Sri Aurobindo College of Dentistry

Indore, Madhya Pradesh

INDIA

Module plan

- Topic :SMOKING & PERIODONTIUM
- Subject: Periodontics
- Target Group: Undergraduate Dentistry
- Mode: Powerpoint – Webinar
- Platform: Institutional LMS
- Presenter:Dr. Heena Agrawal

CONTENTS:

- Introduction
- The Smoking Epidemic
- Effects of smoking on prevalence & severity of Periodontitis
- Pack Year
- Effects of smoking on Periodontal Disease
- Maintenance therapy
- Recurrent Periodontal Disease
- Effects of smoking cessation on periodontal status & treatment outcomes
- Brief intervention program
- Pharmacotherapy
- Conclusion

INTRODUCTION:

- Smoking is the major risk factor for periodontitis, affecting prevalence, extent & severity of disease.

- Smoking may influence clinical outcome of surgical & nonsurgical therapy as well as long term success of implant placement.

- Thus it is important to understand impact of smoking- its effect on initiation, progression & management of the disease in patients who smoke.

- Tobacco smoke contains thousands of different compounds including Carbon monoxide, hydrogen cyanide, reactive oxygen radicals, a high number of carcinogens and the main psychoactive & addictive molecule- nicotine (Benowitz 1996).

- Many of these components could modify the host response in periodontitis.

EFFECTS OF SMOKING ON PREVALENCE & SEVERITY OF PERIODONTAL DISEASE

- Gingivitis: Development of inflammation in response to plaque accumulation is reduced in smokers compared to non smokers.

- Data suggest- smokers have a decreased expression of clinical inflammation in the presence of plaque accumulation compared with nonsmokers.

- Periodontitis- studies have demonstrated that the pocket depth, attachment loss & alveolar bone loss are more prevalent & severe in smokers compared to nonsmokers.

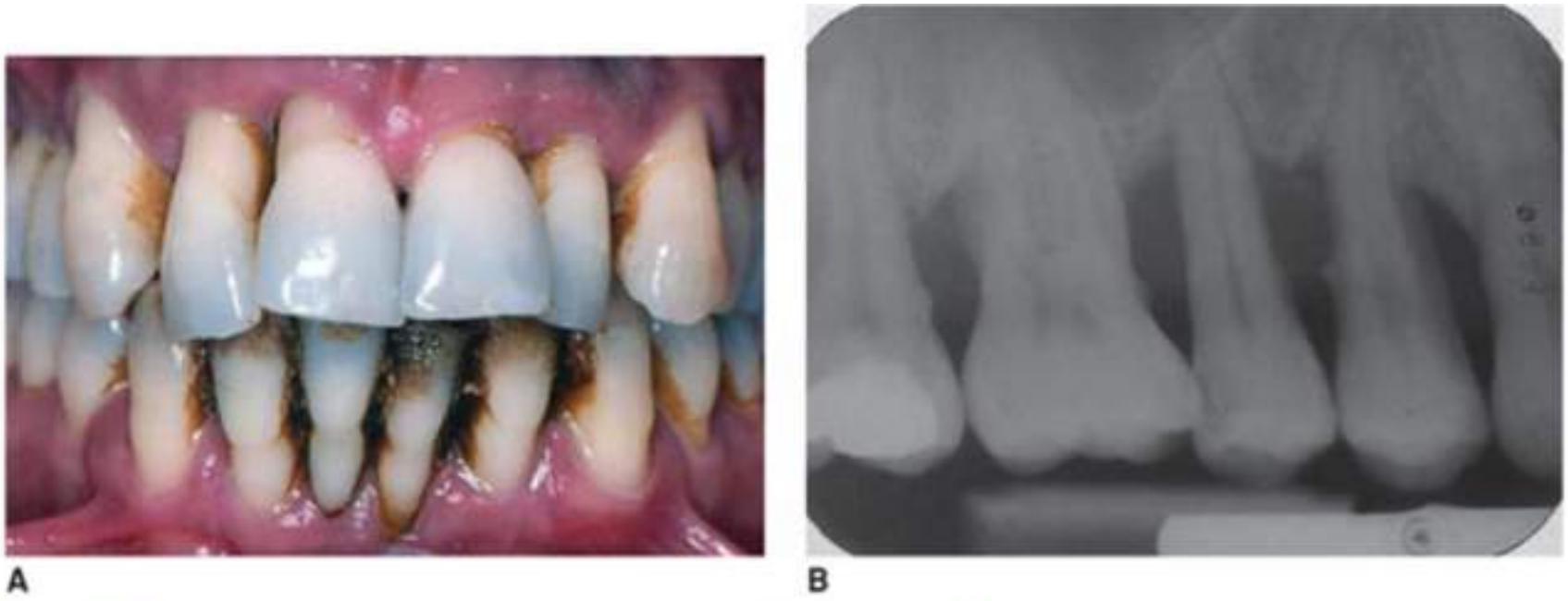

Figure 11.1. **Periodontitis Associated with Smoking.** A: Clinical and B: radiographic evidence shows advanced periodontitis with horizontal and vertical bone loss in this 37-year-old male, cigarette smoker, with 20 pack years of smoking.

