predisposition to infections. Idiopathic diabetes encompasses some forms of type 1 diabetes that have no known etiologies.

Type 2 diabetes mellitus, formerly non-insulin dependent diabetes mellitus (NIDDM) is caused by peripheral resistance to insulin action, impaired insulin secretion, and increased glucose production in the liver. Type 2 diabetes is the most common form of diabetes accounting for 90% to 95% of all cases. This form of the disease most often has an adult onset. It generally occurs in obese individuals and can often be controlled by diet and/or oral hypoglycemic agents. The development of ketosis and coma is not common. Type 2 diabetes can present with the same symptoms as type 1 diabetes but typically in a less severe form. An additional category of diabetes is hyperglycemia secondary to other diseases or conditions. A prime example of this type of hyperglycemia is gestational diabetes associated with pregnancy. Gestational diabetes develops in 2% to 5% of all pregnancies but

disappears after delivery. Women who have had gestational diabetes are at increased risk of developing type 2 diabetes later in life. Other specific types of diabetes are diabetes due to genetic defects of the beta cell, genetic defects in insulin action, Diseases of the exocrine pancreas, Endocrinopathies, Drug or chemical-induced diabetes, Infections and Diabetes associated with genetic syndromes.

Diabetes mellitus as a risk factor for periodontitis

Numerous oral changes have been described in diabetics, including cheilosis, mucosal drying and cracking, burning mouth and tongue, diminished salivary flow, and alterations in the flora of the oral cavity, with greater predominance of *Candida albicans,* hemolytic streptococci, and staphylococci. An increased rate of dental caries has also been observed in poorly controlled diabetes. These changes are not always present, are not specific, and are not pathognomonic for diabetes. Furthermore, these changes are less likely to be observed in well-controlled diabetics. Individuals with controlled diabetes have a normal tissue response, a normally developed dentition, a normal defense against infections and no increase in the incidence of caries. Periodontal manifestations may include a tendency toward enlarged gingiva, sessile or pedunculated gingival polyps, polypoid gingival proliferations, abscess formation, periodontitis, and loosened teeth. The most striking changes in uncontrolled diabetes are the reduction in defense mechanisms and the increased susceptibility to infections leading to destructive periodontal disease. Periodontal disease in diabetics follows no consistent or distinct pattern. Majority of well-controlled studies point out that a higher prevalence and severity of periodontal disease is present in individuals with diabetes than without, with similar local factors. Periodontal findings include pronounced gingival inflammation, greater loss of attachment, increased bleeding on probing, and increased tooth mobility.[2] Diabetes does not cause gingivitis or periodontal pockets, but there are indications that it alters the response of the periodontal tissues to local factors, hastening bone loss and retarding postsurgical healing of the periodontal tissues. Frequent periodontal abscesses appear to be an important feature of periodontal disease in diabetics. Evidence indicates that the risk of developing destructive periodontitis increases threefold in diabetic individuals.

Role of diabetes mellitus in periodontal disease

The increased glucose in the gingival fluid and blood of individuals with diabetes could change the environment of the microflora, inducing qualitative changes in bacteria that could account for the severity of periodontal disease observed in poorly controlled individuals with diabetes. The increased susceptibility of diabetics to infection has also been hypothesized as being due to polymorphonuclear leukocyte deficiencies resulting in impaired chemotaxis,

defective phagocytosis, or impaired adherence. Increased collagenase activity and decreased collagen synthesis is found in individuals with diabetes with chronic hyperglycemia. Chronic hyperglycemia adversely affects the synthesis, maturation, and maintenance of collagen and extracellular matrix. In the hyperglycemic state, numerous proteins and matrix molecules undergo a nonenzymatic glycosylation, resulting in advanced glycation end products (AGES).The formation of AGES can occur at normal glucose levels, but in hyperglycemic environments, AGE formation is excessive. AGE formation cross-links collagen, making it less soluble and less likely to be normally repaired or replaced. As a result, collagen in the tissues

of poorly controlled diabetics is aged and more susceptible to breakdown. Poor glycemic control and increased AGES render the periodontal tissues more susceptible to destruction. Cellular migration through cross-linked collagen is impeded and perhaps more importantly, tissue integrity is impaired as a result of damaged collagen remaining in the tissues for longer periods. The cumulative effects of altered cellular response to local factors, impaired tissue integrity and altered collagen metabolism undoubtedly play a significant role in the susceptibility of individuals with diabetes to infections and destructive periodontal disease. The increased prevalence and severity of periodontitis commonly observed in patients with diabetes, especially those with poor metabolic control, led to the designation of periodontal disease as the "sixth complication of diabetes.""In addition to the five "classic" complications of diabetes , the American Diabetes Association has officially recognized that periodontal disease is common in patients with diabetes, and its Standards of Care include taking a history of current or past dental infections as part of the physician's examination.[3]

Effect of periodontitis on glycemic status

In a longitudinal study of patients with type 2 diabetes, severe periodontitis was associated with significant worsening of glycemic control over time. Individuals with severe periodontitis at the baseline examination had a greater incidence of worsening glycemic control over a 2- to 4-year period than did those without periodontitis at baseline.[4] In this study, periodontitis is known to have preceded the worsening of glycemic control. Periodontitis has also been associated with the classic complications of diabetes.

Systemic infections increase tissue resistance to insulin, preventing glucose from entering target cells, causing elevated blood glucose levels, and requiring increased pancreatic insulin production to maintain normoglycemia. Insulin resistance may persist for weeks or even months after the patient has recovered clinically from their illness. In the individual with type 2 diabetes, who already has significant insulin resistance, further tissue resistance to insulin induced by infection may considerably exacerbate poor glycemic control. In type 1 patients, normal insulin doses may be inadequate to maintain good glycemic control in the presence of infection-induced tissue resistance. It is possible that chronic gram-negative periodontal infections may also result in increased insulin resistance and poor glycemic control.[5] In patients with periodontitis, persistent systemic challenge with periodontopathic bacteria and their products may act in a way similar to well-recognized systemic infections. This mechanism would explain the worsening of glycemic control associated with severe periodontitis.

