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THE UNIVERSITY OF  
TENNESSEE   
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**FUTURE**



## Periodontics for the Dental Team

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Memphis, TN



Jacob Shiloah, DMD

Professor, Department of Periodontology

[jshiloah@uthsc.edu](mailto:jshiloah@uthsc.edu)

*Department of Periodontology*



1977

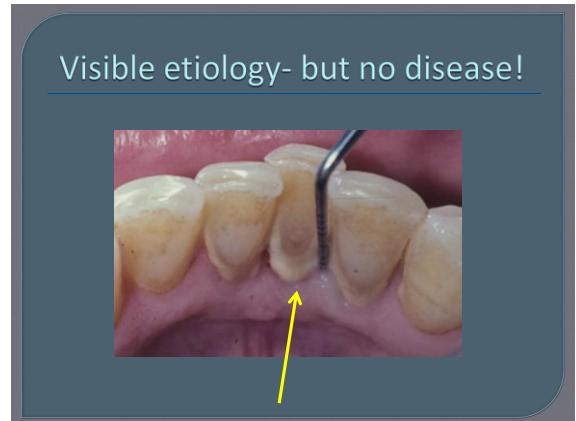
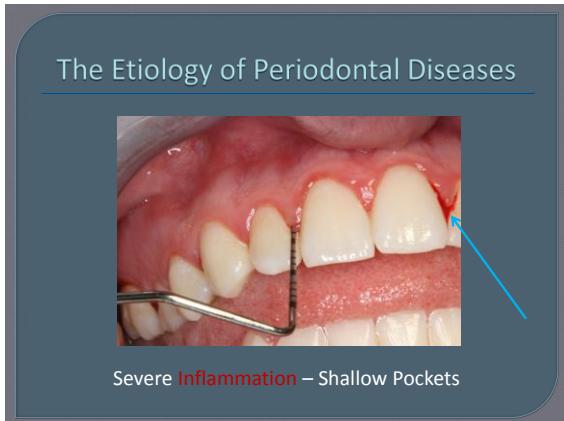
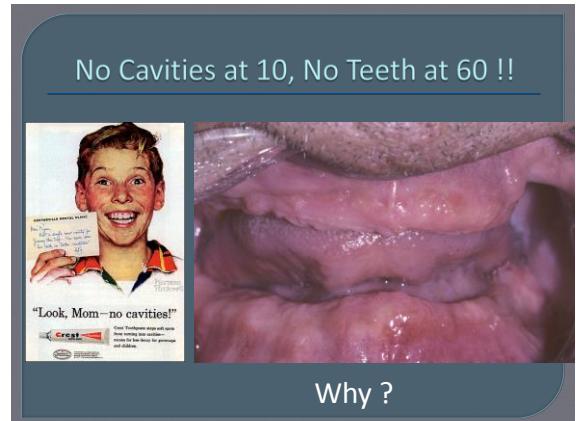
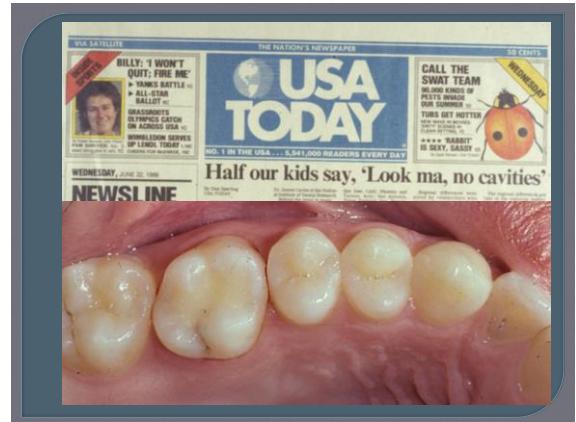
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- I don't receive **ANY** benefit or honorarium for mentioning or discussing their products.

*Jacob Shiloah*

## Periodontics for the Dental Team

- Risk factors for periodontal diseases
- Cosmetic periodontal procedures
- Periodontal medicine – the oral systemic disease connection



## The Etiology of Periodontal Diseases



Deep Pocket – No Visible Etiology



Where is the etiology?

### A “Baby Tooth” in a Bad Neighborhood



### Erroneous Concepts on Etiology

- All bacterial plaques (biofilms) are the same. The more plaque – the more disease.
- All subjects are universally susceptible, because all of them have bacterial plaque.
- Once the disease starts, it progresses continually and linearly.
- All pockets are bad, if left untreated they get worse.

### Current Views on Etiology

- Plaque composition varies from subject to subject.
- Plaque composition varies from site to site (and time to time) in the same mouth.
- Low correlation between plaque index and severity of periodontitis.
- Some bacteria (A.a, P.g, P.i, T.f and others) have a cardinal role in periodontitis.

### The Bacterial Microflora in Periodontitis

- *Aggregatibacter actinomycetemcomitans*
- *Pophyromonas gingivalis*
- *Prevotella intermedia*
- *Fusobacterium nucleatum*
- *Tannerella forsythia (Bacteroides forsythus)*
- *Treponema denticola*



### Low Correlation Between Plaque Index and Severity of Periodontitis



(Plaque index is correlated with **Gingivitis**)

### The Bacterial Microflora in Periodontitis

- Gram-negative, non-motile anaerobic
- Evade the host defense system (epitheliotoxin, leukotoxin, proteases that degrade IgA and IgM)
- Produce collagenases
- Possess potent endotoxins

### Current Views on Etiology

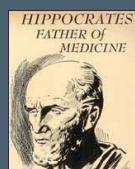
- A wide spectrum clinical manifestations of periodontitis and attachment loss.
- Only 5-10% of the patients suffer from severe periodontitis.
- About 10% of the subjects have immunity to periodontitis.
- **Risk factors** modulate susceptibility.



### Know Your Patient!

"It is more important to know what sort of person has a disease than to know what sort of disease a person has."

Hippocrates  
460-B.C. - 377 B.C.



**Why Some Patients Are Highly Susceptible to Periodontitis?**

A 42 year old man:

**High resistance to periodontitis**

A 45 year old male patient, poor oral hygiene, good bone levels , sporadic dental visits.

**Risk Factors**

**Risk Factors**

- Local risk factors (i.e. overhanging margins)
- Systemic risk factors

**Risks for Periodontitis**

- Risk factors
- Risk indicators
- Risk predictors

**Risk Factor (susceptibility factor)**

- A genetic, systemic, behavioral or environmental element that increases the possibility of a disease or abnormality occurring, and if absent or removed, reduces that probability.
- An element that increases the probability of occurrence of a disease without necessarily being the causative agent.
- It amplifies the etiology.

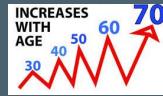
## Risk Indicator

- A probable, or putative, factor that has not been confirmed by longitudinal studies.



## Risk Indicators in Periodontal Diseases

1. Age
2. Gender
3. Stress
4. Osteoporosis
5. HIV infection
6. Drugs
7. Nutrition



## Risk Predictor

- An element that is associated with elevated risk for a disease to occur, but may not be part of the causal chain. (e.g. tooth loss due to periodontitis is a good predictor for future tooth loss).



Most diseases are associated with multiple risk factors, some of them are known, others are not known.

## “Aggressive Periodontitis”



## Known Risk Factors in Periodontal Diseases

- Genetics
- Diabetes mellitus
- Pathogenic bacteria
- Smoking



## Non-Modifiable Risk Factors

- Age
- Gender
- Race
- Family history
- Patient's past history (smoking, alcoholism)
- Genetic (embryonic gene therapy - ethical and legal issues)



## Osteoporosis : Risk Factors

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>○ Genetic</li><li>○ Female</li><li>○ Thin / small frame</li><li>○ Post-menopause</li><li>○ Aging</li><li>○ Race: Asian &amp; Caucasian</li></ul> | <ul style="list-style-type: none"><li>○ Smoking</li><li>○ Inactive lifestyle</li><li>○ Diet (low intake of Calcium &amp; Vitamin D)<ul style="list-style-type: none"><li>○ [For 51 and 70 years – daily intake of 400 IU (10 mcg) is needed]</li></ul></li><li>○ Alcohol abuse</li><li>○ A previous bone fracture (after 50 years of age) – an indicator for more fractures to come</li></ul> |
|--|---|



## Managing Osteoporosis

1. Hormonal replacement therapy: Estrogen (**Premarin** 2.5 mg)
2. Estrogen Agonist (mimics the action of): **Evista** 60 mg daily
3. Bisphosphonates (affect osteoclast-mediated bone loss):
  - A. **Fosamax** 10 mg daily / 70 mg weekly
  - B. **Boniva** 2.5 mg daily / 150 mg monthly
  - C. **Reclast** 5 mg IV / once a year
  - D. **Actonel** 5mg-daily, 35mg-weekly, 150mg-monthly

## Risk Indicator : Osteoporosis

- A major public threat for more than 28 millions Americans.
- The majority are women (80%).
- One in 2 women and one in 8 men over the age of 50 will have an osteoporosis related fracture (hip, spine or arms).
- The majority of the studies suggest a relationship between osteoporosis (bone density) and periodontitis.



## Are your bones healthy?



NORMAL



OSTEOPOROSIS

## Bisphosphonates

### Adverse Reaction :

Osteonecrosis of the Jaw (ONJ) due to lack of blood supply to the bone.



