

Periodontal Disease and Systemic Disease: Is there a link?

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 - Figures Courtesy of I-C. Wang D.M.D.

Diabetes

- Type I Diabetes
 - Auto immune destruction of insulin producing B cells in pancreas
 - < 30 years old
 - Hyperglycemia
 - Treatment : Insulin
- Type II
 - 90 %
 - Onset midlife
 - Insulin tolerance
 - Hyperglycemia
 - Treatment: Diet, exercise, oral meds, insulin
- Gestational Diabetes

Diabetes and Periodontal Disease

- Pima Indians studies
Subjects with Type II DM have 3 times higher incidence of periodontal disease
- Periodontitis progresses more rapidly in patients with uncontrolled diabetes
- Poorly controlled and long duration of diabetes are in highest risk group

Diabetes and Periodontal Disease

- Patients with severe periodontal disease demonstrated worse glycemic control than subjects with minimum destruction
- Mechanical and systemic anti-microbial therapy may improve glycemic control

Measures of diabetes

- Blood glucose is an momentary measure of glycemic control
- Hemoglobin a1c is a measure of glycemic control over the last three months
- There are point of service finger stick tests to measure both

Diabetes Classic complications

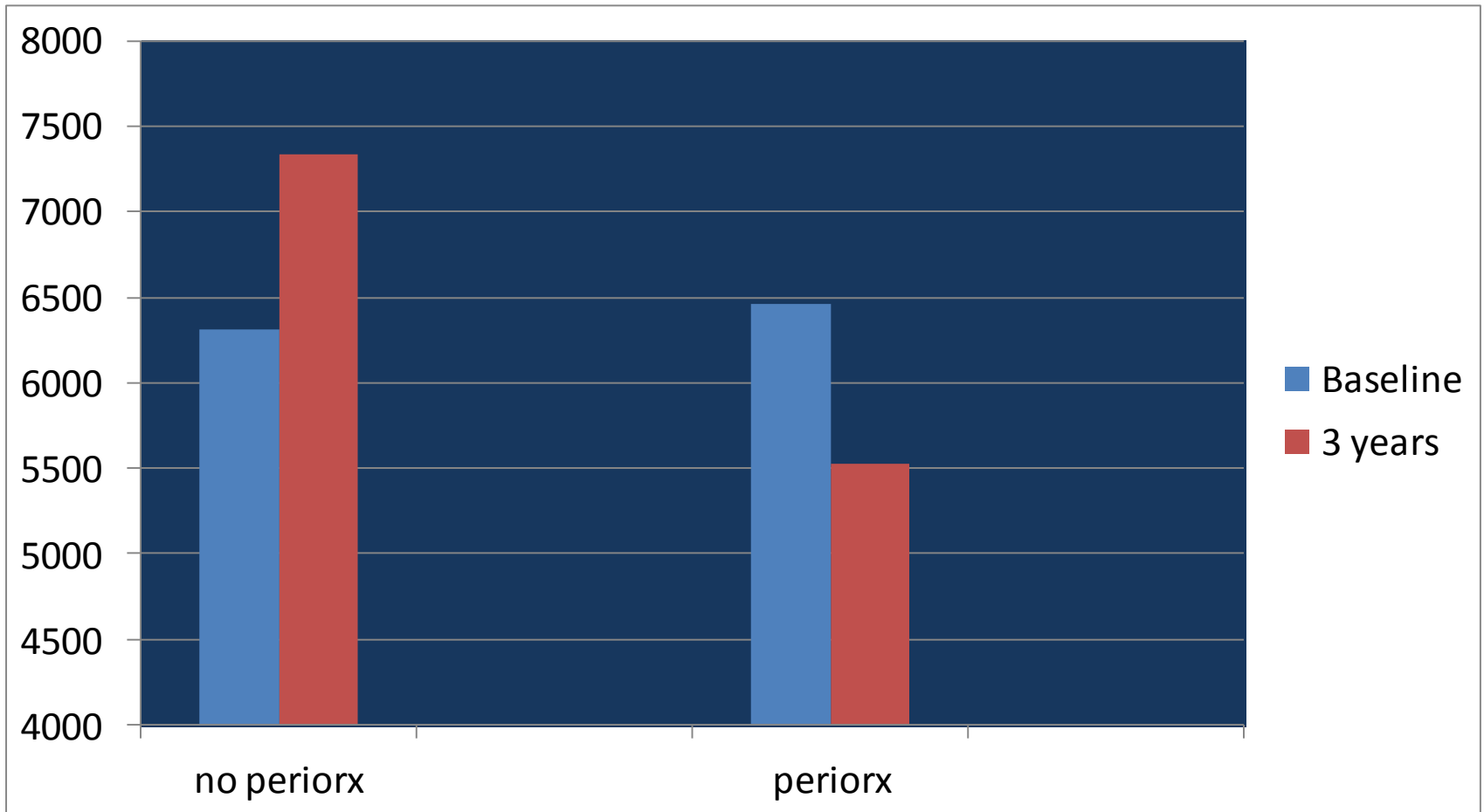
- Retinopathy Blindness
- Nephropathy Renal failure
- Neuropathy
- Macrovascular disease
 - Cardiovascular, Stroke
 - Peripheral
- Altered wound healing