PREVALENCE & SEVERITY OF PERIODONTAL DISEASES - VARIOUS STUDIES

- Smokers have:

1. Deeper probing depths & large no. of deep pocket

2. More attachment loss including more gingival recession.

3. More alveolar bone loss

4. More tooth loss

5. Less bleeding on probing

6. More teeth with furcation involvement

CLASSIFICATION OF SMOKERS

- Using Criteria established by the centers for disease control & prevention (CDC):

✓ **Current smokers-** who had smoked 100/ more cigarettes over their lifetime & smoked at the time of interview.

✓ **Former smokers-** had smoked 100/more cigarettes in their lifetime but were not currently smoking.

✓ **Nonsmokers** – had not smoked 100/ more cigarettes in their lifetime.

- Light smoker – </= 19 cigarettes/ day
- Heavy Smoker - >/= 19 cigarettes/ day

Forms Of Tobacco:

- Traditional or Sacred Tobacco:
- Various types are still traditionally used by many tribes.
- Smoking Tobacco
- Cigarettes
- Cigars
- Pipes
- Hookah
- Beedis

SMOKELESS TOBACCO

- Smokeless tobacco includes Betel nut, Betel quid & Snus.
- Snuf is a moist smokeless powder tobacco which is manufactured in small teabag- like pouches, and placed in mouth to use.
- Smokeless tobacco use has been associated with oral leukoplakia & carcinoma.
- However, no generalized effects on periodontal disease progression seem to occur, other than localized attachment loss & recession at the site of tobacco product placement.

Effects of smoking on Etiology & Pathogenesis of Periodontal Disease:

- Increased periodontal destruction associated with smoking suggests that the host- bacterial interactions normally seen in chronic periodontitis are altered, resulting in more aggressive periodontal breakdown.
- Why?
- May be due to changes in composition of subgingival plaque
- or Changes in host response to the bacterial challenge
- or combination of both.

Effect on Plaque Development

- Early observational reports that smokers showed a higher prevalence of dental plaque than nonsmokers suggested that more severe periodontal disease in smokers might be because of greater accumulations of plaque.

Effects on the Oral Flora:

- The majority of studies have investigated the difference in the subgingival microflora between smoking & nonsmoking subjects with periodontal disease.

- However, a study of the microbiota of the oral mucous membranes & saliva failed to establish a statistically significant trend for smokers to harbor greater proportions of putative periodontal pathogens in these oral locations.

Effects of Smoking on the subgingival Microflora in Periodontitis

- The earliest reported evidence of microbiological differences between smokers & non smokers was provided by Zambon et al (1996)

- The results indicated a higher prevalence of A. actinomycetamcomitans, T. Forsythensis, P. Gingivalis,P. Intermedia, T. Denticola, F. Nucleatum & M. micros, Campylobacter rectus in the current or former smokers.

Local effects of Nicotine

- The vasoconstrictive properties of nicotine resulted to impair the gingival blood flow

- Smoking has been shown to impair revascularization during soft & hard tissue wound healing, which is critical for periodontal plastic, regenerative & implant procedures.

Physiological effects of smoking:

- Clinical signs of inflammation are less pronounced in smokers than non smokers.

- This may result from alterations in the inflammatory response in smokers or from alterations in the vascular response of the gingival tissues.

- With developing inflammation there is increase in GCF flow, Bleeding on probing, & gingival blood vessels - were less in smokers than non smokers.
- In addition, oxygen concentration in healthy gingival tissues appears to be less in smokers than nonsmokers, although this condition is reversed in the presence of moderate inflammation.
- Subgingival temperatures are lower in smokers than in nonsmokers
- Recovery from the vasoconstriction caused by LA administration takes longer in smokers.

Effects of Smoking on Periodontal Tissues

- Effects of smoking on Gingival Blood Flow:

- Both a local & a systemic effect of cigarette smoking on periodontal diseases have been suggested (Haffajee & Socransky 2001), Gingival Bleeding (Bergstorm & Prevber 1994) , as well as the vascular hyperaemic reaction associated with plaque induced gingivitis is suppressed in smokers.

Effects of Smoking on Periodontal Tissues

- The difference in bleeding response between smokers & nonsmokers has generally been attributed to the vasoconstrictive properties of Nicotine.

- Application of snuff to the gingiva was found to induce increase of blood flow not only in the ipsilateral but also in the contralateral side compared to gingiva not exposed to the snuff.

GINGIVAL INFLAMMATION & BLEEDING

- The development of gingival redness & the volume of Gingival crevicular fluid (GCF) were also lower in smokers suggesting a suppression of the normal inflammatory response to plaque.

