
GOOD MORNING

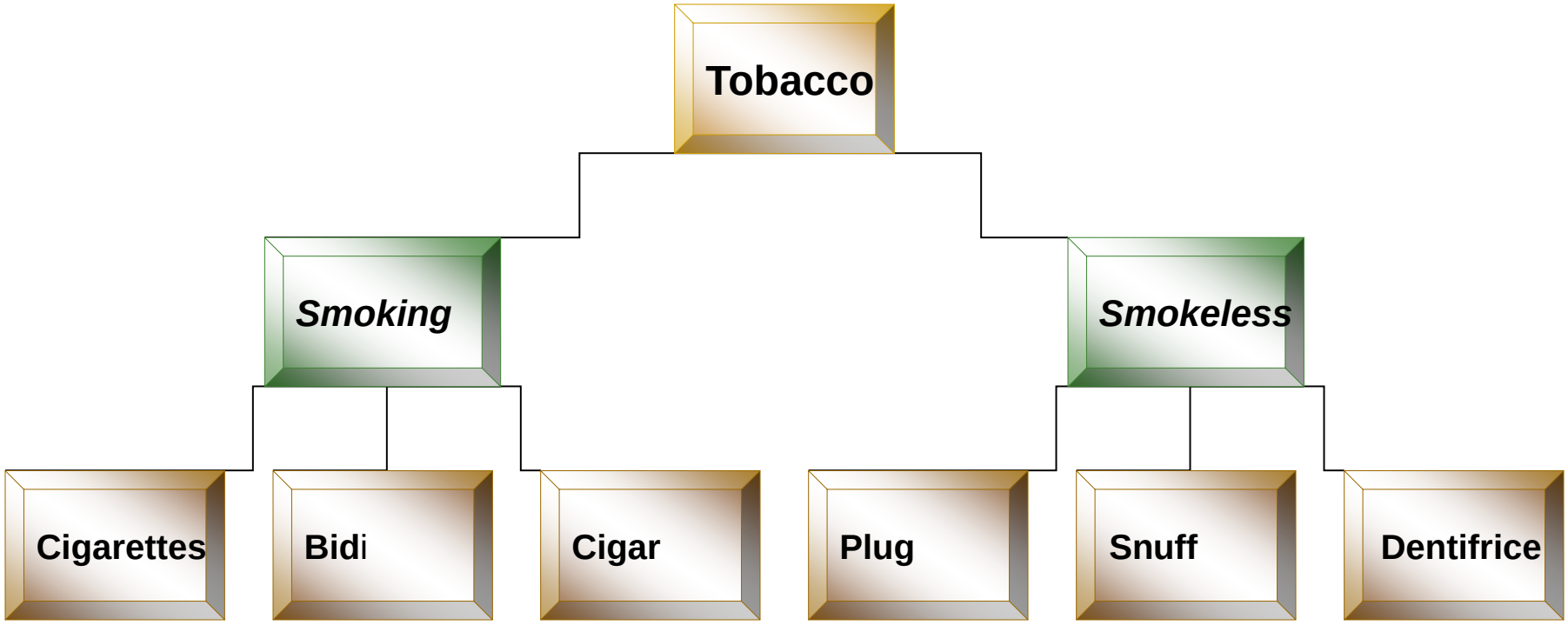
SMOKING AND PERIODONTAL DISEASE

INDEX

INTRODUCTION

- Smoking Epidemic
- Tobacco smoke contains :
  - CO
  - Ammonia
  - Formaldehyde
  - Benzopyrene
  - Dimethylnitrosamine
  - Hydrogen cyanide
  - Nicotine
  - Benzene
  - Benzopyrene

FORMS OF TOBACCO



INTRODUCTION

- Smoking : *pack years.*
- Detection:
  - *Carbon monoxide*
  - *Levels of cotinine*
- Smoking Status:
  - *Current smokers*
  - *Former smokers*
  - *Non-smokers*
  - *Heavy smokers*
  - *Light smokers*

EFFECTS ON PERIODONTAL DISEASE

- Former smokers were more likely to have periodontitis than non-smokers.
- Dose-response relationship:
  - Nine or fewer –
  - Thirty one or more – six times.
- Older adult smokers are three times more prone to periodontitis.
- Young smokers more GAP.

EFFECTS ON PERIODONTAL DISEASE

- Cigar and Pipe Smokers show disease severity intermediate to current smokers and non-smokers.
- Former smokers have less risk of periodontitis than current smokers but more than non-smokers.
- Risk of periodontitis decreases with increasing number of years since quitting, suggesting reversibility.