For more information

National Diabetes Information Clearinghouse

niddk.nih.gov/health/diabetes/pubs/dmsats/dmstats/htm#comp

Medical Costs in Diabetics



Cardiovascular disease

- 58 million Americans
- 22% of US population
- 40% of all deaths

Epidemiological Studies

- DeStafano 1993: NHANES
- Population of over 20,000 people
- Median of 14 years

NHANES study

- Subjects with severe periodontal disease were at significantly greater risk of developing
 - Atherosclerosis
 - Myocardial infarction and stroke
- Even when controlled for
 - body mass, age, exercise, serum triglyceride, blood pressure, cholesterol level

Prospective study (Beck)

- Periodontitis significant risk factor for cardiovascular disease morbidity and mortality.
- Fatal coronary heart disease odds 1.6 increased
- Fatal stroke odds 2.1 increased
- controlling for all the traditional cardiovascular risk factors.

What defines a preterm baby?

- A baby...
 - born during or before the 36th week of gestation (one week before full term)

 - and

 - weighing less than 2,500 grams (5 pounds, 8 ounces)

What causes low birth weight ?

- Some of the known causes include:
 - Cigarette smoking
 - Alcohol
 - Multi fetal pregnancies
 - Mother's medical problems
 - An abnormal placenta, uterus or cervix

How can preterm low birth weight be prevented ?

- **All pregnant women should:**
 - Get early , regular prenatal care
 - Consume 0.4 milligrams of folic acid daily
 - Eat a balanced diet
 - Gain enough weight
 - Avoid smoking, alcohol, illicit drug

Facts about preterm low birth weight

- In the United States, 13% of newborns are low birth weight
- 25% of preterm low birth weight cases occur without any known risk factors
- Low birth weight is related to 60% of infant deaths

Pregnancy Gingivitis

- Generalized marginal gingival enlargement
- Incidence: up to 90%
- Altered inflammatory response to plaque



Why is preterm delivery important

- Major cause of neonatal death
- Causes nearly half of long-term neurologic morbidity

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 - Consume 0.4 milligrams of folic acid daily (before and during early pregnancy)
 - Eat a balance diet
 - Gain enough weight
 - Avoid smoking
 - Avoid drinking alcohol /using illicit drugs /prescriptions or over-the-counter drugs not prescribed

How does low birth weight affect a baby ?