G C F

- Smoking may result in lower resting GCF flow rate.(Persson et al 1999)
- The increase in GCF during an experimental gingivitis may be less in smokers, & an episode of smoking may produce a transient increase in GCF flow rate.

Effects of Smoking on Healing :

- Smoking causes impaired healing in orthopedic surgery, plastic surgery, dental implant surgery & in all respects of Periodontal surgeries & mucogingival plastic surgeries.

- smoking impairs the host defense response in a no. of ways:

1. Smoking can cause vasoconstriction and reduced blood flow systemically. An adequate blood supply is critical for revascularization of the connective tissue.
2. There are over 4,000 substances in tobacco smoke including carcinogens such as cyanide, carbon monoxide & nitrosamines which may contribute to poor wound healing in cigarette smokers.

Effects of Smoking on Response to Periodontal Therapy:

- Non surgical therapy :

- Studies have indicated that current smokers do not respond as well to periodontal therapy as non smokers or former smokers.
- Probing depth reduction & Clinical attachment level improvements in smokers are 50% to 75% those of non smokers following surgical & non surgical periodontal therapy.

ANTIMICROBIAL THERAPY:

- Because of diminished treatment response in smokers, clinicians may recommend adjunctive antimicrobial therapy for smokers.

- This practice may be justified by evidence that suggest that subgingival pathogens are more difficult to eliminate in smokers following scaling & root planing.

- They concluded that there is a little adjunctive effect of systemic antimicrobial therapy.

IMPLANT THERAPY:

- The impact of smoking on implant success is unclear at present.

- Several studies have shown that implant success rates are reduced in smokers whereas other studies have shown no effect.

- The majority of implant failures in smokers occurred prior to prosthesis delivery; thereafter, the differences between smokers & non smokers tend to disappear.

- Smoking more negatively impacts on the implants placed in maxilla than the implants placed in mandible.

- However, with existing evidence supporting a negative effect of smoking on long term implant success, patients should be informed & advised of the benefits of smoking cessation & the potential risks of smoking for implant failure

MAINTENANCE THERAPY:

- The effect of smoking on maintenance therapy was seen to be detrimental and long lasting.

- It was found that when patients were evaluated each year, smokers consistently had deeper pockets and less gain in attachments than non smokers.

RECURRENT PERIODONTAL DISEASE:

- Because of the hazardous effects of smoking on periodontitis, smokers become refractory to traditional periodontal treatment and tend to show more periodontal breakdown than non smokers.

- As a result, they continue to have progressive or recurrent periodontitis leading to tooth loss.

Effect of Smoking Cessation on Periodontal Status & Treatment Outcomes:

- Smoking cessation does not reverse the past effects of smoking, but there is an abundant evidence that the rate of bone and attachment loss slows after patients quit smoking.

- It is encouraging to note that former smokers respond to surgical & non surgical therapy in a manner similar to never smokers.

- In fact among the patients who had quit smoking one year or more prior to scaling & root planing, there was no relationship between the number of years since cessation & changes in probing depth or clinical attachment levels.

Brief Intervention Programme

- Appropriate approach for dental office is a five step programme recommended by agency for Health Care Research & Quality.

- Programme uses 5 A's approach for smoking cessation:

1. Ask (identify Patient's tobacco usage)
2. Advice (On association between oral disease & smoking & the benefits of cessation)

3. Assess (Patient's interest & readiness to participate in Tobacco Cessation Programme)

4. Assist (Use proper technique & assist patient in cessation)

5. Arrange (Follow up)

- The emphasis in this brief intervention is to offer information, encouragement, & support to patients and to provide information about resources that may help the patient to be tobacco free.

- A simplified version that is particularly useful for the dental team is AAR programme as follows:
- AAR.

- Ask
- Advice
- Refer
- Refer the patient to professional smoking cessation programme.

PHARMACOTHEARPY:

- The use of pharmacotherapy in tobacco cessation began in 1980's, when nicotine replacement therapies were introduced.

- The US Food And Drug Administration (FDA), currently approves nicotine chewing gums, nicotine lozenges, nicotine patches, nicotine nasal sprays, and nicotine inhalers for use in patients who are attempting cessation.

Spray

Inhalers

Electronic Cigarette

Bupropion

- The patches, chewing gums and lozenges are available as over the counter products, the inhaler & nasal spray require prescriptions.

- Nicotine replacement products act as nicotine delivery systems in lieu of tobacco & can decrease withdrawal symptoms.

- One non nicotine medication, sustained release Bupropion is also approved for tobacco cessation pharmacotherapy.

- In larger doses bupropion is used as an antidepressant.

- These medications have been proven safe & effective & have been extensively studied alone, in combination, and as an adjunct to behavioral therapy.

- Nicotine replacement products & sustained release bupropion are considered first line therapies.

- Clonidine & nortryptiline are second line pharmacotherapies that have been studied for cessation therapy, but have more side effects & not approved at this time by the FDA for use in tobacco cessation.

Thank You.