## Osteonecrosis of the Jaw (ONJ)



## Risk Indicator: Drugs

### Drug Induced Gingival Overgrowth:

- Anticonvulsants ( Dilantin )
- Calcium Channel Blockers ( Procardia )
- Immunosuppressants ( Cyclosporine A )



## Epilepsy

A chronic neurological disorder characterized by recurrent, unprovoked seizures due to abnormal brain function. The etiology is unknown in 70% of the cases. It is classified according to its clinical symptoms (Petit Mal ("bad" a small illness, a brief impairment of consciousness, a staring spell) , Grand Mal ( Tonic-Clonic ) : a massive seizure where a person's muscles contract violently, bouncing from side to side, ending with loss of consciousness.)

### It may affect any age :

- **Newborn** (maternal drug abuse, pre-term birth, brain hemorrhage, hypoxia )
- **Infant & children** (Meningitis, high fever, head trauma, Down syndrome, genetic)
- **Adults** (alcohol & drug abuse, head trauma, brain tumor)
- **The elderly** (stroke, head trauma, Alzheimer's disease)

## Anticonvulsant : Phenytoin (Dilantin)



● Developed in 1938 (by Tracy J. Putman & H. Houston Merritt ) for epileptic patients. It is cheap and easy to take.

● Effective against partial seizures, and against generalized tonic-clonic seizures (grand mal).

● Dosage: 100 mg capsule, up to 300 mg a day.



## Dilantin Overgrowth

### Dilantin: Oral side effects:

- Stimulates proliferation of fibroblasts.
- Stimulates collagen production
- Suppresses collagenase production & degradation of collagen fibers
- Affects only certain population of fibroblasts.



## Dilantin Overgrowth

- Affects 50% of the patients
- Fibrotic enlargement: anterior / facial gingiva
- More often in children
- Does not affect edentulous areas
- Not a dose-related



## Dilantin Overgrowth

- Does not respond to scaling and root planing.
- Surgical intervention provides only a **temporary** relief.



## Dilantin Overgrowth



## Phenytoin (Dilantin)

### Alternatives:

- Tegretol
- Valproic acid (Depakote)
- Others

## Calcium Channel Blockers (calcium antagonists)

- Disrupt the calcium conduction in cardiac muscle and blood vessels.
- They prevent calcium from entering the cell membrane in the heart and blood vessel walls, resulting in slowing the heart rate and lowering the blood pressure.
- They decrease the force of contraction of the heart and induce vasodilation of the blood vessels.
- Lower the blood pressure

## Calcium Channel Blockers

### Are cardiovascular drugs for:

- Hypertension
- Arrhythmia
- Angina pectoris



## Calcium Channel Blockers (CCB)

- Verapamil (Calan, Isoptin)
- Diltiazem (Cardizem)
- Nifedipine (Procardia, Adalat)
- Nicardipine (Cardene)
- Amlodipine (Norvasc)
- Bepridil (Vascor)
- Nisoldipine (Sular)

### Calcium Channel Blockers: Edematous gingival overgrowth



### Reversibility of the Enlargement



### Genetics : Hereditary gingival fibromatosis

- Large masses of firm, dense, resilient and painless fibrous tissue.
- Normal in color
- Interferes with tooth eruption
- Specific genes responsible for GF have not been identified.

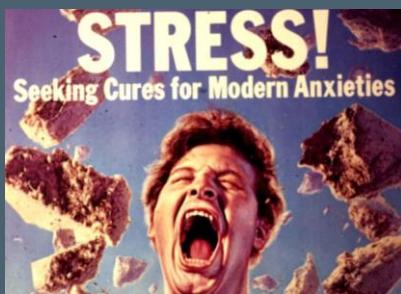


### Hereditary gingival fibromatosis

A mother & her two children



### Risk Indicator in Periodontal Diseases

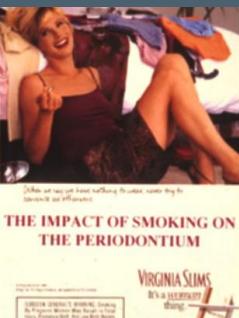
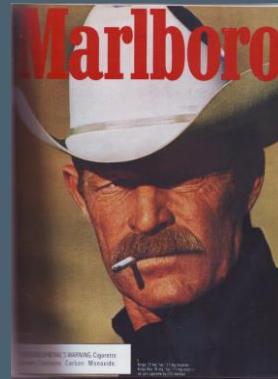
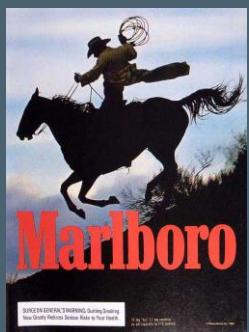
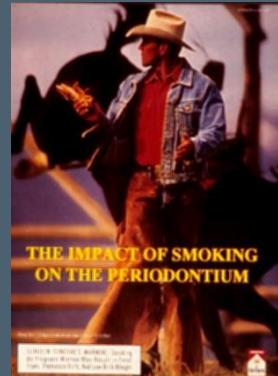


### Psychoneuroimmunology

The study of the interaction between psychological processes (e.g. stress, anger), the brain and the immune systems of the human body.



## Tobacco Smoking



# Changing Concept About Smoking

Before you cold me, Mom ...  
maybe you'd better light up a

**Marlboro**

You may need some feel over-anxious  
about the world's the  
Miracle of Marlboro!

Gee, Mommy,  
you sure enjoy your  
**Marlboro**

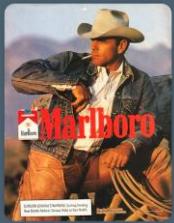
You need never feel over-anxious about the world's the Miracle of Marlboro!

YOU CAN GET YOURS WITH A PLAIN STICK BEEFIE, 60¢.

The three most valuable brand names on earth:  
Marlboro, Coca Cola, and Budweiser.  
(in that order)

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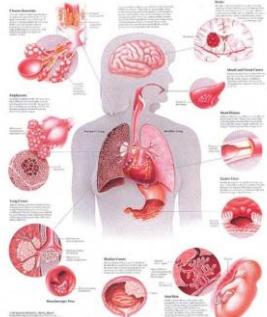
The first owner of the Marlboro Company died of lung cancer.



So did several "Marlboro Men"

(Since its inception in 1924 by Philip Morris, tobacco has killed more people than World War II)

#### DANGERS OF SMOKING



1994

#### Tobacco Smoking & The Periodontium

Early reports (Arno, Waerhaug et al 1958, Sheiham 1971, Ainamo 1971).

- Periodontitis among smokers was related to poor oral hygiene.
- Smokers had similar periodontal destruction as non-smokers with similar oral hygiene.
- Conclusion: Smoke as much as you want, but keep your mouth clean!!!

#### Tobacco Smoking & The Periodontium

Current Views:

1. Smokers are more prone to develop periodontitis; the disease is more severe and occurs at a younger age.



#### Tobacco Smoking & The Periodontium

2. Smoking affects prognosis, healing and treatment outcomes.
3. The prevalence of smokers in a periodontal practice is much higher than in general dental practice.
4. Bone loss and tooth loss are more prevalent among smokers.
5. Bone loss in smokers is NOT correlated to oral hygiene.

## Tobacco Smoking & The Periodontium

- 6. The predominant factor among recurrent periodontitis in patients is smoking



## Tobacco Smoking

- **Pack / Year history:**  
The number of packs smoked each day X years
- Tobacco + menthol is more addictive than tobacco alone!



## Tobacco Smoking & The Periodontium

### Pathogenesis:

1. Impaired chemotaxis
2. Impaired phagocytosis
3. Impaired fibroblast function
4. Reduction in antibody (IgG) production
5. Low oxygen tension in the oral cavity promotes anaerobic bacterial growth.



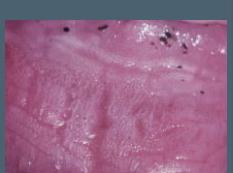
## “Smokeless Tobacco”



## “Smokeless Tobacco”



## “Smokeless Tobacco”



**Smoking is the only risk factor that could be eliminated!**



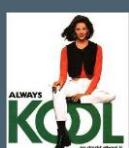
**Smoking Cessation: easier said than done!**



## Smoking Cessation



- ⦿ Nicotine addiction is dose related (pack /year)
- ⦿ Nicotine + Menthol is more addictive than nicotine alone!
- ⦿ Must switch to another brand.



## Smoking Cessation

Behavioral modifications **prior** to drug intervention:

- ⦿ Switch brand
- ⦿ Stay away from menthol
- ⦿ Cut smoking to one cigarette an hour



## Smoking Cessation

Smoking is the most modifiable risk factor for periodontal diseases:

- Will power alone
- Nicotine replacement therapy (gums, patches, sprays and inhalers)
- Antidepressant : Bupropion (Zyban) 150 mg
- Chantix

## Chantix™

- Mode of action: like nicotine, it activates the same receptors in the brain to release dopamine

### Dosage:

- First 3 days – one white pill (0.5 mg).
- Days 4-7 - one white pill every 12 hours
- Day 8 and on ( 12 weeks) – one blue pill (1 mg) every 12 hours



## Chantix™

### Side effects:

- Serious mental/mood changes, Nausea, headache, vomiting, drowsiness, gas, constipation, trouble sleeping, unusual dreams, or changes in taste may occur.
- Neuropsychological effects (suicidal thoughts, erratic behavior)
- Possible links to heart problems and seizures



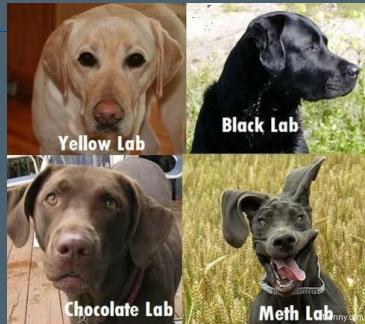
## Chantix™

### Side effects:

- Nausea (30%)
- Vomiting (5%)
- Sleep disturbances (37%) (insomnia, nightmares etc.)