- **Low birth weight babies may face serious health problems such as:**
 - Respiratory distress syndrome (RDS)
 - Anemia
 - Jaundice
 - Mental retardation
 - Cerebral palsy
 - Impaired lung function, sight and hearing
 - Intracranial hemorrhage
 - Malnutrition
 - Congestive heart failure

Note

- Of 3,000 pregnant women were studied by our group
- Women with periodontal disease were 3-8x more likely to have spontaneous preterm birth
- Of 28 women who delivered at less than 32 weeks gestations, 24 had periodontal disease

Intervention Studies

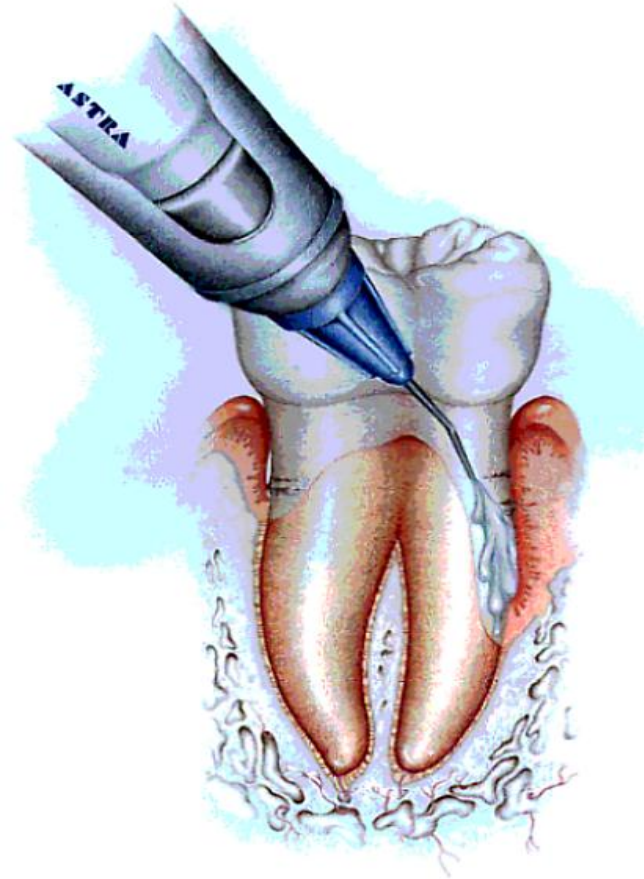
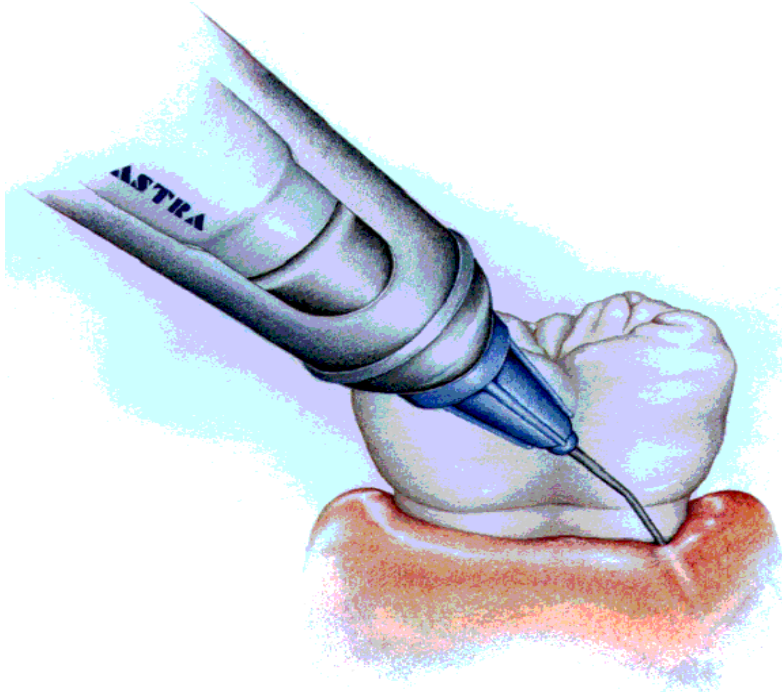
- Can demonstrate that treating periodontitis reduces the risk of preterm birth

Incidence of Preterm Births at Less Than 37 Weeks

- Reference group with periodontitis
13.7%
- Prophy + Placebo
8.9%
- Scaling and root planing + Placebo
4.0%

