
Periodontics

DEN 1217 Section D226

Treatment Planning

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Treatment Planning

Patient introduction:

Ms. X is a 35-year-old female. Patient is 7 months pregnant.

Medical history:

She has been diagnosed with sickle cell, gestational diabetes mellitus, preeclampsia and type III chronic periodontitis. Concerned with possible delayed healing. Probing depths of 6-7 mm; BOP, up to 33% radiographic bone loss, or grade II mobility or Grade II furcation.

Dental history:

(Ascertain the patient's awareness of and interest in previous dental disease and treatment. Document existing dental treatment and evaluate patient's history with existing endodontic therapy and appliances)

Medication:

Glibenclamide/Glyburide
Antibiotics (premedication)

Pt taking for:

Gestational diabetes mellitus
Sickle cell

Dental implications:

Low blood sugar (hypoglycemia)
Risk of bacteremia

First appointment: 30-45 minutes (shorter appointments due to her pregnancy)

- Comprehensive oral evaluation consisting of a medical and dental update, head and neck examination, and oral cancer screening.
- Complete X-ray series, including vertical bitewings are recommended, but will be postponed until after the birth. Referral to the periodontist. Periodontitis associated with systemic diseases should be considered for referral. (GDM, Pregnancy)
- Oral hygiene instructions. Stain for plaque and relate stained areas to bleeding sites. Advise patient of relationship between systemic diseases and periodontal disease.
- Periodontal debridement, to facilitate the periodontal examination.
- Periodontal examination. Sites that bleed on probing should be recorded.
- Nutritional counseling for the control of dental caries.
- Tobacco counseling for the control and prevention of oral disease and risks during pregnancy, if indicated.
- Application of desensitizing medicaments, if needed.
- Application of topical fluoride treatment is needed to minimize the effects of erosion; fluoride varnish may be preferred over gel treatments due to nausea.

Second, third, and fourth appointments: 30-45 minutes (each scheduled with a minimum of 10 days after previous appointment to allow tissue healing, as much as possible, since patient delayed on healing process)

- Review medical and dental history.
- Evaluate tissue response from previous treatment.
- Stain for plaque and relate stained areas to any bleeding sites as part of oral hygiene instruction (patient learns cause and effect; sites that persist in bleeding on probing, despite not staining positive for supragingival plaque, suggest more aggressive therapy may be needed at that site).
- Reinforce plaque biofilm-control instruction.
- Periodontal debridement by quadrant (local anesthesia may be indicated as needed).
- Recommend home adjunctive antimicrobial irrigation or mouth rinse, if indicated. Indication: use alcohol-free products during pregnancy.
- Nutritional counseling for the control of dental caries.
- Tobacco counseling for the control and prevention of oral disease and risks during pregnancy, if indicated.
- Application of desensitizing medicaments, if needed.
- Application of topical fluoride treatment is needed to minimize the effects of erosion; fluoride varnish may be preferred over gel treatments due to nausea.

Fifth appointment (reevaluation of therapy): 30-45 minutes (scheduled 4-8 weeks after previous appointment)

- Review medical and dental history.
- Evaluate tissue response from previous treatment.

- Oral and dental examination.
- Periodontal examination; record sites that bleed on probing.
- Stain for plaque and relate stained areas to any bleeding sites as part of oral hygiene instruction (patient learns cause and effect; sites that persist in bleeding on probing, despite not staining positive for supragingival plaque, suggest more aggressive therapy may be needed at that site).
- Periodontal debridement by quadrant (local anesthesia may be indicated as needed).
- Recommend home adjunctive antimicrobial irrigation or mouth rinse, if indicated. *Indication: use alcohol-free products during pregnancy.*
- Coronal polishing, as indicated.
- Nutritional counseling, if needed.
- Tobacco counseling, if indicated.
- Application of desensitizing medicaments, if needed.
- Application of topical fluoride treatment; fluoride varnish may be preferred.

Etiology

- Ms. X primary etiologic factor is dental plaque (poor oral hygiene). She is diagnosed with systemic diseases and those are risk factors. Her condition can also be associated with the endocrine system, because the Ms. X is 7 months pregnant and she's having changes in sex hormones and exaggerated response to plaque.
- Pregnant women's diet commonly changes due to increased snacking and cravings, so dental caries may occur. There is an increase in the acidity in the mouth due to vomiting, dry mouth or poor oral hygiene from nausea and vomiting.
- Due to hormonal changes, Pyogenic granuloma (aka. Granuloma gravidarum) may develop. Gravidarum is a round growth, usually connected to the gingivae by a thin cord of tissue.
- Erosion stemming may be detected from vomiting as a result of morning sickness. Patients should be encouraged to avoid tooth brushing immediately after vomiting, which exposes the teeth to stomach acids.