Success rate at 1 year : 21% ( 16% by Zyban, 8% by placebo alone)

## The New Marlboro Girl



## Cosmetic Periodontal Procedures



A pretty smile - is always in style!

One of the major objectives of dentistry is to maintain the natural dentition in **health**, **comfort** and **function** throughout the life of the patient.



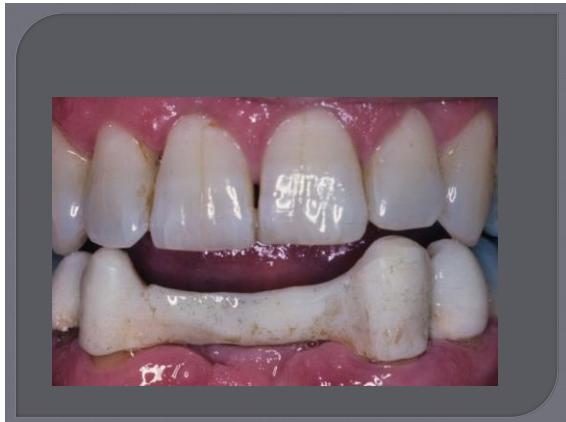
“...Health, Comfort and Function...”  
But What About Aesthetics?



The testing ground for dental materials!!!







## What is health?

Health  
is  
Wealth!



Health: absence of pathology and symptoms



“It makes you more sexy!”

“It’s in your head, nobody sees it!”

“Get used to it!”

Asymptomatic Pathology



The  
Ghost  
Tooth

A symptomatic tongue – no apparent pathology



The burning tongue syndrome

## World Health Organization



### Definition of Health:

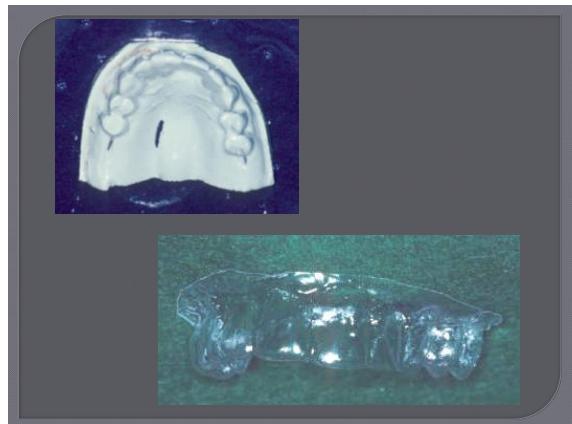
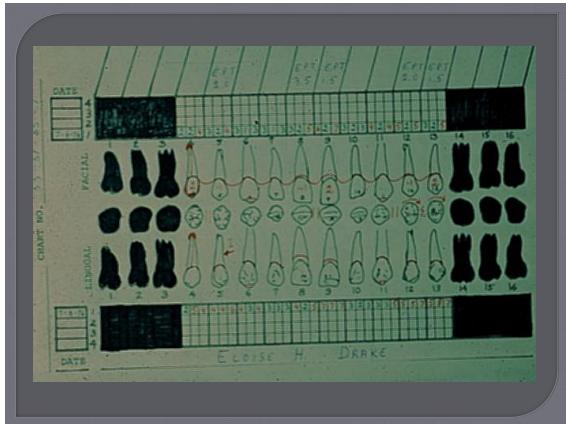
“Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity”

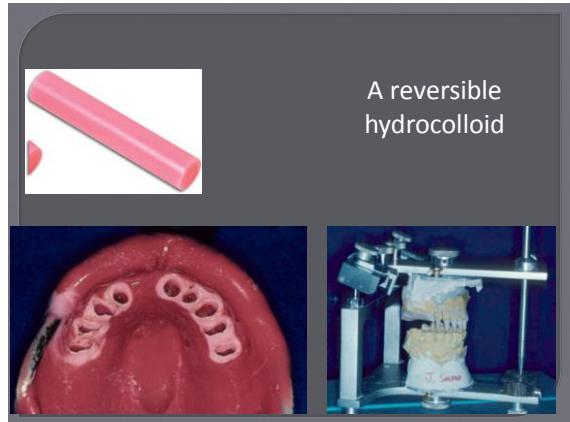
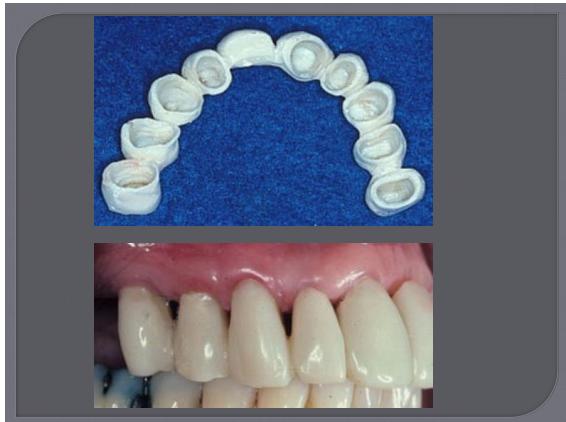
Health: wellness of body, mind and spirit.



A lesson in cosmetic dentistry





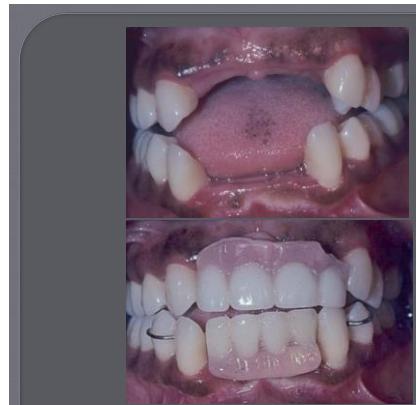


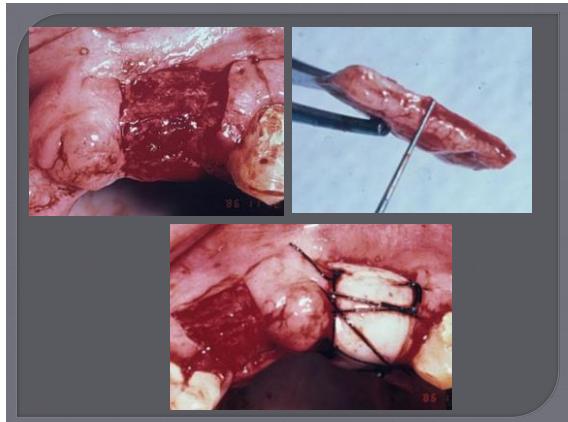
## Cosmetic Periodontal Procedures

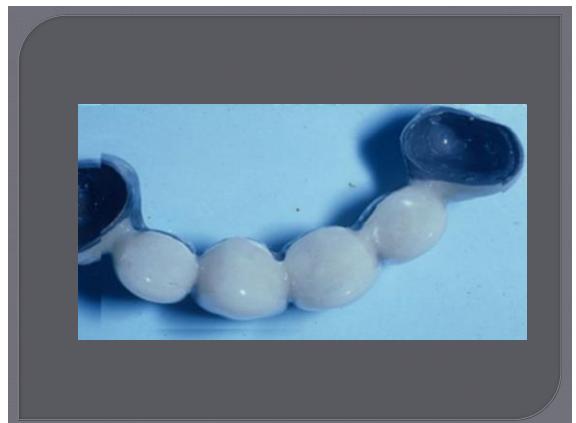
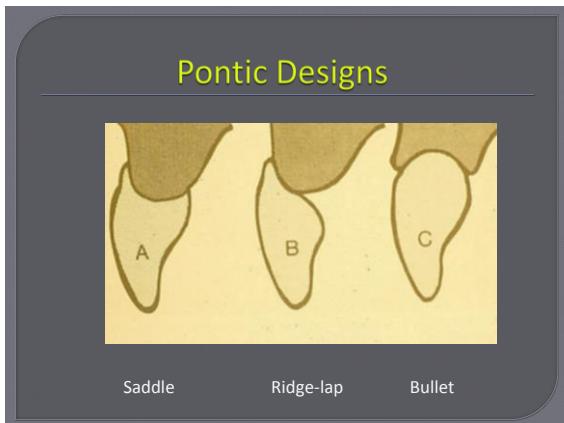
1. Reconstruction of the interdental papillae
2. Ridge augmentation
3. Cosmetic crown lengthening
4. Management of amalgam tattoo / melanin pigmentation
5. Root coverage