Effects of periodontal therapy in patients with diabetes

In diabetic patients with periodontitis, periodontal therapy may have beneficial effects on glycemic control. This may be especially true for patients with relatively poor glycemic control and more advanced periodontal destruction prior to treatments. Studies suggest that the combination of subgingival mechanical debridement and systemic doxycycline may result in short-term improvement in glycemia in diabetic patients with severe periodontitis and poor metabolic control.[6] Although routine use of systemic antibiotics in treatment of chronic periodontitis is not justified, patients with poorly controlled diabetes and severe periodontitis may constitute one patient group for whom such therapy is appropriate. Of course, antibiotics remain an adjunct to the necessary mechanical removal of plaque and calculus. Systemic antibiotics may eliminate

residual bacteria following scaling and root planing, further decreasing the bacterial challenge to the host. Tetracyclines are also known to suppress glycation of proteins and to decrease activity of tissue-degrading enzymes such as matrix metalloproteinases. These changes may contribute to improvement in metabolic control of diabetes. Periodontal treatment designed to decrease the bacterial insult and reduce inflammation might restore insulin sensitivity over time, resulting in improved metabolic control. The improved glycemic control seen in several studies of periodontal therapy would support such a hypothesis.

Management of the diabetic patient with periodontitis

When the clinician detects intraoral signs of undiagnosed or poorly controlled diabetes, a thorough history is indicated. The classic signs of diabetes include polydipsia, polyuria, and polyphagia. If the patient has any of these signs or symptoms, or if the clinician's index of suspicion is high, further investigation via laboratory studies and physician consultation is indicated. Periodontal therapy has limited success in the presence of undiagnosed or poorly controlled diabetes.

If a patient is suspected of having undiagnosed diabetes, the following procedures should be performed:

1. Consult the patient's physician.
2. Analyze laboratory tests fasting blood glucose, casual glucose, and postprandial blood glucose.'
3. Rule out acute orofacial infection or severe dental infection, and provide emergency care only until diagnosis is established.

If a patient is known to have diabetes, it is critical that the level of glycemic control be established before initiating periodontal treatment. The fasting glucose and casual glucose tests provide "snapshots" of the blood glucose concentration at the time the blood was drawn. They reveal nothing about long-term glycemic control.

Diagnostic criteria for diabetes mellitus

Symptoms of diabetes plus casual plasma glucose concentration e"200 mg/dl

Fasting plasma glucose e"126 mg/dl. Fasting is defined as no caloric intake for at least 8 h;

2-h post-load glucose e"200 mg/dl

The primary test used to assess glycemic control in a known diabetic individual is the glycosylated or glycated hemoglobin assay. Two different tests are available, the HbAl and the HbAlc test; the HbAlc is more commonly used. This assay reflects blood glucose concentrations over the preceding 6 to 8 weeks and may provide an indication of the potential response to periodontal therapy. Patients with relatively well-controlled diabetes (HbAlc < 8%) usually respond to therapy in a manner similar to nondiabetic individuals. Poorly controlled patients (HbAlc > 10%) often have a poor response to treatment, with more postoperative complications and less favorable long-term results. Periodontal infection may

worsen glycemic control, and should be managed aggressively. Diabetic patients with periodontitis should receive oral hygiene instructions, mechanical debridement to remove local factors, and regular maintenance.

An HbAlc of <10% should be established before surgical treatment is performed. Systemic antibiotics are not needed routinely, although recent evidence indicates that tetracycline antibiotics in combination with scaling and root planing may positively influence glycemic control. If the patient has poor glycemic control and surgery is absolutely needed, prophylactic antibiotics may be given. Penicillins are most often used for this purpose. Frequent re evaluation after active therapy is needed to assess treatment response and prevent recurrence of periodontitis.

Table I. Correlation between hemoglobin A1c levels and mean plasma glucose levels

HbA1c (%)	Mean plasma glucose	
	mg/dl	mmol/l
6	135	7.5
7	170	9.5
8	205	11.5
9	240	13.5
10	275	15.5
11	310	17.5
12	345	19.5

Hemoglobin A1c provides an estimate of the average glucose level. It does not account for short-term fluctuation in plasma glucose levels.

The most common dental office complication seen in diabetic patients taking insulin is symptomatic low blood glucose or hypoglycemia. Hypoglycemia is also associated with the use of numerous oral agents Hypoglycemia does not usually occur until blood glucose levels fall below 60 mg/dl. Taking insulin without eating is the primary cause of hypoglycemia. As a general guideline, well-controlled diabetic patients having routine periodontal treatment may take their normal medication as long as they also eat their normal meal. If the procedures are going to be particularly long, the insulin dose before treatment may need to be reduced. Likewise, if the patient will have dietary restrictions after treatment, insulin or sulfonylurea dosages may need to be reduced. Consultation with the patient's physician is prudent and allows both practitioners to review the proposed treatment plan and determine any modifications needed. When periodontal surgery is indicated, it is usually best to limit the size of the surgical fields so that the patient will be comfortable enough to resume a normal diet immediately

Conclusion

Periodontal disease and diabetes are very common chronic diseases which often coexist in the same patient. The dentist could be the first to detect an undiagnosed diabetic patient. The inter-relationship between periodontal disease and diabetes mellitus provides an example of a cyclical association, whereby a systemic disease predisposes the individual to oral infections, and, once the oral infection

is established, it exacerbates the systemic disease.[7] Periodontal therapy and maintenance could help diabetic patients to achieve better glycemic control. Patient education and motivation is critical in this regard.

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Rehabilitation of Atrophied edentulous Ridge with "ALL ON FOUR " Implant Supported Denture – A Case Report

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Abstract

Patients with severe atrophy of the jaw are not typically considered good candidates for dental implants. However, the introduction of a new type of implant 5 years ago is challenging that standard. Combined with the All-on-Four concept of inserting the implants, the new implant can benefit a wider range of patients, including those with degeneration of bone in the upper or lower jaw.

Introduction

The use of dental implants to improve patients quality of life has been documented in a multitude of publications. The Embarrassment caused by dentures moving during social interactions and the constant preoccupation with attempts to stabilize them leave the majority of patients dissatisfied with this treatment options. The use of dental implant improves patient speech,function,esthetics and self esteem. Patients with severe atrophy of the jaw are not typically considered good candidates for dental implants. We Report a case of such Type with severe atrophy were All-on-Four concept of inserting the implants was done and rehabilitated.