Effects of Smoking on the Prevalence and Severity of Periodontal Disease

Periodontal Disease	Impact of Smoking
Gingivitis	↓ Gingival inflammation and bleeding on probing
Periodontitis	↑ Prevalence and severity of periodontal destruction ↑ Pocket depth, attachment loss, and bone loss ↑ Rate of periodontal destruction ↑ Prevalence of severe periodontitis ↑ Tooth loss ↑ Prevalence with increased number of cigarettes smoked per day ↓ Prevalence and severity with smoking cessation

EFFECTS ON PATHOGENESIS OF PERIODONTAL DISEASE

- Microbiology:
  - More qualitative than quantitative changes.
  - More *T. forsythia*
  - *DNA – DNA hybridization shows members of orange and red complex are more prevalent in current smokers.*

EFFECTS ON PATHOGENESIS OF PERIODONTAL DISEASE

- Immune-Inflammatory responses :
  - Neutrophil functional alterations.
  - Decreased IgG.
  - Increased release of tissue destructive enzymes.

EFFECTS ON PATHOGENESIS OF PERIODONTAL DISEASE

- Physiology:
  - Alterations in inflammatory response.
  - Less gingival blood vessels, BoP, GCF.
  - Oxygen conc. **Less** in smokers in healthy gingiva.
  - Subgingival temperatures are low.
  - Recovery from vasoconstriction after LA is slow.

Effects of Smoking on the Etiology and Pathogenesis of Periodontal Disease

Etiologic Factor	Impact of Smoking
Microbiology	No effect on the rate of plaque accumulation ↑ Colonization of shallow periodontal pockets by periodontal pathogens ↑ Levels of periodontal pathogens in deep periodontal pockets
Immunology	Altered neutrophil chemotaxis, phagocytosis, and oxidative burst ↑ TNF-α, and PGE_2 in GCF ↑ Neutrophil collagenase and elastase in GCF ↑ Production of PGE_2 by monocytes in response to LPS
Physiology	↓ Gingival blood vessels with ↑ inflammation ↓ GCF flow and bleeding on probing with ↑ inflammation ↓ Subgingival temperature ↑ Time needed to recover from local anaesthesia

EFFECTS ON PERIODONTAL THERAPY

- Non-surgical Therapy :
  - Less favorable response .
  - Less reduction in pocket depth, CAL.
  - With higher level of plaque control clinically less significant differences are seen.
  - Former and non-smokers respond equally.

EFFECTS ON PERIODONTAL THERAPY

- Surgical Therapy :
  - Less favorable response.
  - Deterioration more in furcation areas.
  - Negative impact on Bone grafting and GTR.
  - Less pocket depth reduction and clinical attachment gain.

EFFECTS ON PERIODONTAL THERAPY

- Implants :
  - Increases risk of implant failure.
  - Double the risk.
  - Higher risk in maxillary than in mandibular.
  - Increased peri-implantitis.

EFFECTS ON PERIODONTAL THERAPY

- Maintenance Therapy :
  - Smokers don’t respond well to even long term maintenance therapy.
  - More intensive management required.
- Studies suggest smokers:
  - May present with periodontal disease at early age.
  - May be difficult to treat.
  - May continue to have recurrent or progressive periodontitis.

Effects of Smoking on the Response to Periodontal Therapy

Therapy	Effects of Smoking
Nonsurgical	↓ Clinical response to scaling and root planing
	↓ Reduction in pocket depth
	↓ Gain in clinical attachment levels
	↓ Negative impact of smoking with ↑ level of plaque control
Surgery and implants	↓ Pocket depth reduction postsurgery
	↑ Deterioration of furcations postsurgery
	↓ Gain in clinical attachment levels, ↓ bone fill, ↑ recession, and ↑ membrane exposure following GTR
	↓ Pocket depth reduction after DFDBA allografts
	↓ Pocket depth reduction and gain in clinical attachment levels after open flap debridement
	Conflicting data on the impact of smoking on implant success
	Smoking cessation should be recommended prior to implants

EFFECTS OF SMOKING CESSATION

- Studies have demonstrated that smokers have significantly worse periodontal outcomes than former or non-smokers.
- The treatment response are significantly poorer than those seen in quitters.
- Benefit of smoking cessation:
  - Shift towards less pathogenic bacteria.
  - Recovery of gingival micro-circulation.
  - Improvements in aspects of immune-inflammatory responses.

CONCLUSION

- Smoking is a major risk factor for periodontitis.
- Nonsurgical periodontal therapy can be successful in smokers if excellent oral hygiene maintenance is achieved.
- Smoking cessation should be an integral part of periodontal therapy.