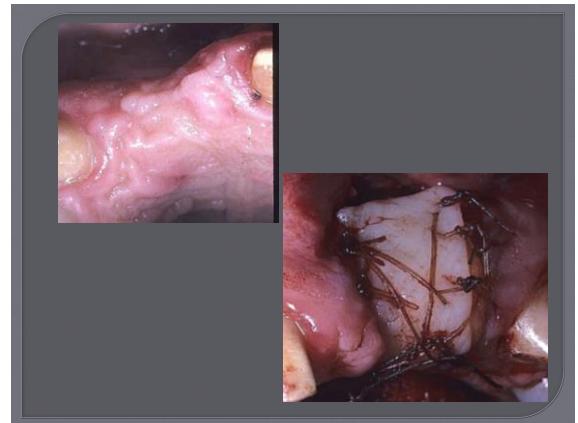
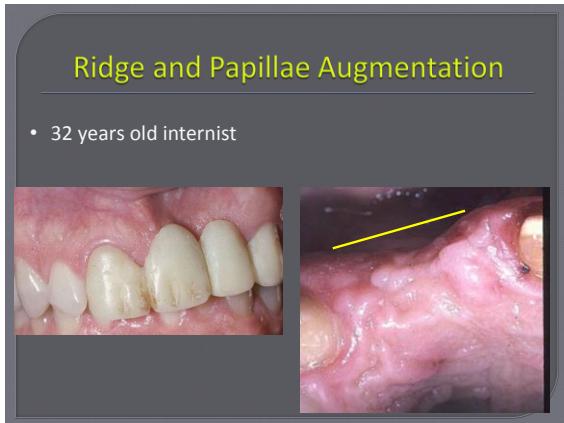
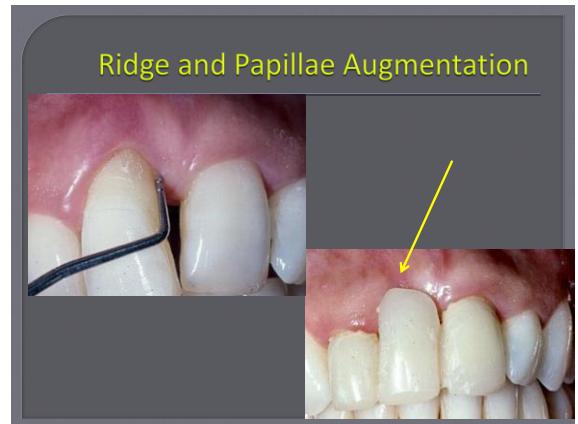


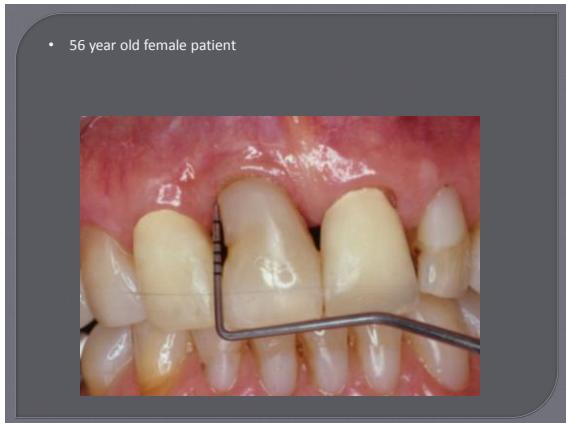
### Reconstruction of the interdental papillae









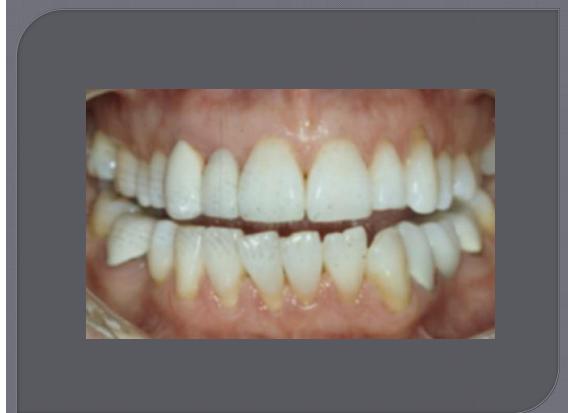


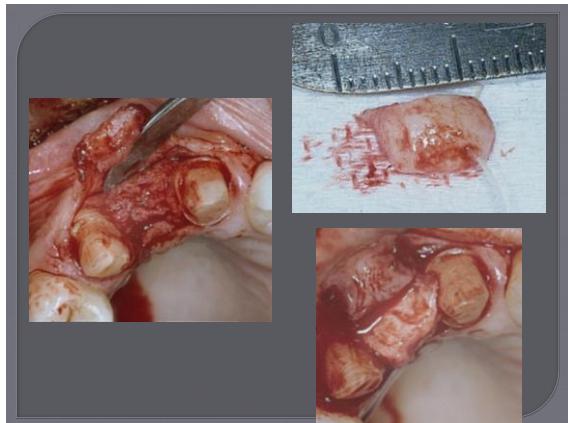
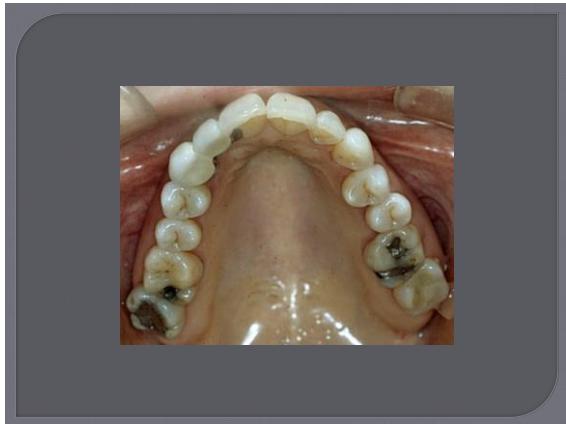


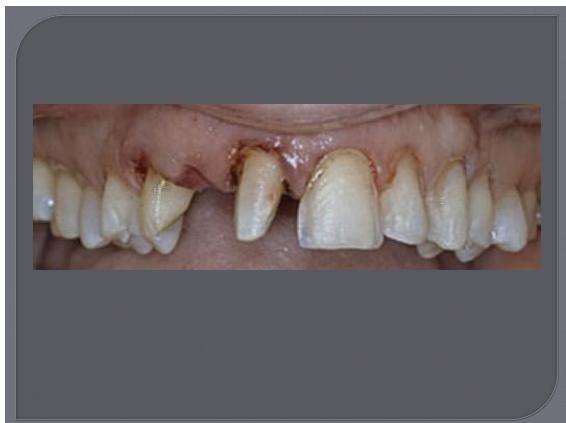
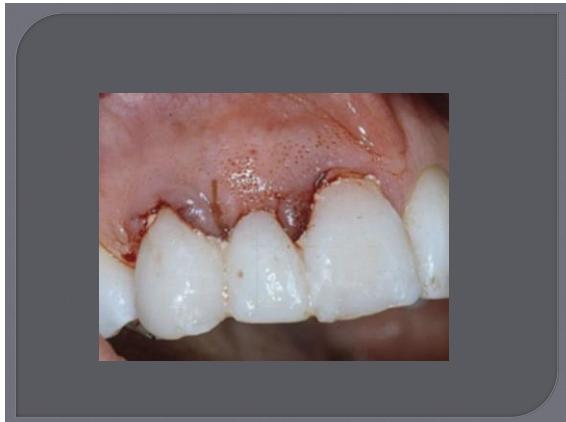


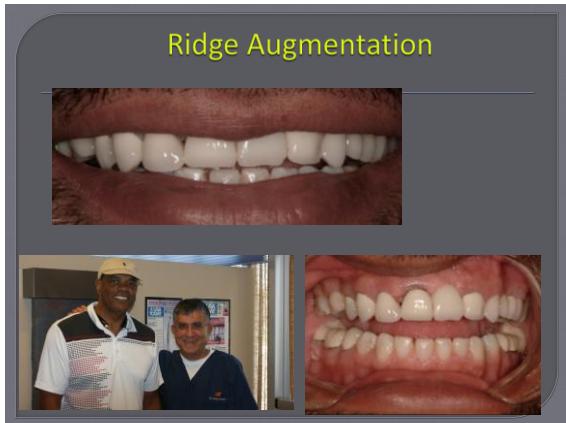
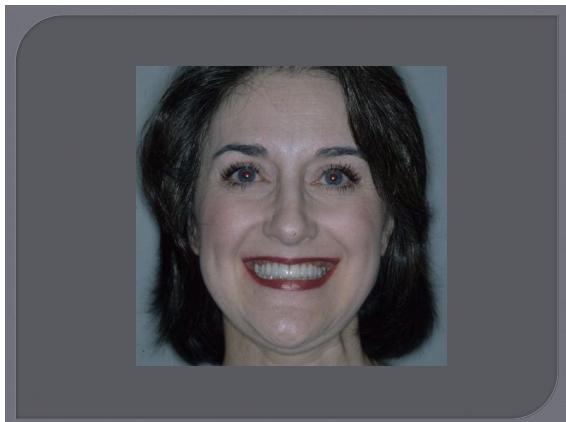
“Do unto others as they  
would like to be done  
unto”