Case Report

The patient, a 70-year-old woman who had been edentulous in her maxilla and mandible for more than 2 years, was highly dissatisfied with the function and esthetics of her existing maxillary and mandibular complete removable dentures. Her OPG revealed severe advanced maxillary and mandibular horizontal atrophy . The procedure was carried out under Local anesthesia.A torque of 70 Ncm was achieved on all.Maxillary and Mandibular All-on-Four procedures were carried out to reconstruct her with 3.5-mm implants(FIG:1) .Maxillary and Mandibular removable provisional denture was given.She was reconstructed with definitive fixed maxillary and mandibular prosthetic appliances (FIG:2) after six months. After several years, she remains asymptomatic, nonpathological, and fully functional, greatly enjoying the security of the fixed appliances in addition to the function and esthetics that were created for her.

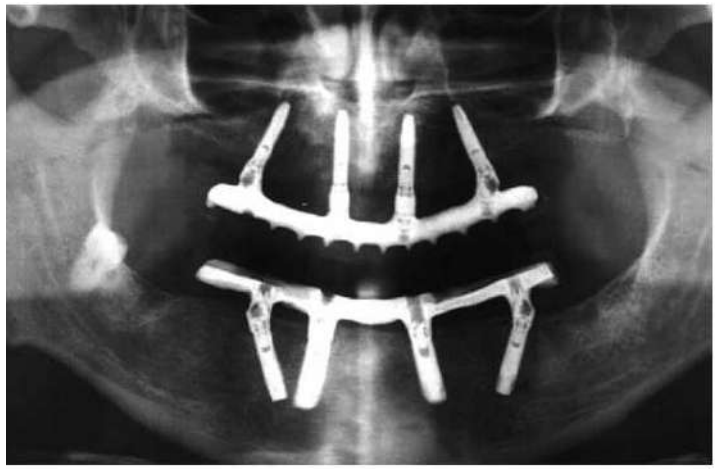
DISCUSSION

All-on-Four concept although this method uses only four implants, two of them are placed distally tilted in areas where bone height, nerve proximity, or other conditions make it impossible to place the implant axially. This tilting allows the placement of longer implants that have good anchorage in the best positions for prosthetic support.

Previously, standard practice called for dental implants of at least 4.0 mm in diameter. For tilted implants in particular, this was considered the smallest diameter that could guarantee sufficient anchorage. The NobelActive implant, introduced

in 2008, made it possible to use a 3.5 mm diameter implant for patients with atrophic jaws.

Featuring tapering, a variable thread, and an inward tapered collar, this implant offers self-drilling capacity and bone compression qualities. High torque values can be reached, giving the implant high initial stability.



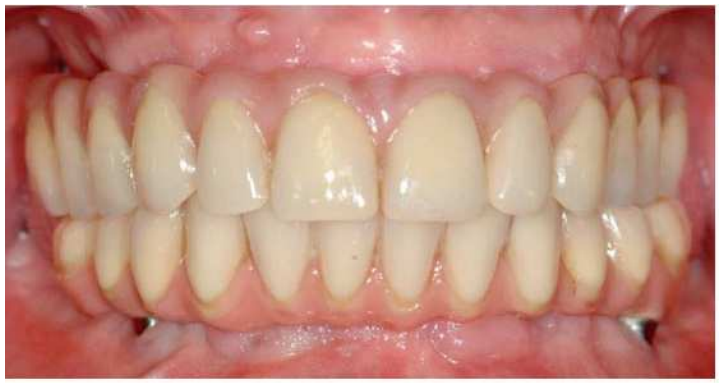
Prior studies have found that failed implants using the All-in-Four method were a result of soft bone and lower insertion torque values. The combination of a 3.5 mm diameter implant and the All-on-Four technique brings new treatment possibilities to patients with severe bone deficiencies.

ADVANTAGES of tilting implants are

1. Stability even in minimum bone volume: Longer implants can be used in minimum bone volume with advantage of increasing bone-to-implant contact and reducing the need for vertical bone augmentation.
2. Good clinical results.
3. Eliminates the need for bone grafting which is invasive with unpredictable outcome .
4. Can usually be performed in patients with various systemic conditions which are often contraindications for bone grafting .
5. The angulations allow placement that avoids anatomical structures .
6. There is a biomechanical advantage in using tilted distal implants rather than distal cantilever units .
7. Reduce the length of cantilevers without performing bone grafting or sinus lifting .
8. Effective and safe alternative to maxillary sinus floor augmentation procedures and to pneumatised maxillary sinus .
9. Distally tilted implants induced better loading transmission than vertical implants.

Axial implant placement has been accepted worldwide as a successful treatment modality for prosthodontic rehabilitation. When various criteria for success of implant prosthesis like osseointegration, crestal bone loss around implant neck, longevity or survival of the restoration etc. are considered along with complications associated with implants; most of the studies have demonstrated excellent success rate over a period of time (1-10 y) with an average of more than 95%. Commonly accepted criteria for assessment of implant success were proposed by Albrektsson et al., Misch et al., at the International Congress of Oral Implantologists (ICOI) consensus conference. Based on above criteria, number of studies has been reported claiming success rate of the order of 78-100% with more than 15 y of observation time .

In case of atrophic maxilla, implant placement isn't possible without undergoing invasive procedures like bone augmentation or sinus lift procedure or both. Several types of complications may occur during and after the sinus elevation procedure like Schneiderian membrane perforation, nose bleeding, post operative pain and swelling even though it was not described an important negative effect on implant success rates . But patient may be under psychological stress and addition of burden of an extra surgery and increased cost if enough bone isn't available to carry out sinus lift and implant placement at same appointment .



Bone grafting, though practicable now a days is dependent on many factors like type of bone graft used (autogenous, alloplastic or xenograft), host response, age of patient, various complications associated with grafting procedure, infection and most importantly time spent while graft material matures and is taken up by bone. One review revealed that there are not many studies providing data on success rate of dental implants placed in onlay graft augmented ridges and demonstrated, on average, a poor methodological quality . Considering all these things, placement of an angulated implant avoiding both invasive procedures like sinus lift and bone augmentation procedure is a viable treatment option

Conclusion

This technique is extremely technique sensitive, useful in patients with resorbed ridges but long term studies are required to evaluate its success rate in terms of load distribution, marginal bone loss around implant and prosthesis survival but currently many practitioners are treating patients with this modality with a great success.

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THE UNWRITTEN CODE

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INTRODUCTION

Dentistry is both a science and an art. A competent dentist should have adequate knowledge, experience, critical thinking and problem-solving skills, professionalism, ethical values, technical and procedural skills. During delivery of patient care, all these qualities are integrated together and performed with a degree of quality, consistent with patient well-being and treatment effectiveness can be self-evaluated by a competent dentist[1].