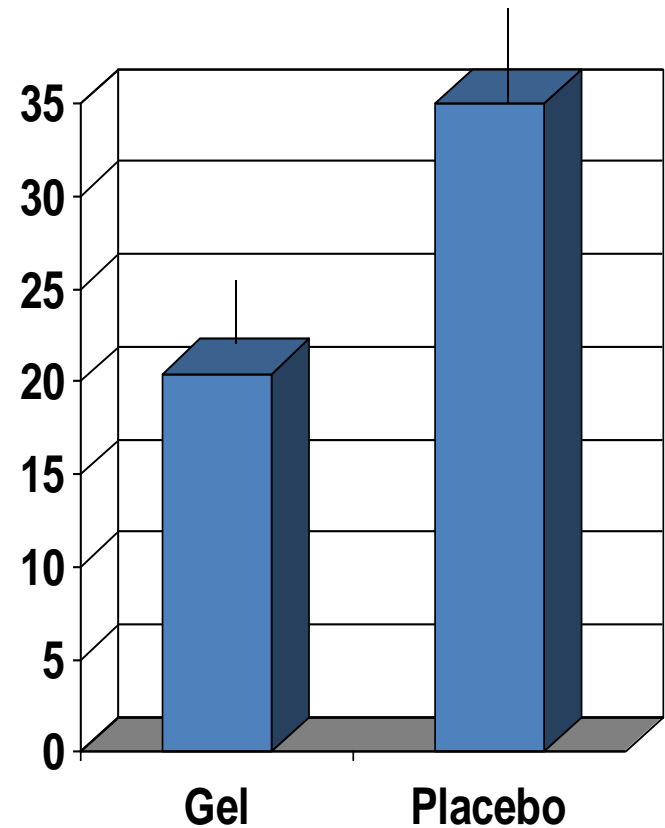
An alternative to anesthetic injections for scaling and root planing

ORAQUIX



Efficacy of Dental Gel

- Multicenter Study
- Patients who require scaling and root planning
- Assess efficacy by Digital Analog Scale



Why the differences in published studies?

- Very different prevalence of more severe periodontal disease
- Very different proportions of African American women in different studies
- How much PD matters?
- Sample size

The success of treatment matters!



Successful treatment



Unsuccessful treatment

The odds of having a preterm birth was 19.8 times higher in patients whose periodontal treatment was not successful v.s. the patients who were successfully treated ($p < 0.01$).

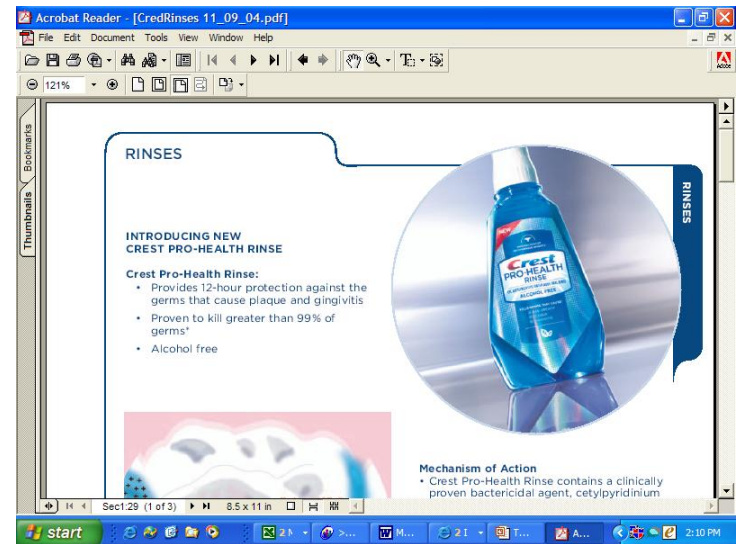


Use of alcohol free antibacterial mouth-rinse is associated with a decreased incidence of PTB