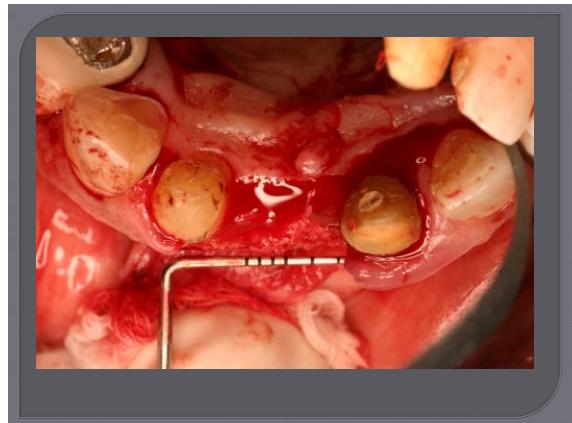
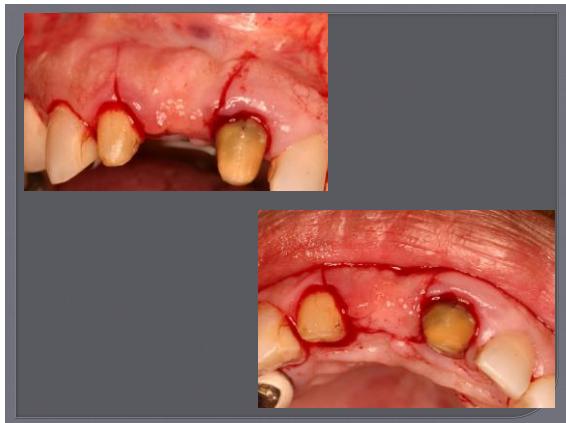
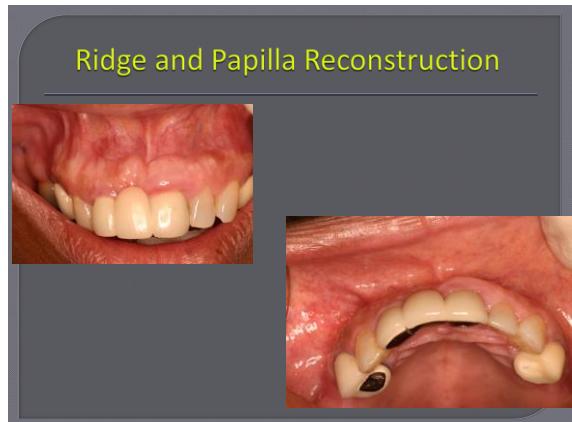
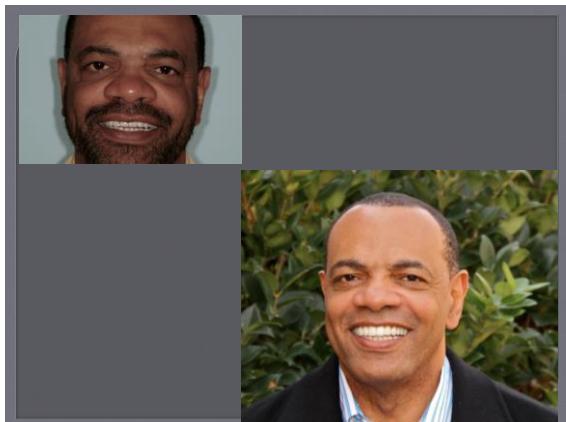
Ron Jackson

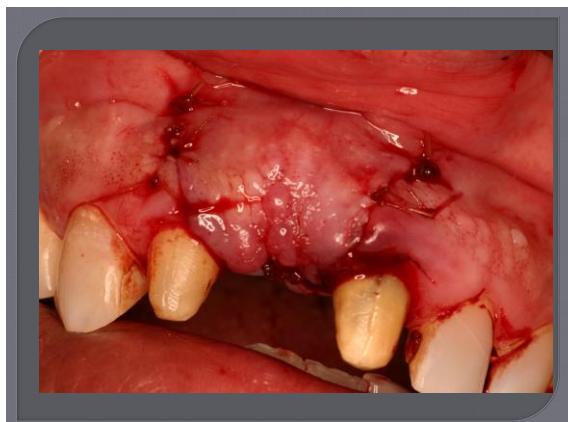
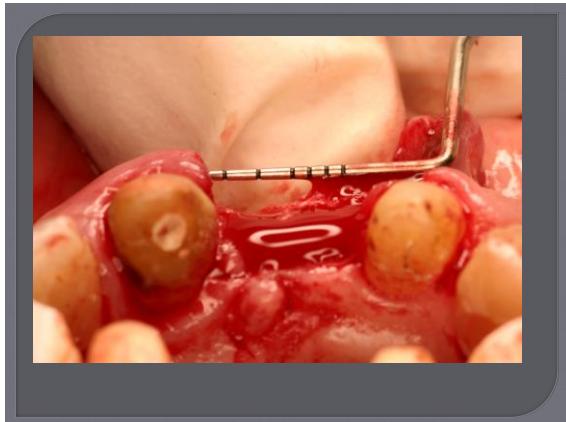


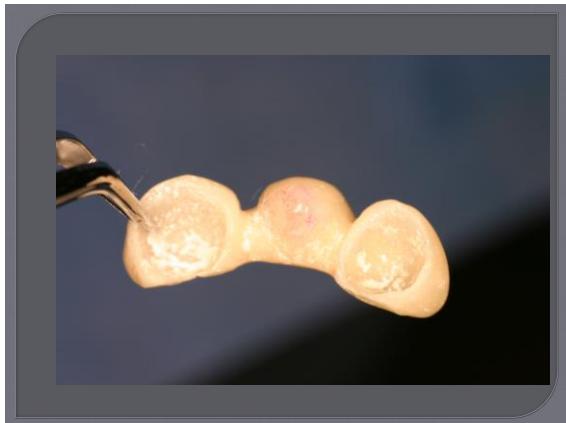
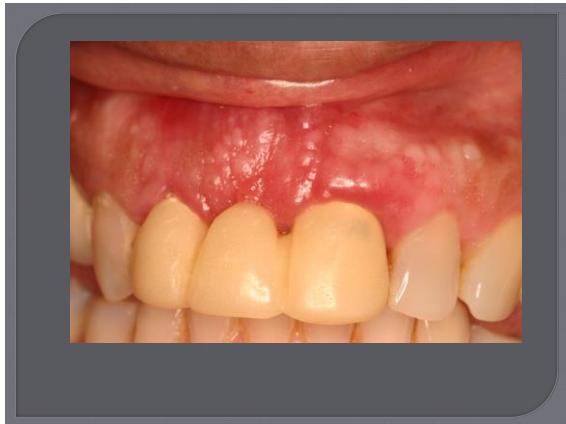






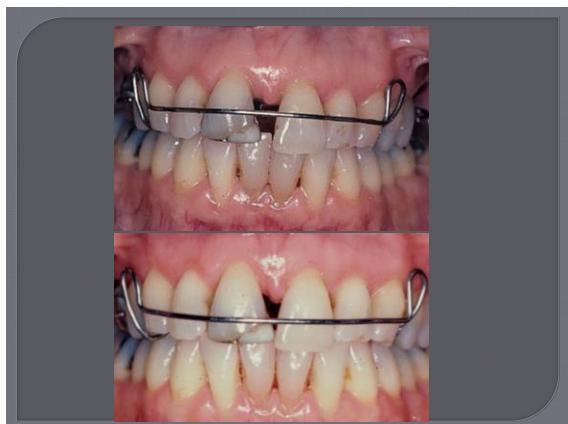








### Reconstruction of the Interdental Papillae via Orthodontics



### Reconstruction of the Interdental Papillae via Orthodontics



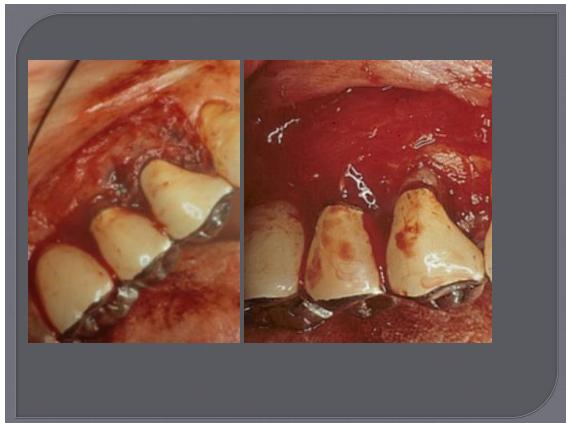
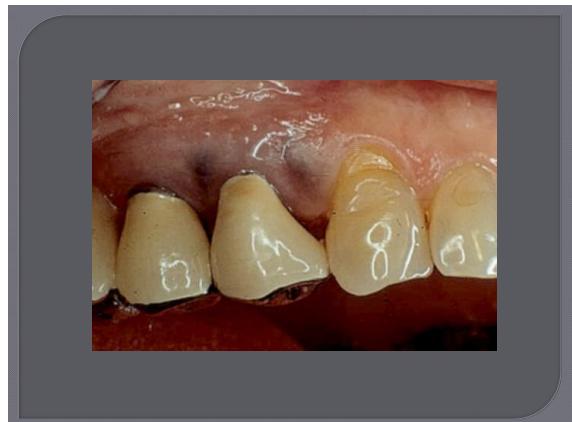
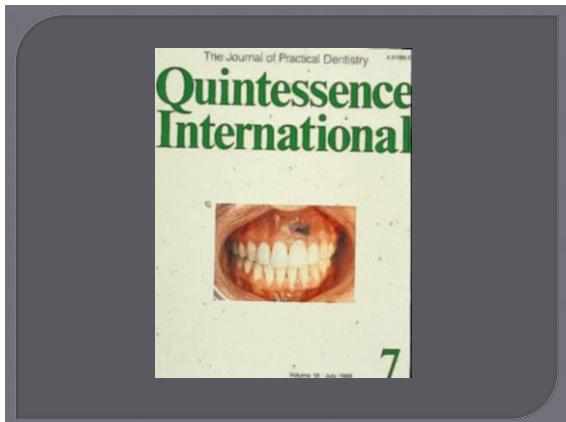
### “Imaging”