A profession has been defined as an occupation involving relatively long and specialized preparation on the level of higher education and governed by a special code of ethics. [2]. Dentists fall under the category of professions and professionals.

Hence all dentist's have both the obligation of making themselves a part of a professional society and of observing its rules of ethics. Dental profession in India is regulated by the Dental Council of India (DCI) and is financed by the Ministry of Health and Family Welfare, Government of India. DCI is a statutory body incorporated under an act of parliament, viz., the Dentists Act, 1948 (XVI of 1948). While DCI mainly deals with the dental education in India, the state dental councils, constituted under section 21 of the Dentists Act, 1948, including a Joint State Council constituted in accordance with an agreement under section 22, register, regulate, and monitor the dental practice in the respective states

The word "ethics" comes from the Greek "*ethos*" meaning character or conduct. It is generally used interchangeably with the word "moral", derived from the Latin word "*mores*", which means customs or habits. These two words together refer to conduct, character and motivation involved in moral acts. Hence, ethicsis imposed by moral obligation and not by law. Ethics are an unwritten code of conduct that encompasses both professional conduct and judgment. The basic principles of ethics that serve as the foundation for the code of ethics are respect to patient autonomy, beneficence, nonmaleficence, justice, and veracity.

Dr. Sunu Alice Cherian

RESPECT FOR PERSONAL AUTONOMY: *Autonomy means free-will. It i*s the right of the patient to make his or her own decisions regarding the treatment that he or she will receive. Not so long ago, the majority of dental decisions were left in the hands of the dentist. Now, it is imperative that the patient have the final decision in his or her treatment. The dentist is responsible for providing the patient with all of the available treatment options, the risks and benefits associated with those treatments, and giving the patient the ability to make a decision that is informed and best suits his or her needs. In Ozar and Sokol's interactive model of the patient-dentist relationship, the dentist and patient are equal partners in the decision making process[3].

One aspect of respect for personal autonomy isconsent. The term consent means voluntary agreement, compliance, or permission [4].According to the Indian contract Act, Section 13, two or morepersons are said to consent when they agree upon the same thing in thesame sense

(meeting of the minds) [5,6].Consent is the legal sister to the ethical concept of patient autonomy. This right protects "every adult patient who is mentally competent and of sound mind not to be touched or in any way treated without the patient's authorization and the dentist who performs procedures without patient's consent commitsassault for which the surgeon is liable in damages" [7].

The proposed treatment, the risks involved, and the possibility of any alternative treatment should be explained to the patient and ensured that appropriate consent is obtained. As there are often a number of different ways of treating a particular dental problem, the patient must understand all of the options available and be able to choose the treatment he/she would like. The dentist must ensure that all necessary information and explanations have been explained, either personally or by the anesthetist if a general anesthetic or sedation is required. The patient must be given clear pre-operative and post-operative instructions in writing and written consent must be obtained before the procedure.

Extractions give rise to the majority of litigations in the dental field and to claims that the risks of the extraction were not revealed to the patient was pointed in some studies.[8] A study of 20 cases concluded that most of the lawsuits in oral surgery practice can be prevented either through preoperative measures or by dealing with the impact of the surgical error through good patient rapport and communication.[9]In such issues, the surgeon should not deliberately proceed without informed consent.[10]

Consent may be implied, expressed, informed, proxy consent, loco parentis, or blanket consent, depending upon the circumstances, in each case [11].

Implied consent

Implied consent was described by Rowe as: 'by being in the chair at thedental surgery with mouth open, a patient implies that they are there fordental treatment'[12]. Though an implied consent is not written and its existence is not explicitly asserted, it is legally effective. It implies consent in general sense, as when a patient arranges an appointment with a dentist,to volunteer the history, to answer question relating to the history and to submit without objection to dental examination[4].Most dental treatment is carried out while the patient is conscious and they are therefore capable to stop the dentist when they wishto. This reinforces the reliability of implied consent as a means ofexercising individual autonomy[13].

Expressed consent (Tacit consent)

Expressed consent is stated in distinct and explicit language, either written (written expressed consent) or verbally (oral or verbal expressed consent) and is a must beyond routine examination[14]. Written consent should be obtained in the use of newer analgesic, narcotic or anesthetic agents that will significantly affect the patient's level of consciousness during the treatment and when a treatment is likely to be more than mildly painful, when it carries appreciable risk, or when it can result in diminishing of a bodily function. Expressed oral consent is obtained for relatively minor examinations or therapeutic procedures, preferably in the presence of a disinterested party [15]. Written consent has the advantage of easy proof and permanent form. Expressed oral consent, if properly witnessed, is as valid as written consent[14].

Proxy consent (Substitute Consent)

When a patient in need of dental treatment is unable to give consent because he/she is a minor or mentally unsound/unconscious, a proxy consent is obtained which can be provided by a parent or close relative[16,17].

Loco parentis

When parents/guardians are not available in an emergency situation in case of children, consent can be obtained from the personbringing the child for dental examination or treatment (e.g. school teacher, warden, etc) [18].

Blanket consent

It is a consent taken on a printed form that covers (like a blanket)almost everything a dentist or a hospital might do to a patient, withoutmentioning anything specifically. Blanket consent is legally inadequatefor any procedure that has risks or alternatives.

Informed refusal

Informed consent need not always mean that the patient agrees to the treatment plan. A subset of informed consent known as informed refusal should be obtained when the patient does not wish to undergo treatment recommended by the dentist. [19] For example, if a dentist recommends that a patient should undergo endodontic therapy, but the patient elects to have the tooth extracted, an entry should be made in the patient's record stating that the patient was informed of the risks of not complying with the recommendation. If a patient is referred to see a specialist and refuses the referral, the clinician should document the refusal thoroughly in the patient chart and have the patient sign the chart or a separate form[20].