Prognosis

Ms. X probing depths of 6 to 7 mm is a factor involved on tooth prognosis. Her medical history is involved as well, because the patient suffers from systemic diseases. At this time, the patient may be put on a suitable maintenance interval of 2 to 4 months if inflammation appears arrested (e.g., no BOP from deep pockets at sites that patient is maintaining plaque-free) and there is no other reason to refer to a specialist. The prognosis for Ms. X would be fair to poor, depending on the response of her gingiva to the periodontal debridement and how she incorporates the oral self-care that is taught to her into her daily routine. She has moderate periodontitis type III, that is categorized by up to 33% bone loss or grade II mobility or grade II furcation. A reevaluation will be done after treatment to see what the results are; if all areas are improved and the periodontal disease progression is halted. If there are still some areas that were unaffected by the treatment, the patient should be referred to a periodontist.

Treatment alternatives

- Postpone non-emergency dental work until the second trimester or after delivery, if possible.
- Elective procedures should be postponed until after the delivery.
- Use fluoride varnish over gel treatment.

Treatment plan modifications

- Radiographs can usually be postponed until after the birth. In case of an emergency, lead abdominal apron and thyroid collar shielding will be used for pregnant patients when radiographs are being taken.
- Local anesthesia: with epinephrine (e.g., bupivacaine, lidocaine, mepivacaine) may be used during pregnancy. The amount of anesthesia administered should be as little as possible, but still enough to make her comfortable.
- Always ask the patient if she took the premedication and when her last meal was, before the appointment.
- Positioning the patient in a semi-supine position to avoid the risk prolonged time lying on her back. Another ideal position for the patient is the left lateral decubitus position with the right buttock and hip elevated by 15°.
- Maintain healthy circulation by keeping patient legs uncrossed while she sits in the dentist's chair.
- Schedule shorter appointments, because it may be difficult for a pregnant patient to lie on her back for an extended period of time.

35-year old female

Periodontal disease can start at any age, with developing risks increasing as a person gets older. While gingivitis may arise in younger years, signs of periodontitis generally do not exhibit signs until the ages of 30 to 40. According to the Centers for Disease Control and Prevention (CDC), 1 out of every 2 American adults over 30 has some form of periodontal disease. This is a result of greater quantities of plaque buildup left untreated.

Men have a higher prevalence of periodontal disease (about 57%) over women (about 39%). However, health-related behaviors in women, such as being more proactive in maintaining general health and wellbeing, do play a role in lower risks. There are socio-economical and physiological factors that play a role in the risks of periodontal disease in women. Similarly, economic gender inequality directly affects access to health care, resulting in lack of health insurance for women. According to the National Health Medicaid data, 20% of uninsured women are unable to receive dental care due to higher out-of-pocket costs compared to men. These factors can result in more prevalent disease outcomes in women, regardless of oral hygiene practices.

Women are also more susceptible to periodontal disease through physiological means, such as hormones and oral contraceptives. High levels of hormones can cause gingivitis. In summary, women are more sensitive to plaque and bacteria, leading to increased bleeding and inflammation. Hormonal imbalance may occur during puberty, menstruation, pregnancy, menopause or by using oral contraceptives. Therefore, a 35-year old woman with signs of periodontal disease should make regular dental visits in order to remove biofilm and plaque build-up and counter the effects of hormonal changes.

7 months pregnant

Hormonal changes will also play a major role in a 7-month pregnant patient's dental treatment. Around 40% of pregnant women develop some form of periodontal disease, especially among ethnic minorities. Gingivitis caused by hormonal imbalance is specifically common during the second trimester of pregnancy, known as *pregnancy gingivitis*.

Periodontal health is crucial during pregnancy. Studies by the American Academy of Periodontology have shown that pregnant women with periodontal disease are more likely to deliver babies prematurely, with low-birth weights, long-term health problems, and disabilities, compared to pregnant women without the disease. This is due to high levels of prostaglandin E, which may cause induced uterine contractions. Therefore, it is essential that pregnant women maintain a healthy oral hygiene regimen for the benefit of their children and themselves.

Some women avoid dental treatment during pregnancy because they believe radiation could harm their fetus. Nevertheless, it is important to educate them on the benefits of a safe dental care with a minimal radiation exposure. Dental

hygienists should use an abdominal lead apron if radiographs are needed. In addition, a semi-seated position is recommended to avoid aspiration and hypotension. Last but not least, sedation and local anesthetics should be avoided during the third trimester of pregnancy.

Preeclampsia

Preeclampsia is a complication that happens during pregnancy and is characterized by high blood pressure. There could be damage to other organ systems, such as the kidneys and liver. It usually begins after 20 weeks of pregnancy in women whose blood pressure was previously normal. If left untreated, it can lead to serious complications for both mother and baby. The most effective treatment is the delivery of the baby, but the mother's recovery could take time. This condition sometimes develops without any symptoms and may occur slowly or suddenly. Other symptoms may be severe headaches, changes in vision, nausea or vomiting, decreased urine output, impaired liver function, and shortness of breath, among others.