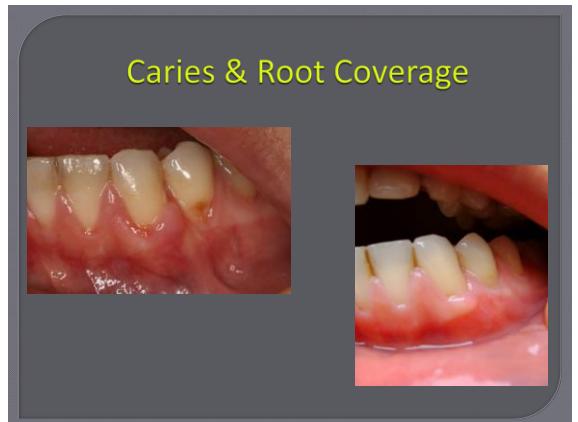
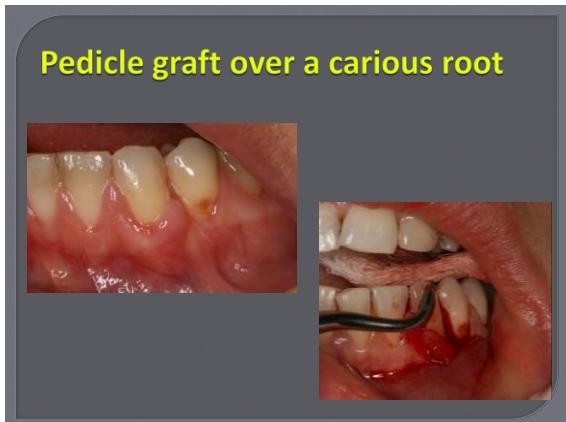
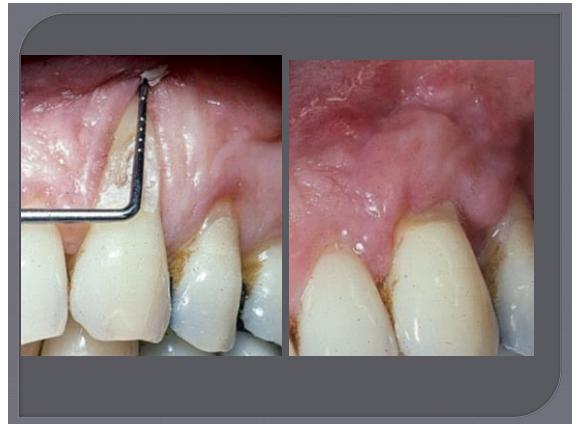
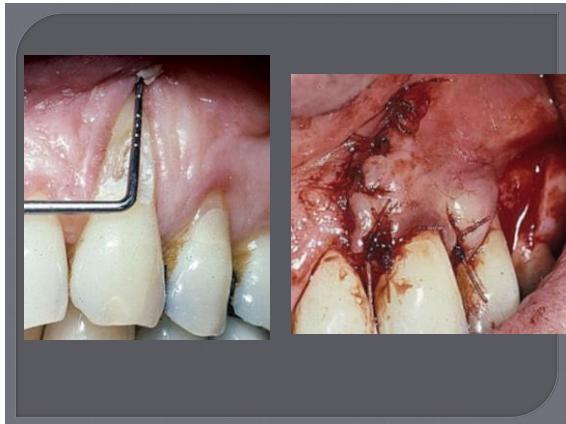
### Management of amalgam tattoo

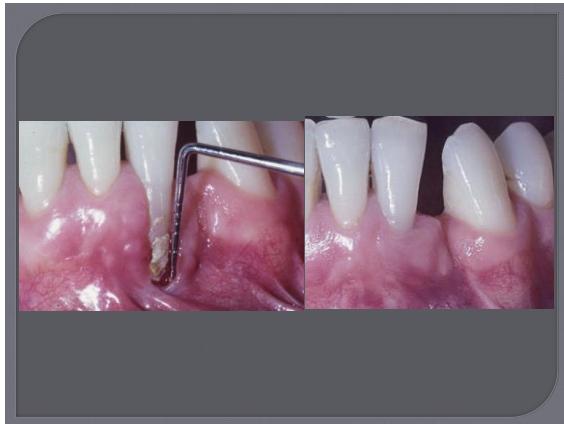


Apicoectomy and a retrograde amalgam

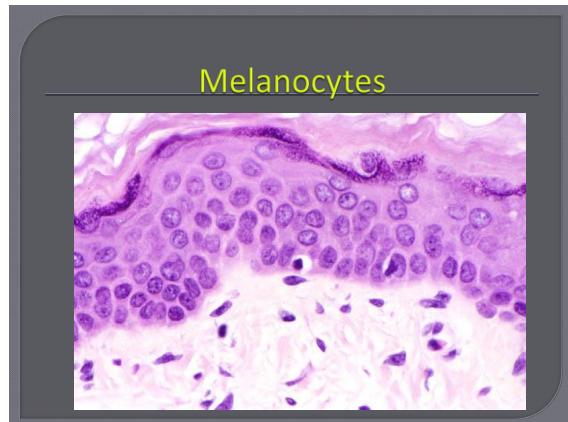








## Gingival Pigmentation

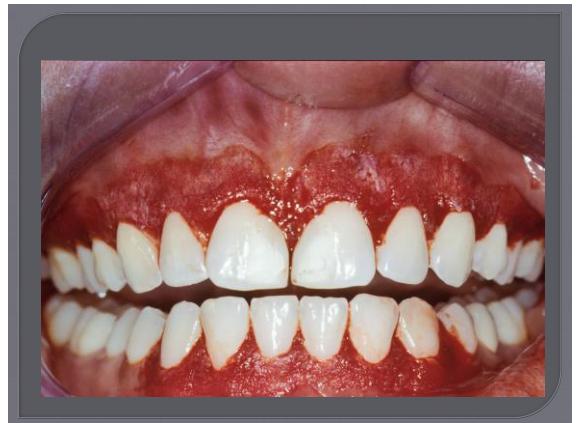
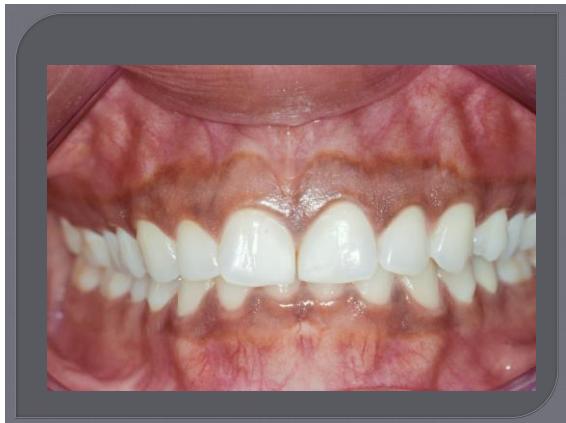


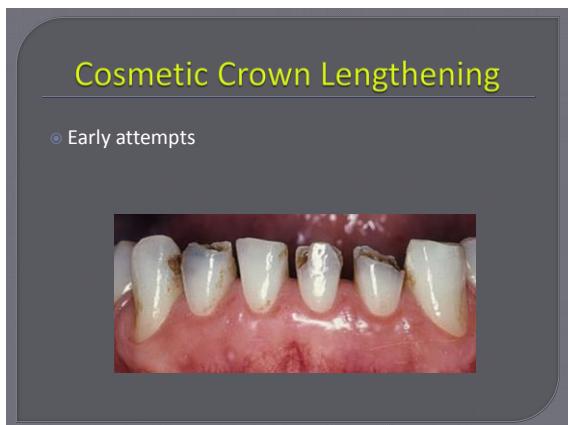
## Melanocytes



## Clinical Observations









### Cosmetic Crown Lengthening

- Early attempts

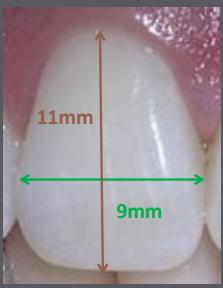


### Cosmetic Crown Lengthening



### Tooth Dimension

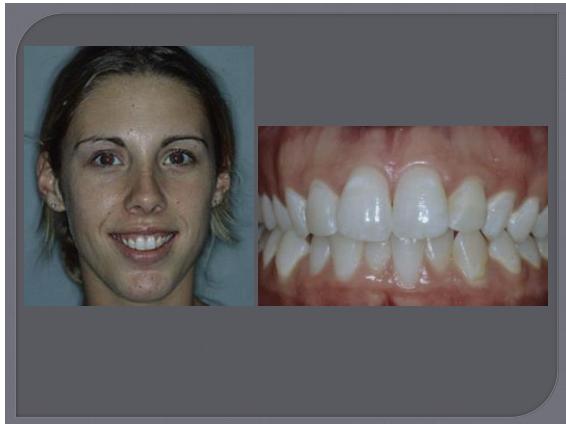
- Central 11 X 9 mm
- Lateral 9 X 7mm
- Cuspid 11X 8 mm