2. Nonmaleficence("do no harm").[21]

The dentist has a duty to refrain from harming the patient. Under this principle, the dentist's primary obligations include updating the knowledge and skills, knowing one's own limitations and when to refer to a specialist or other professional, and knowing when and under what circumstances delegation of patient care to auxiliaries is appropriate. A dentist is required to complete the treatment through to the end, once it has begun. If for any reason a dentist feels that he or she cannot complete the procedure, the dentist is obligated to refer the patient to a specialist or colleague.It is also the duty to protect the patient from harm. Should harm to the patient occur, the dentist shall disclose it to the patient. It is the obligation of the dentist to inform immediately to any patient who may have been exposed to blood or any other potentially infectious material at the dental office and to refer the patient to a qualified healthcare provider to obtain post-exposure services and follow-up. It is the ethical obligation of the dentist to avoid interpersonal relationships with his or her patients, which can impair a dentist's ability to properly utilize professional judgment regarding treatment and may exploit the confidence placed on the dentist by the patient[22].

3. Beneficence("do good")[21].

A dentist has the responsibility to provide a high standard of professional services and is accountable for the intended benefit and outcome of any treatment. Dental treatment should be intended to result in an improvement or maintenance of the patient's condition. The ultimate goal of treatment shall be to optimize or restore oral function and/ or appearance for the patient. This is influenced by factors such as, the patient's age, general health, underlying anatomy, previous treatment, pre-existing conditions, and compliance with oral hygiene and other instructions. The most important aspect of this obligation is the competent and timely delivery of dental care within the bounds of clinical circumstances presented by the patient, with due consideration being given to the needs, desires and values of the patient[23].

4. JUSTICE

The dentist has a duty to be fair in their dealings with patients, colleagues and society and delivering dental care without prejudice. Society often determines what is just and unjust, therefore it is essential that dentists rely on cues from society to ensure ethical compliance[3]. Practicing justice includes serving patients without discrimination against race, creed, color, sex or national origin.

5. VERACITY

Veracity involves truthfulness and keeping prom-ises. Dentists are obliged to be truthful with patients and/or their families and to avoid withholding information or representing care in a false or misleading manner. It is unethical for a dentist to recommend unnecessary dental pro-cedures to their patients.

MAKING AN ETHICAL DECISION

From the moment a dentist accepts a patient, both the dentist and the patient accept certain obligations pertaining to the patient-dentist relationship, which include responsibilities such as, disclosing relevant information regarding the patient's care, mutual respect, being truthful and trustworthy, and considering the patient's values and personal preferences. The process of ethical decision making by dentists may be simple or quite complex, ranging from "The Golden Rule" (found in many scriptures: do unto others as you want them to do to you), to decisions that contemplate the ethical principles or considerations at stake. Ethical decision making involves both judging and choosing. Factors that adversely affect a dentist's decision making capacity include emotional state, incompetence, physical and mental disorders, and other conditions.

Hence, there are several models that exist to assist those in the profession to make ethical decisions. One model put forth to making ethical decisions relating to dental situations is by Ozar and Sokolare:

1. I*dentifying the alternatives: De*termining the most appropriate course of action, identifying resulting circumstances of the procedure, and informing the most important features of each treatment to the patient.
2. Determining what is professionally at stake: Professional opinion of the dentist taken in similar treatment situations and apply those considerations to the decision making process.
3. Determining what else is ethically at stake for the patient in each treatment alternative.
4. Determining what ought to be done or ranking the alternatives.No matter what the outcome, the principles of ethics come into play during every decision (made by applying various values, virtues, rules, rights, and professional norms) regarding dental treatment.

One of the most effective methods for decision making in the dental treatment process is the ACD Test, which is deeply rooted in ethical guidelines set forth by the ADA. [23]

Assess

Is it true?

Is it accurate?

Is it fair?

Is it quality?

Is it legal?

Communicate

Have you listened?

Have you informed the patient?

Have you explained outcomes?

Have you presented alternatives?

Decide

Is now the best time?

Is it within your ability?

Is it in the best interest of the patient?

Is it what you would want for yourself?

The answers to these questions should lead to the best and most ethical decision for the patient's treatment and should be utilized when faced with an ethical dilemma.

CONCLUSION

Practicing dental surgeons have the obligation of maintaining and enriching the profession. Appropriate goals for including ethics in the syllabus of dentistry has also been identified[24].The main ethical consideration in dentistry has not been aboutspecific clinical issues such as, that of the termination of care, but it is more focused on the ethicalstandards of the profession in the sense of excellence in the quality of care and theneed to maintain public trust. Since there are many ethical dilemmas in dentistry, dentists will need to be kept informed about developments in dental ethicsjust as they do in other aspects of dentistry.

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CURRENT THOUGHTS ON DENTAL MANAGEMENT OF PATIENTS RECEIVING ANTIPLATELET AND ANTICOAGULANT THERAPY

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Thromboembolic events are among the major causes of mortality and morbidity. To decrease the incidence of such events, physicians prescribe one or more antithrombotic medications for patients at risk. These medications include antiplatelet agents, fibrinolytic drugs and anticoagulants.

It is common for oral and maxillofacial surgeons to treat patients who are receiving oral anticoagulation or antiplatelet therapy.Patients taking warfarin or antiplatelet agents face an increased risk of bleeding due to dental procedures. But stopping these medications may put the patient at risk of a thrombotic event. The risk of bleeding must be weighed against the risk and consequences of thrombosis.Dentists should be aware of their patient's medical condition and have the knowledge and means to provide optimal care.

ANTIPLATELET THERAPY

Antiplatelet therapy is a mainstay in the management of patients with CAD and PVD.Antiplatelet drugs interfere with platelet aggregation by reversibly or irreversibly inhibiting various steps in platelet activation required for primary hemostasis.The most common antiplatelet medications are the cyclooxygenase inhibitors (e.g., ASA) and the adenosine diphosphate (ADP) receptor inhibitors (e.g., clopidogrel). Although antiplatelet drugs can double bleeding time, this time may remain within or just above the normal limit and thus, have no clinical significance.

ASA achieves its antiplatelet effect by inhibiting cyclooxygenase 1 (COX-1), preventing the formation of prostaglandin H_2 and thromboxane A_2. Thromboxanes are responsible for platelet aggregation.Although some dental clinicians ask their patients to stop ASA days before a minor oral surgery procedure to prevent potential bleeding, studies have shown that stopping low-dose ASA (75–100 mg) is unnecessary. In most cases, postoperative bleeding experienced by patients taking ASA does not differ from that in patients not taking ASA.[1] Therefore, stopping low-dose ASA as a routine practice before minor oral surgery procedures should be abandoned. In fact, stopping ASA may create a higher risk of an adverse event (e.g., acute coronary event) than the potential risk of intra- or postoperative bleeding.