A novel technology

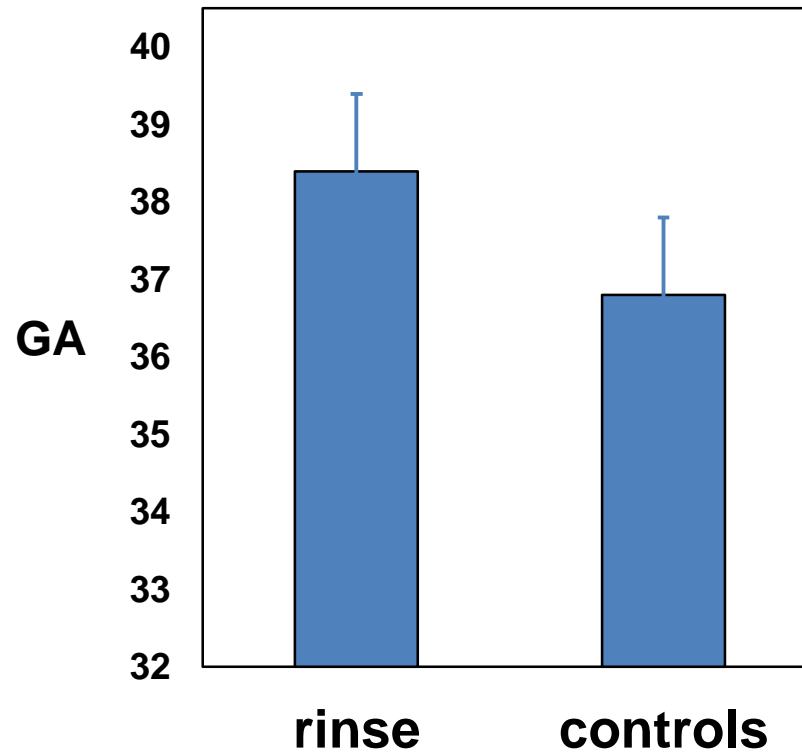
Crest Pro-Health Rinse

- 0.07% high bioavailable CPC
- Alcohol-free
- Antiplaque
- Antigingivitis
- Fights breath malodor
- 12-hour protection



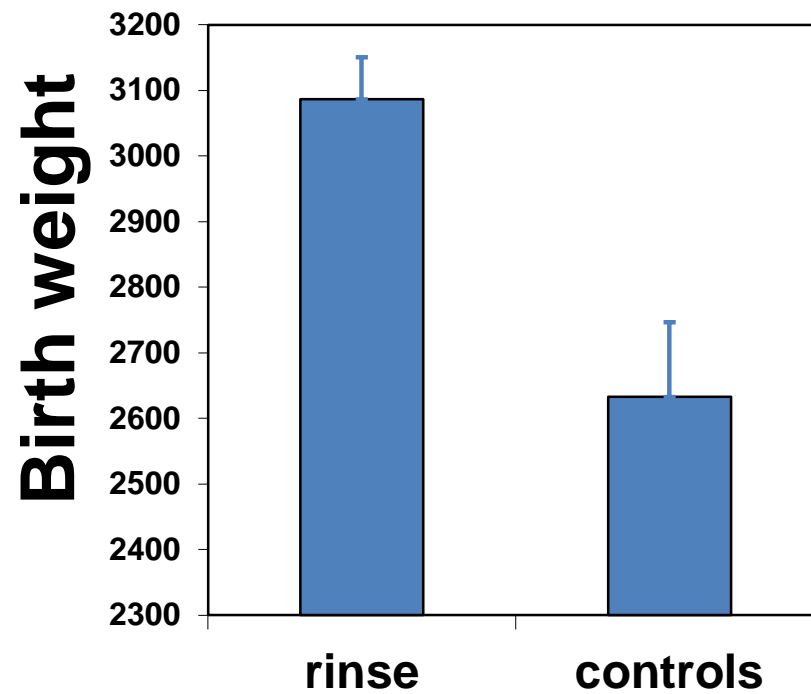


GESTATIONAL AGE AND TREATMENT GROUP ($P < 0.011$)