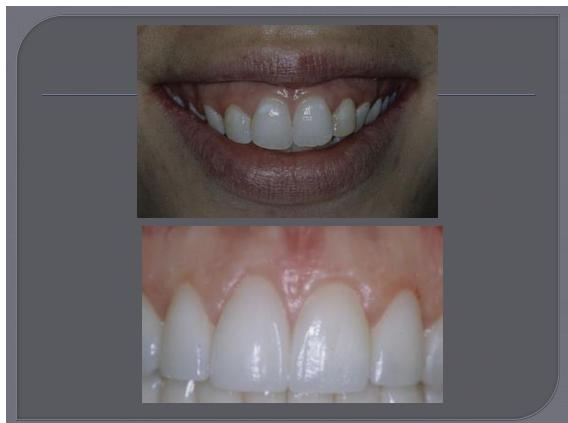


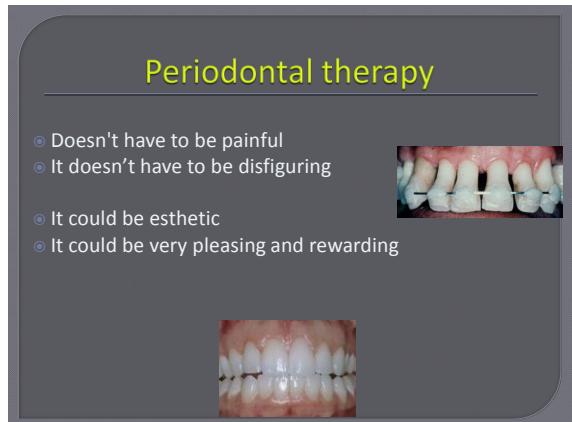
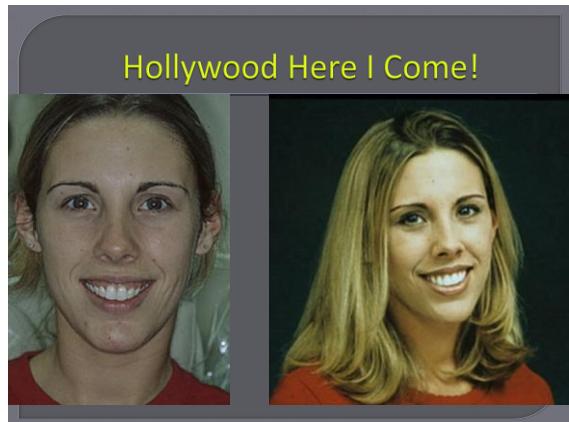
### Cosmetic Crown Lengthening

- Current trends









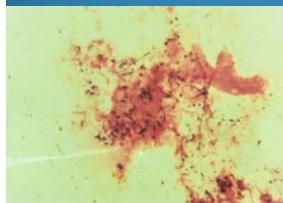
## The Oral-Systemic Disease Connection



## "The Human Mouth as a Focus of Infection"

W. D. Miller, MD, DDS, PhD

*The Dental Cosmos* 33:689-706, 1891



## W. D. Miller, MD, DDS, PhD 1853-1907



- Born in Ohio
- Trained in the USA and in Europe (Germany)
- Developed the scientific basis for a life-long oral cleanliness

## W. D. Miller, MD, DDS 1891

"The human mouth as a gathering place and incubator of diverse pathogenic germs....many diseases whose origin is involved in mystery could be traced to their source – the oral cavity" !



## W. D. Miller, MD, DDS 1891

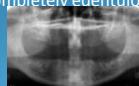
### Bacterial Reservoir for Systemic Diseases:

- "Decay of the teeth"
- Pulpitis
- Abscesses
- Impaction (pericoronitis)
- "Pyorrhea Alveolaris" (periodontitis)



## The consequences of the “focal infection” theory:

- Extraction of all periodontally and endodontically involved teeth
- Patients became completely edentulous at a very young age
- Extractions had no effects on the progression of other diseases (such as Arthritis)



## The Oral-Systemic Disease Connection

### Periodontal Medicine



## Systemic Factors Impacting the Periodontium

1. Diabetes mellitus
2. Pregnancy
3. Malignancies (metastasis)
4. Medications
5. HIV infection
6. Nutrition (scurvy etc.)
7. Stress



## Diabetes & The Periodontium



## Pregnancy and the periodontium



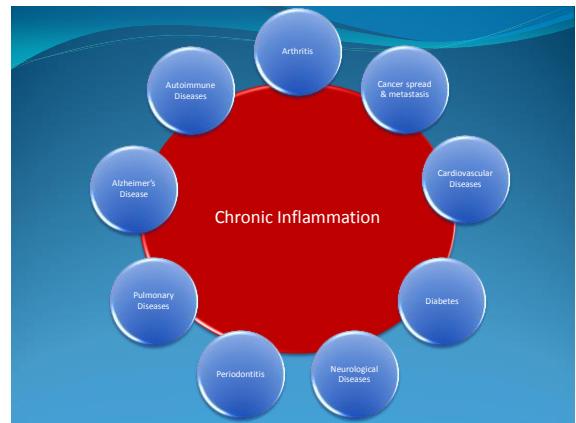
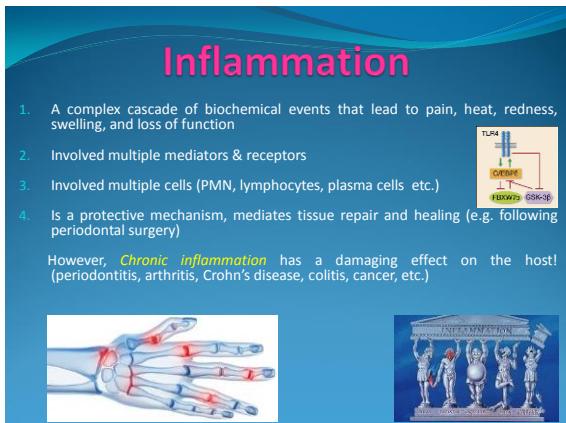
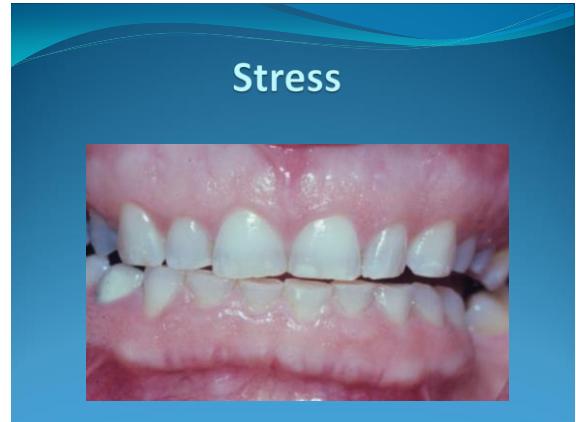
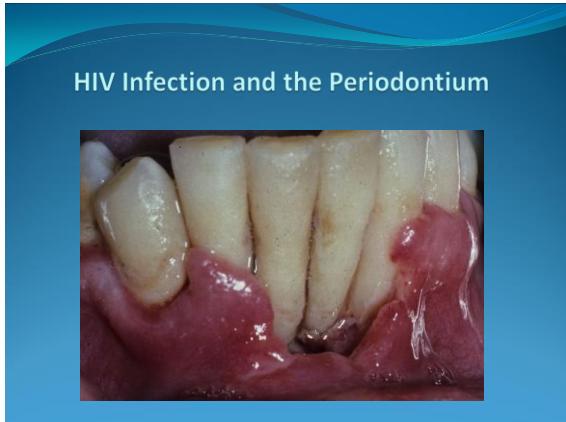
Pregnancy gingivitis



Pyogenic granuloma  
“pregnancy tumor”

## Gingival Enlargement: Leukemia





## Fighting Inflammation: Antioxidants

## Non-Steroidal Anti-Inflammatory Drugs

## The Systemic Impact of Oral Infections & Inflammation

- Preterm birth / low birth weight
- Coronary Heart Disease
- Stroke (CVA , Cerebral Vascular Accident )
- Bacterial Pneumonia
- Diabetes
- Gastric ulcers (*Helicobacter pylori*)
- Cancer spread

## Source of Information

- Epidemiology studies
- Possible mechanisms of action
- Intervention studies
- Animal studies (mice, rabbits, hamsters)
- Microbiological studies (implanted oral bacteria in chambers under the skin)

## Periodontitis and Pregnancy

## Periodontitis and Pregnancy

**Prostaglandins:**

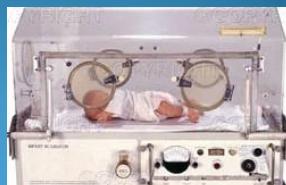
Are inflammatory mediators

Are produced by the host (patient) in response to bacterial infection

At high level they cause contraction of the uterus leading to miscarriage or preterm birth.

The French "abortion pill" (RU486) contains Mifepristone (a steroid that blocks the action of progesterone) and prostaglandins.

## Preterm Birth (12% of all births) (less than 37 completed weeks)



## The Consequences of Pre-term Birth

- Medical problems
- Emotional problems
- Social consequences: \$ 5. 5 Billion a year (medical care, schooling, training etc.)

## Medical Consequences of Pre-term Birth

- Low weight (less than 2500 grams – 5 pounds 8 ounces)
- High mortality rate 2-10% (much higher in birth earlier than 32 weeks)
- Retardation
- Motor impairment
- Cerebral palsy, blindness and deafness
- Respiratory problems (asthma, infections etc.)