Clopidogrel works by inhibiting the ADP receptor ($P2Y_{12}$),and is prescribed when ASA is contraindicated, e.g., due to allergy, ASA intolerance or gastric ulceration. For some medical conditions, clopidogrel is combined with ASA to prevent blood clot formation, e.g., in the period after coronary stent placement when there has been previous ST-segment elevation myocardial infarction.Studies have shown that clopidogrel does not predispose a patient to excessive bleeding intra- or postoperatively.[2]

A 2013 systematic review found no clinically significant increased risk of postoperative bleeding complications from invasive dental procedures in patients on either single or dual antiplatelet therapy.[3]The rationale for maintenance of antiplatelet therapy during oral and maxillofacial surgical procedures is also supported by the widely accepted opinion that the

cardioprotective benefit of antiplatelet therapy far outweighs the potential risk of bleeding.[4]Stopping antiplatelet therapy predisposes patients to an increased risk of thromboembolism at the expense of minor intraoperative and/or postoperative bleeding, which can be easily controlled with local measures.

ANTICOAGULANT THERAPY

Anticoagulant therapy is to reduce blood coagulability to an optimal therapeutic range within which the patient is provided some degree of protection from thromboembolic events.Heparin anticoagulation therapy is used to treat and prevent venous thromboembolism. Both unfractionated and low-molecular-weight heparin are used, although the latter has become the standard of treatment because of its superior properties and fewer side effects. For patients taking heparin who require a minor oral surgery procedure, studies have shown that there is no need to stop or alter their heparin therapy.[5]

Warfarin, an oral anticoagulant, is used to prevent arterial thromboembolism among patients with atrial fibrillation and those with prosthetic heart valves.Patients at risk of deep venous thrombosis and pulmonary embolism are also treated with warfarin.A 2009 systematic review and meta-analysis found no increased risk of bleeding associated with continuing regular doses of warfarin in comparison with discontinuing or modifying the dose for patients undergoing single and multiple tooth extraction.[6]A 2015 consensus guideline from the European Heart Rhythm Association suggests that interventions not necessarily requiring discontinuation of the newer anticoagulants include extraction of 1 to 3 teeth; periodontal surgery; abscess incision; or implant positioning.

ORAL SURGERYCONSIDERATIONS

The activity of anticoagulants is expressed using the international normalized ratio (INR). For a normal individual the INR is 1.0. The INR must be measured prior to dental procedures, ideally within 24 hours before procedure. If the patient has a stable INR, an INR measured within 72 hours before procedure is acceptable. Minor surgical procedures can safely be carried out if the INR it is within the therapeutic range of 2.0-4.0 when local hemostatic measures are used to control bleeding. However, it is recommended that patients who have INR greater than 4.0 should not undergo any form of surgical procedure.

For all patients receiving antiplatelet or anticoagulant therapy, hemostasis should be achieved using local measures. Active consideration should be given to suturing and packing. Various hemostatic dressings used are oxidized regenerated cellulose (e.g. Surgicel, Ethicon), Gelatin sponges (e.g. Gelfoam, Pfizer), fibrin adhesives (e.g. Tisseel), 4.8% tranexamic acid and 25% epsilon amino caproic acid.

Local anaesthetic containing adrenaline should be used where possible and although there was no evidence of harm resulting from inferior alveolar nerve blocks identified, alternative techniques should be used where possible. Segregating treatment over multiple visits is good practice, as any bleeding issues are simplified if the size or number of surgical sites are reduced. This also allows the surgeon to test the patient's risk of bleeding, although this should be interpreted with caution as the bleeding risk can be influenced by other factors that may not remain constant between dental appointments.

Non–COX-selective NSAIDs should be used with cautionin patients receiving warfarin.These drugs inhibit platelet aggregation and may cause GI bleeding and peptic ulceration and/or perforation. Other drugs commonly prescribed in dentistry interacting with warfarin includes metronidazole, trimethoprim-sulfamethoxazole, macrolide antibiotics, tetracyclines, cephalosporins,and levofloxacin.

CONCLUSION

Knowledge and understanding of the mechanism of action of these different agents will allow us to treat our patients safely and minimize the risk of adverse events. Achieving the fine balance

between ischemic and bleeding risk remains a challenge in patients undergoing surgery who are treated with antiplatelet or anticoagulant therapy. Finally, for most of our outpatient surgical procedures, maintenance and continuation of this therapy are recommended. Local hemostatic measures are almost sufficient for oral surgery with no long term sequelae in contrast to occurrence of fatal thromboembolic events on drug interruption.

Consultation with the patient's cardiologist, physician, and/or vascular surgeon is always recommended before interrupting this treatment modality.

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MEDICATION RELATED OSTEONECROSIS OF THE JAWS : AN OVERVIEW

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Introduction

Osteonecrosis of the jaw (ONJ) is a serious disease that affects the mandible more often than the maxilla. The name means osteo = bone and necrosis = death. Literature provides several acronyms for this condition like previous names like bisphosphonate (BP)-related osteonecrosis of the jaw (BRONJ), BP-related osteonecrosis, ONJ, and also as Bpassociated ONJ.

With rising evidence of this complication associated with other antiresorptive drugs, the term BRONJ has been changed to medication-related ONJ (MRONJ). In 2014, the American Association of Oral and Maxillofacial Surgeons (AAOMSs) suggested to change the nomenclature from bisphosphonate- related osteonecrosis of the jaw (BRONJ) to MRONJ to accommodate the growing number of osteonecrosis cases involving the maxilla and mandible associated with other antiresorptive (denosumab) and antiangiogenic therapies.

Medication-related osteonecrosis of the jaw (MRONJ) is a severe adverse drug reaction, consisting of progressive bone destruction in the maxillofacial region of patients. ONJ can be caused by two pharmacological agents:

1. Antiresorptive :(including bisphosphonates (BPs) and receptor activator of nuclear factor kappa-B ligand inhibitors)
2. Antiangiogenic

ANTIRESORPTIVEMEDICATIONS

Intravenous (IV) bisphosphonates (BPs): are antiresorptive medications used to manage cancer-relatedconditions,including hypercalcemia of malignancy, skeletal-related events (SREs) associated with bonemetastases in the context of solid tumors such as breast, prostate, and lung cancers, and for management of lytic lesions in the setting of multiple myeloma. Although the potential for BPs toimprove cancer-specific survival remains controversial, These medications have had a significant positiveeffect on the quality of life for patients with advanced cancer involving the skeleton.