BIRTH WEIGHT AND TREATMENT GROUP ($P < 0.001$)



Oral Health Care During Pregnancy

*A Summary of a Consensus Development
Expert Workgroup Meeting*



Analgesics in Pregnancy highlighted from the report

| Analgesics | |
|---|--|
| Acetaminophen | <i>May be used during pregnancy.</i> |
| Acetaminophen with Codeine, Hydrocodone, or Oxycodone | |
| Codeine | |
| Meprobidne | |
| Morphine | |
| Aspirin | <i>May be used in short duration during pregnancy. Avoid in 3rd trimester.</i> |
| Ibuprofen | <i>May be used in short duration during pregnancy; do not use for >48–72 hours. Avoid in 3rd trimester.</i> |
| Naproxen | |

Antibiotics in Pregnancy highlighted from the report

| Antibiotics | |
|----------------|-------------------------------|
| Amoxicillin | May be used during pregnancy. |
| Cephalosporins | |
| Clindamycin | |
| Metronidazole | |
| Penicillin | |
| Avelox | Avoid during pregnancy. |
| Ciprofloxacin | |
| Clarithromycin | |
| Levofloxacin | |
| Tetracycline | Never use during pregnancy. |

Anesthetics and OTC Drugs in Pregnancy - highlighted from the report

| | |
|--|--|
| Anesthetics | Consult with a prenatal care health professional if using anesthetics other than a local with epinephrine block or infiltration (e.g., intravenous sedation or general anesthesia). |
| Local anesthetics (Bupivacaine, Lidocaine, Meprvacaine) | May be used during pregnancy. |
| Nitrous oxide (30%) | May be used during pregnancy when topical or local anesthetics are inadequate. Pregnant women require lower levels of nitrous oxide to achieve sedation; consult with prenatal care health professional. |
| Over-the-Counter Antimicrobials | |
| Cetylpyridinium chloride mouth rinse | May be used during pregnancy. |
| Chlorhexidine mouth rinse | |
| Xylitol | |

Report on Dental Treatment in Pregnancy

- Webpage:

http://www.mchoralhealth.org/materials/consensus_statement.html

- PDF:

<http://www.mchoralhealth.org/PDFs/OralHealthPregnancyConsensus.pdf>

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Osteoporosis

- Loss of bone density
- Propensity to fracture
 - Especially,
 - Hips
 - Wrist
 - Spine
- May result in widows hump

Risk factors for Osteoporosis

- Low peak bone mineral density
- Low body mass index
- Diet: insufficient calcium 1000-1500mg/day
- Women
- Postmenopausal
- Lack of Estrogen
- Smoking

Risk factors for Osteoporosis

- Drugs
 - Corticosteroids
 - Possible to lose 10% of bone mineral in one years
 - Cytotoxic Drugs
 - Estrogen antagonists
- Lack of exercise
- Propensity to fall

Periodontitis and Osteoporosis

- There is an association between basal bone density and
- Bone mineral density at the hip
- Sites with osteoporosis and periodontitis have the highest rate of bone loss

What to do?

- Prevention, prevention, prevention
 - Include questions on osteoporosis in the medical history
 - Educate about diet, exercise, etc.
 - Refer for treatment
- Prevent and treat periodontal disease

Prevention of osteoporosis

- Education
- Attain sufficient peak bone mass
 - Calcium and milk
 - Avoid soda
 - Avoid smoking
- Attain sufficient bone mass
- Exercise
- Appropriate drug treatment

Pharmacologic approaches

- Estrogens
- Nasal calcitonin
- Bisphosphonates
 - E.g. alendronate, risendronate
- Designer estrogens
- PTH (daily injections)
- Prolia

Do oral bisphosphonates cause implant failure?

- 100 consecutive patients taking bisphosphonates for at least three years prior to implant placement for osteoporosis
- 100 controls not taking bisphosphonates
- Tracked for at least 5 years
- Looked for evidence of
 - implant loss, loss of >2mm bone
 - mobility
 - ONJ
- **NO EVIDENCE OF BONE LOSS OR ONJ**