## Risk Factors for Pre-Term Birth (PTB)

### Birth before 37 weeks of gestation:

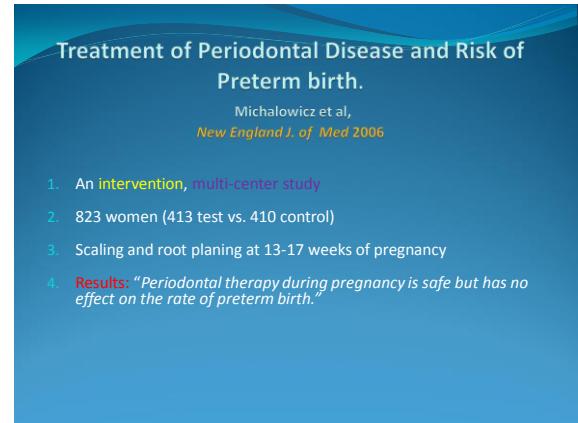
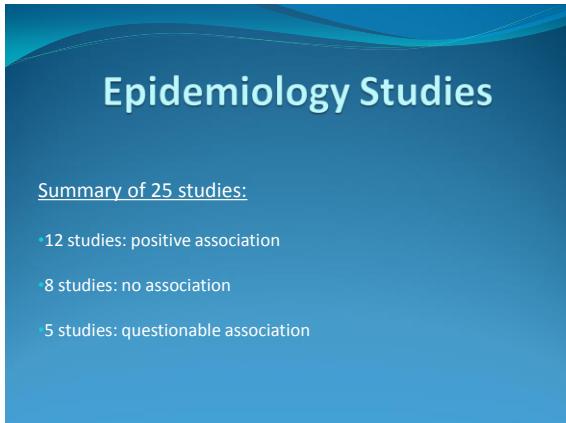
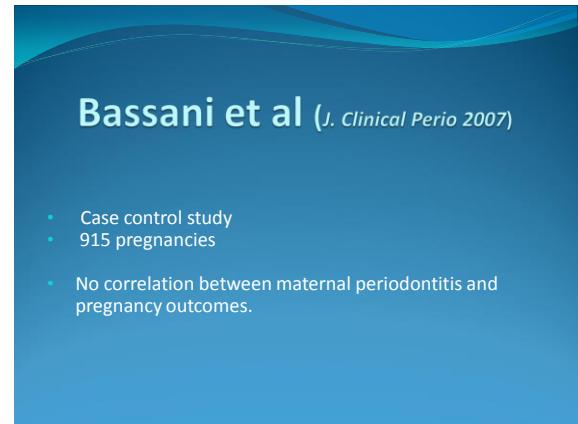
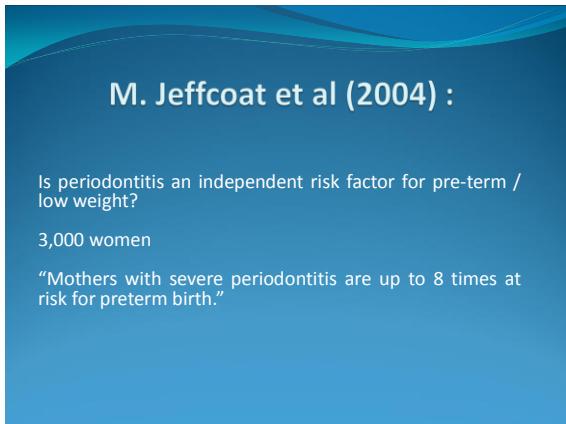
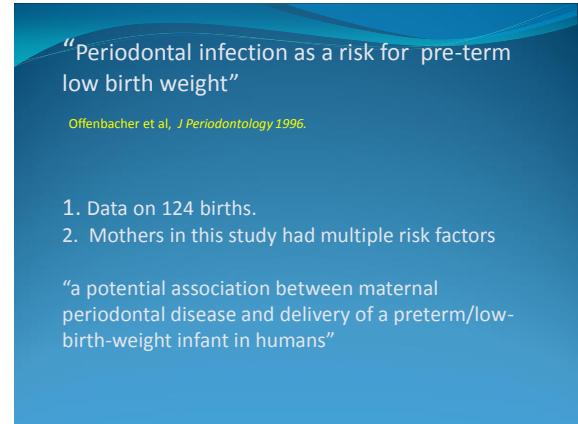
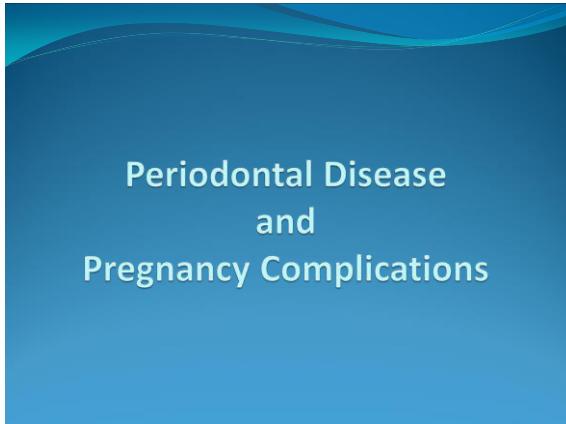
- 1 Smoking
- 2 Previous preterm birth
- 3 Multiple birth (twins, triplets etc.)
- 4 Rupture of membranes (of the amniotic sac, in 30 % of all PTB)
- 5 Infection of the uterus / amniotic sac (productions of inflammatory mediators).
- 6 Drug and alcohol abuse
- 7 Malnutrition

## Risk Factors for Pre-Term Birth (PTB)

- 8 Lack of prenatal care
- 9 Abdominal trauma
- 10 Age (younger than 17 years, or older than 34 years)
- 11 Race
- 12 Low maternal weight
- 13 Short cervical length
- 14 Stress (physical or emotional)
- 15 Parity (number of birth)

## Risk Factors for Pre-Term Birth

25% of all complicated pregnancies  
have no  
known reason!



## The Benefits of Pregnancy Studies

- Women are getting better periodontal care during pregnancy.
- “Pregnancy Gingivitis” and “Pregnancy Tumor” may become things of the past.
- The optimal time for periodontal intervention is preconception! (women quit smoking prior to pregnancy too)

## A good tooth - in a bad neighborhood



Why the inflammation didn't spread to #10 ?

“It’s a boy ” !!



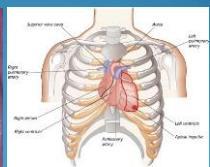
## Periodontitis and Cardiovascular Disease (CVD)

1. Heart attack (Myocardial Infraction)
2. Stroke - CVA (Cardio-Vascular Accident)



## Periodontitis and Cardiovascular Disease (CVD)

1. Heart attack (Myocardial Infraction)
2. Stroke (CVA)



## Risk Factors for CVD (Cardiovascular Disease)

- Genetic
- Diabetes
- Hypertension
- High cholesterol level
- Smoking
- Gender



## Risk Factors for CVD

- Stress (emotional or physical)
- Lack of physical activities
- Age
- Race
- Obesity
- Drug and Alcohol abuse



## Periodontitis and CVD

- Periodontitis is found more often in patients with CVD.
- Do they share the same risk factors?
- Is this relationship causal or coincidental?
- Is periodontitis an independent risk factor for CVD?

Only large-scale randomized intervention studies will provide the answers.

## C-Reactive Protein

- A protein discovered by Tillett & Francis in 1930 in the serum of patients with acute **inflammation** that reacted with C-polysaccharide of bacteria.
- It is produced by the liver, normal level is below 1.0 mg/L
- Higher levels (of more than 3.0 mg/L) is linked to CVD

## Inflammation, Heart Disease and Stroke

### The Role of C-Reactive Protein:

- A marker of inflammation in the body
- Inflammation is involved in atherosclerosis
- Arterial plaques contain inflammatory cells

A risk marker for cardiovascular diseases, but it is not an independent risk factor / marker.

The Good News: Statins (Lipitor, Zocor, Crestor, Vytorin etc.) reduce its blood level.

## C-Reactive Protein (CRP)

Patients with periodontitis have an increased systemic level of CRP



## C-Reactive Protein & Periodontal Therapy

Scaling and root planing reduced its level in the blood.

Iwamoto et al, *J. Perio 2003*

**"Recommending periodontal treatment solely for the purpose of CVD prevention is not warranted"**

JADA 2006 (October issue)

## Floss or Die!



**"Honey, we will live forever and have healthy babies!!**



A smooth mouth - is a happy mouth!

## Diabetes Mellitus

- Type I (= Juvenile Diabetes, Insulin Dependent Diabetes Mellitus) is due to lack of production of insulin by the pancreas.
- Type II (=Adult Diabetes) is due to inadequate production of insulin, or to resistance to insulin action.



## The Impact of Periodontitis on Diabetes

- Inflammation increases insulin resistance
- Complicates metabolic control of diabetes
- Periodontal therapy decreases inflammatory mediators in the blood and **may** improve the diabetic condition
- Weight loss is far better way to control a type II Diabetes!



## Gastric and Peptic Ulcers

### Signs and Symptoms:

- Burning, aching, gnawing abdominal pain that may extend to the back
- Pain that is alleviated by taking anti-acids
- Loss of appetite and weight
- Bloating, nausea or vomiting after eating
- Darker stool
- **Chronic gastric ulcers may cause cancer !!**

## Gastric and Peptic Ulcers

### Risk factors:

- Smoking
- Non-Steroidal Anti-inflammatory Drugs (aspirin, ibuprofen etc.)
- Stress
- Alcoholism
- Genetics
- Excessive stomach acid



### *Helicobacter pylori* Chronic Gastritis & Gastric ulcers

- A gram-negative bacterium that causes the ulcers
- Carcinogen in the stomach
- Found in 50% of sub-gingival dental plaques of periodontitis patients vs. 11% healthy subjects.

Souto, J. PERIO 2008

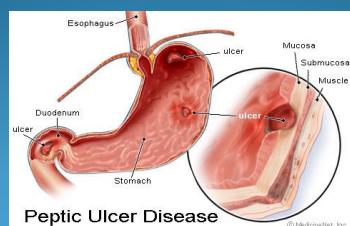
### *Helicobacter pylori*

### Chronic Gastritis & Gastric ulcers

In 2005, Australian researchers, Barry Marshall and Robin Warren were awarded the Nobel Prize in Physiology or Medicine for their discovery.



**“What will kill you is not what you eat, but what is eating you”!!**



## Periodontal Medicine Summary

1. Periodontal disease merits prevention and therapy as an oral health problem in itself, regardless of its possible systemic impact. **Scaring tactics don't work.**
2. We don't need an excuse (systemic threat) to treat the periodontal patients!!



Patients are not healthy without good  
oral health!



FUTURE