BPs can be divided into aminobisphosphonates (NBPs) and non-NBPs on the basis of an amino functional group presence in the molecule. NBPs are the one involved in the ONJ

Intravenous (IV) BPs are utilized to treat conditions associated with cancer as well as hypercalcemia of malignancy, skeletal-related events connected with bone metastases from solid tumor and for the management of lytic lesion related to multiple myeloma.

Oral BPs are used to treat osteoporosis,[7] osteopenia,[8] or other less common conditions such as Paget's disease and osteogenesis imperfecta.[9]

RANK ligand inhibitor (denosumab) is an antiresorptive medication that inhibits osteoclast function, decreases bone resorption,

and increases bone density.[10,11] It is used in patients affected by osteoporosis or metastatic bone diseases.

Antiangiogenic medications

These medications hinder the development of novel blood vessels, blocking the angiogenesis-signaling cascade. They are basically divided into two types of drugs: Monoclonal antibodies that stop the receptor or growth factor (bevacizumab) and small molecules, which determine the block by binding the tyrosine kinase receptor (sunitinib and sorafenib). It has been hypothesized that they facilitate the other anticancer agents delivery.

PATHOPHYSIOLOGY

The pathophysiology of the disease has not been fully elucidated. Proposed hypotheses that attempt to explain the unique localization of MRONJ exclusively to the jaws include

A. Inhibition of osteoclastic bone resorption andremodeling

B. Inflammation/Infection

C. Inhibition of Angiogenesis

D. Other Hypotheses:

1. Soft tissue toxicity

2. Innate or acquired immune dysfunction

Predisposing Factors

The occurrence of BRONJ is related to history of trauma to thedentoalveolar region, duration of BP therapy and type of BP.History of recent dentoalveolar trauma was the most commonrisk factor reported in the majority of cases. Such traumaincluded recent oral surgery, extraction of teeth, denture use,and poor maintenance of oral hygiene. There was found to be a 7-fold increase in the risk of BRONJ in patients with a history of periodontal and dental abscesses. Hence, maintenance of good oral health and avoiding extraction of teeth is stressed.Risk of BRONJ was also seen in patients with diabetes, steroidUse,old age, arthritis, chronic inactivity, estrogen, female sex, thrombophilic disorders, hypertension, infection, and manyother disorders.

Clinical Presentation

The American Association of Oral and Maxillofacial Surgeons(AAOMS) accepted the term BRONJ due to the associationbetween BP therapy and necrosis of jaws and established aconcise and specific working definition for BRONJ. Patients may be considered as having BRONJ if all of thefollowing are present:

1. History of treatment with a BP

2. Exposed, necrotic bone in jaws that persists for more than8 weeks; and

3. No radiation therapy history of the jaws.

Diagnosis is based on history and clinical examination. Exposednecrotic bone in the oral cavity is the most common clinicalfinding of BRONJ. Lesions in the mandible are a more commonthan the maxilla (2:1 ratio) and more commonly in tori, bonyexostoses, and the mylohyoid ridge,which are covered by thin overlying mucosa.The area of exposed bone is surrounded by inflamed soft tissue.Pus discharge can be seen in the sites of the exposed bone ifthey become secondarily infected.These exposed necrotic areas of bone usually remainasymptomatic for weeks, months, or years. The symptomsappear if there is inflammation of surrounding tissues orgross bone exposure which is evident clinically. Signs andsymptoms that may occur before clinical detection includepain, soft-tissue swelling or ulceration, suppuration, and abscess formation. The secondary infection of necroticjaw bone results fistula formation both intraoral and extraoral.Neurovascular bundle compressed by

surrounding inflamedbone can impair inferior alveolar nerve function. In advancedstages, changes in structure and bone loss caused by extensiveosteonecrosis, leads to more serious problems like pathologicalfracture and reduced mechanical stability of the jaw. Maxillary bone involvement is characterized by chronicmaxillary sinusitis following osteonecrosis with or withoutoralantral fistula.

PREVENTION OF MEDICATION-RELATED OSTEONECROSIS OF THE JAW

Dental screening and adequate treatment are fundamental to reduce the risk of ONJ in patients under antiresorptive or antiangiogenic therapy or before initiating the administration.The treatment of MRONJ is generally difficult, and the optimal therapy strategy is still to be established. For this reason, prevention is even more important. Several authors suggested a "drug holiday" before teeth extractions or other invasive procedures. However, there is no unanimous consensus on this treatment and not enough data to support the cessation ofmedical treatment in patients with osteoporosis. Currently, AAOMS considers appropriate drug holiday procedure as reported by Damm and Jones in "at risk" patients with extended exposure history (>4 years)

In the following situations care should be taken:

- Cancer patients about to initiate intravenous medical treatment
- Asymptomatic cancer patients receiving intravenous medical treatment
- Osteoporotic patients about to start oral medical treatment
- Osteoporotic patients receiving oral medical treatment
- Patients treated with oral-aminobisphosphonate for <4 years without risk factors
- Patients treated with oral-aminobisphosphonate for <4 years with risk factors or for >4 years

Treatment

The treatment goals for patients of risk category or activedisease are to preserve the quality of life by control of pain,infection management, and prevention of development ofnecrosis in new areas.

Medical therapy (nonsurgical)

Management may consist of the following:

- Antimicrobial oral rinses
- Systemic antibiotics
- Systemic or topical antifungal agents
- Discontinue BP therapy
- No or minimally invasive dental therapy (i.e,. root canaltherapy).

Surgical therapy

Surgical intervention should be limited due to impaired ability ofbone to heal. The article from AAOMS based on the consensusof a panel discussion is the best available guide to therapy.

TREATMENT OF MEDICATION-RELATED OSTEONECROSIS OF THE JAW

Treatment of ONJs is a demanding challenge for clinicians, and an effective and appropriate MRONJ therapy is still to be decided. It is suggested a multidisciplinary team approach including a dentist, an oncologist, and a maxillofacial surgeon to evaluate and decide the best therapy for patient. The choice between a conservative treatment and surgery is not easy, and it should be made on a case by case basis. However, the initial approach should be as conservative as possible. The most important

goals of treatment for patients with established MRONJ are primarily the control of infection, bone necrosis progression and pain.