Causes of preeclampsia involve several factors. It is believed to begin in the placenta. Early in pregnancy, new blood vessels develop and evolve in order to send blood to the placenta. However, in women with preeclampsia, these blood vessels don't seem to develop or function properly because they are narrower than normal blood vessels and react differently to hormonal signaling. This limits the amount of blood that can flow through them. The more severe the preeclampsia and the earlier it occurs in pregnancy, the greater the risks for mother and baby, for it may require induced labor and delivery.

GDM

Gestational diabetes mellitus (GDM) is associated with an onset of intolerance of carbohydrates during pregnancy. The first signs of GDM are usually observed between 24-28 months of the pregnancy and occur in 4% of pregnancies in the U.S. In most cases, patients with GDM generally do not show symptoms of diabetes after childbirth. However, some may show signs of pre-diabetes after childbirth and are susceptible to developing type 2 diabetes mellitus.

Some predisposing risk factors for developing GDM include a family history of diabetes or obesity, as well as lack of physical activity. According to a study by Gilbert et. al, there is an important relationship between these risk factors and GDM. Physical activity and a balanced diet can lead to low rates of diabetes after childbirth. Since GDM patients have difficulties in maintaining proper glucose and insulin levels, they also result in hyperglycemia. There is an elevated number of cytokines in gestational diabetes due to many reasons, including pregnancy itself and adipose cells. Furthermore, there is a significant interaction between type 2 diabetes mellitus and periodontal disease.

Gestational diabetes has been recently studied to see if there was an interaction. There is a higher prevalence of periodontal disease in pregnant women with GDM (Xiong et. al 2009). Researchers had defined periodontal disease as having probing depths or clinical attachment loss greater than or equal to 4 mm. Inflammation occurs in the oral cavity due to interactions between insulin resistance, hyperglycemia, the elevated presence of cytokines and other factors. Inflammation plays a big role in periodontal disease and which is why there is a connection to gestational diabetes.

Glibenclamide/Glyburide

Glibenclamide or Glyburide is a medication that is prescribed to treat diabetes in order to help manage and enhance the secretion of insulin. It belongs to the sulfonylurea pharmacologic category, which stimulates insulin production from beta cells located in the pancreas. It also reduces glucose output that is released from the liver. This medication also assists people with diabetes by increasing the sensitivity to insulin in peripheral target sites. Clinicians should inquire if the patient had taken their medication and when was their last meal prior to the appointment.

In the case of a hypoglycemic event, clinicians should recognize the signs and symptoms, which could include an irregular heart rhythm, pale skin, anxiety and fatigue. Oral glucose or tablets should be given to these patients in order to boost their blood sugar levels. Studies show that there are symptoms of hypoglycemia in newborn children whose mothers were using this medication. Since it is being taken for gestational diabetes mellitus, pregnant women should stop using Glibenclamide at least two weeks prior to the expected birth date of their child.

Sickle cell

Sickle cell disease is defined as a group of red blood cell disorder in which there is an abnormal protein attached to the red blood cells. The abnormal protein is hemoglobin S or sickle hemoglobin. In order for a person to get sickle cell anemia, it must be inherited from both parents with the abnormal hemoglobin gene. If so, there is always a 25% chance that their child will have sickle cell anemia. In the United States, African Americans is the larger population who have sickle cell anemia.

When treating patients, dental hygienists should be aware of the possible complications that this disorder could cause. These patients can have acute pain episodes that can happen when sickle cells block blood flow and decrease the delivery of oxygen. Crises can occur in the abdomen, arms, chest, lower back and legs. Conditions such as high altitudes, dehydration, illness, stress, and temperature changes can sometimes trigger them. People who have sickle cell anemia may also have damaged spleens. This means that they are at a high risk of getting blood infections.

Pregnant patients with sickle cell anemia may have complications such as blood clots, high blood pressure, more pain crises and infections. These patients may also have to premedicate (antibiotic prophylaxis) due to their increased risk of bacteremia. Studies show that sickle cell anemia and periodontal disease are not directly related. One of the studies compared pocket depth in patients with sickle cell anemia and in patients who did not have it and found that there was no difference. Both studies did however show that patients with sickle cell anemia have a higher plaque and gingival index score. This was due to lack of preventative care. Many patients with sickle cell anemia do not prioritize their dental health. This would eventually lead them to develop periodontal disease. It is important that dental hygienists stress preventative care to these patients. All in all, oral health is a vital element of people's wellbeing and quality of life.

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35-Year Old Female, 7 months pregnant:

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Preeclampsia

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Preeclampsia & Eclampsia: Risk Factors, Signs & Symptoms, and Treatment

<https://www.webmd.com/baby/guide/preeclampsia-eclampsia#1>

High Blood Pressure in Pregnancy | Preeclampsia

<https://medlineplus.gov/highbloodpressureinpregnancy.html>

GDM

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Sickle cell

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