At risk category

Patients are in this group if they have a treatment history with antiresorptive or antiangiogenic drugs. They do not need any treatment. Anyway, they should be educated to the risk of developing MRONJ such as instructed to quickly report every signs and symptoms. Local risk factors management and periodical clinical and radiological check-ups are suggested.

management

A medical treatment (antiseptic, analgesic, antibiotic, and antiphlogistic therapy) and management of local risk factors are indicated. Low-level laser therapy is a possible choice for treatment of osteonecrosis by helping reparative process, improving osteoblastic index, and stimulating lymphatic and blood capillaries growth. A careful follow-up for the evolution to a greater stage is necessary.If exposed and necrotic bone or fistulae are present, they are rinsed with antiseptic fluids and covered with an adhesive paste, 3 times a day. In the absence of healing tendency, after 8 weeks, it is possible for a surgical debridement approach. It should be more conservative as possible but extended as large as necessary to a complete removal of affected bone. Antibiotic and antiphlogistic treatments are administered. Follow-up examinations are necessary.Marginal or segmental osteotomies are recommended for severe cases. Invasive surgery is indicated only if it could improve patient's quality of life. In other cases or if patient rejects surgery, a conservative approach to control symptoms and to prevent the osteonecrosis progression is administered.

Conclusion

The occurrence of ARONJ has been reported in oral medicine, maxillofacial, and oncology departments worldwide. Thechanges in normal bone metabolism with the added effect oflocal trauma appear to be the important factor that determinesthe development of osteonecrosis. Literature evidencereports of tooth extraction as a precipitating event Nevertheless, anypatient under prolonged BP therapy should be provided withpreventive dental care and education so as to minimize therisk of developing BRONJ in future. Discontinuing IV BPs incancer patients has been suggested. However, the effectivenessof discontinuing these drugs before dental surgery, in reducingincidence of BRONJ, can only be answered after long-term assessments of such study populations.

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IDA HOPE THIRUVALLA

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At the onset let me express my heartfelt congratulations to all the members of IDA Thiruvalla Branch for being a part of it. As we all know, we have taken a big leap towards progress in various levels including our professional potential, social committments etc. I take this opportunity to extend my gratitude to all the members who support IDA Hope. It is our resposibility to see that all the eligible IDA members are also members of IDA HOPE so that all of us are mutually benefitted.

IDA HOPE (HELP OFFERED TO PROFESSIONALS IN EMERGENCIES)

- IDA HOPE is a subcommittee of IDA KERALA STATE and is the premier members welfare scheme which was formed in the year 2007-08.
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- HOPE MEDI is a Health Insurance policy for IDA HOPE members and their family.
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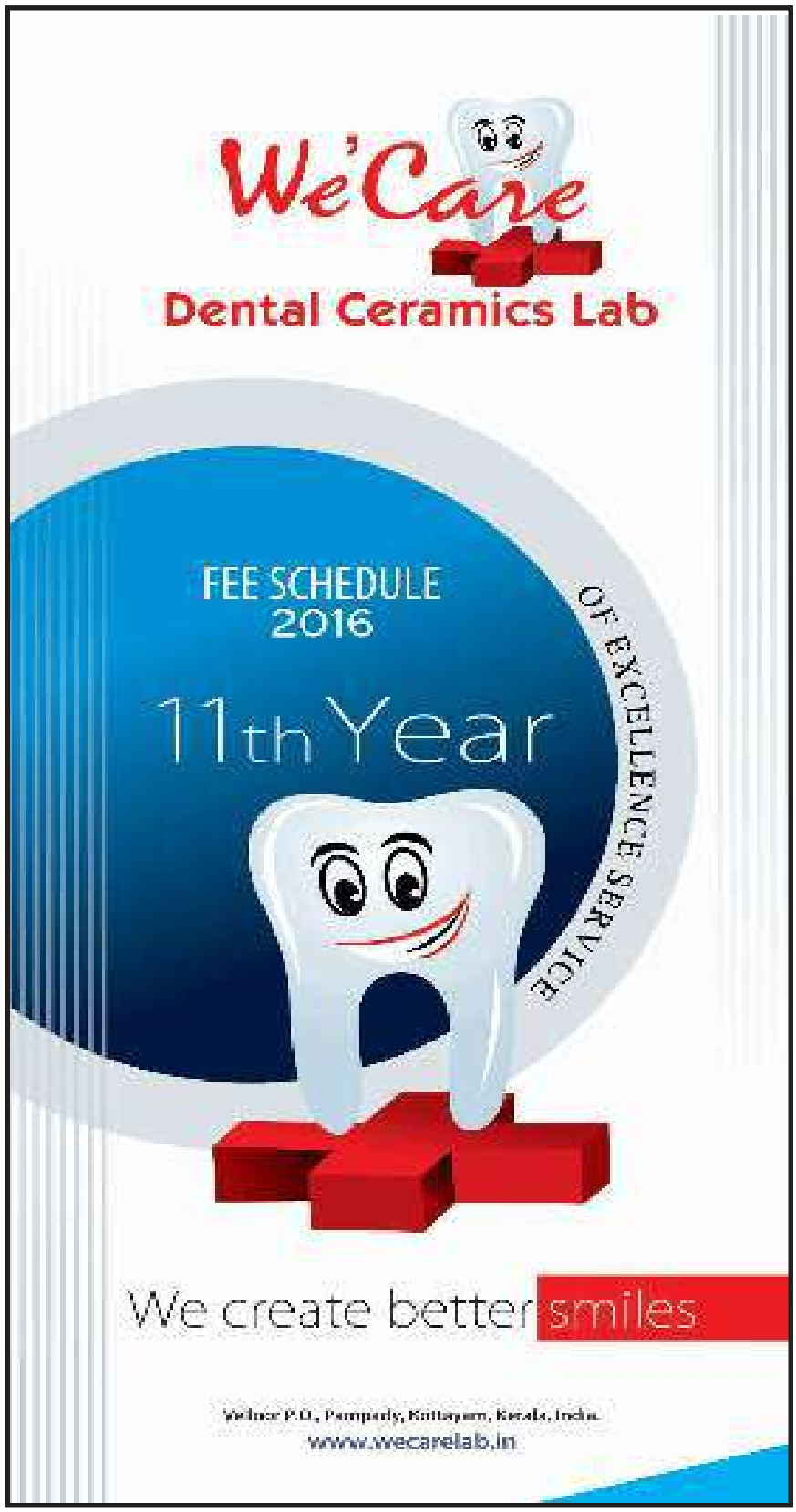
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