

Oral health care during pregnancy: A strategies and considerations

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ABSTRACT

Pregnancy is a unique period during a woman's life. It is characterized by physiological and hormonal changes, which may adversely affect oral health. Oral health care during pregnancy cannot be dissociated from systemic health. It represents a comprehensive and multidisciplinary approach aiming to empower women's wellness, then allowing people to understand the importance of caring for their oral and systemic health, from educational measures to pain control and oral disease treatment. Preventive, diagnostic, and restorative dental treatment is safe throughout pregnancy and is effective in improving and maintaining oral health. However, these patients are not medically compromised and should not be denied dental treatment because they are pregnant. This review discusses the possible dental complications of pregnancy and their management.

KEY WORDS: Dental treatment, Oral health, Pregnancy

INTRODUCTION

Dental treatment can be safely provided at any time during pregnancy allowing pregnant women to achieve an optimal level of dental health throughout their pregnancy.

^[1] The current concept of satisfactory oral health goes beyond possessing healthy teeth, and oral health is now known to be integral to general health and essential for well-being (World Health Organization, 2003). While oral health is a key component of overall health and well-being of women across their lifespan, it is particularly important before conception and during pregnancy. The physical changes that occur during pregnancy may increase a woman's susceptibility to oral infections, including periodontal disease, and may harm the body's ability to maintain the soft tissues in the mouth.

Mild inflammation of the gums (pregnancy gingivitis) is estimated to affect pregnant women. Tooth decay may increase during pregnancy due to changes in oral hygiene and diet. Barriers to dental care during pregnancy include persistent myths about the effects of pregnancy on dental health and concerns for fetal safety during dental treatment.^[2] Tooth erosions occur

from contact with gastric acids during the "morning sickness." Pregnant women with low health literacy have less pregnancy-related knowledge and poorer health behavior.^[3] Numerous metabolic and hormonal changes considered to be related to fluctuations in estrogen and progesterone levels leading to increased vascular permeability and a decrease in host immunity, favoring increased sensitivity to oral infections.^[4]

Ideally, during pre-natal testing, the pregnant woman should be referred to a dentist. Unfortunately, up to now, there have been no such official guidelines in India. Although there has been an improvement in the dental care of pregnant women during the past decades, inequalities and erroneous perceptions concerning the importance of dental care during pregnancy still exist, affecting mainly the socioeconomically deprived in the population. Even dentists need a specific education to provide proper oral care to pregnant patients.

PURPOSES AND METHODOLOGY

To help the dentist make the right decisions, there are documented answers on issues to face regarding the dental treatment of pregnant women. The sources included PubMed, from which we collected the relevant bibliography using the following search criteria: Dental, treatment, therapy, and pregnancy (MeSH terms). We also used PubMed to search for

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reviews, clinical, and experimental studies reported within the past 5 years, as well as the most important older publications that were highly cited.

REVIEW OF LITERATURE

Hwang *et al.*, 2011, assessed that women who did not receive oral health counseling or did not have a tooth cleaning during pregnancy were at slightly higher risk for preterm delivery than women who did receive care.^[5]

Dye *et al.*, 2012, found that the higher levels of untreated dental caries or tooth loss among mothers were a strong indicator of higher levels of caries in their children.^[6]

Da Costa *et al.*, 2010, identified low reimbursement, time restrictions, culture and language differences, and lack of demand for services as barriers to care.^[7]

Thompson *et al.* in 2012 found that dental cleaning was associated with dental insurance, oral health counseling, and maternal factors such as race, ethnicity, education, and history of physical abuse.^[8]

Carmichael *et al.* found that increasing diet quality was associated with reduced risks for the congenital disabilities.^[9]

In 2011, Buerlein *et al.* found that women had myths and misperceptions about oral health.^[10]

HIGH-RISK PATIENTS

Patients with pregnancy-induced hypertension, gestational diabetes, threat of spontaneous abortion, or history of premature labor need obstetricians' consultation.

High-risk pregnant patients can usually be identified by taking a detailed medical history and asking questions about the course and nature of the pregnancy. Careful monitoring of baseline blood pressure and pulse and respiratory rate are mandatory before any invasive procedure. If blood pressure is repeatedly elevated, when above 140/90 mmHg and fear and pain can be ruled out as causes, the obstetrician should be notified immediately.^[11]

DENTAL TREATMENT

Pregnant patients are sensitive to taste, smell, and environmental temperature. Hence, unpleasant tastes and odors can cause severe nausea or even gagging and vomiting. Hypoglycemia may cause fainting; it can be prevented by recommending that the patient has diet containing protein and complex carbohydrates before the dental procedure. Patients should be well hydrated, and the duration of dental procedure should be as minimum as possible.^[12]

Dental treatment of any kind should be avoided during the first trimester of pregnancy so as not to harm the fetus during the stage of organogenesis. The ideal period for a complete dental treatment of a pregnant woman is the beginning of the second trimester (14–20 weeks of pregnancy). At this stage, there is no risk of teratogenesis, nausea and vomiting would have subsided, and the uterus is not yet large enough to cause discomfort.^[13]

Extensive elective procedures should be postponed until after delivery. Any treatment should be focused on controlling disease, to maintain a healthy oral environment and prevent the potential problems. It is essential to treat all dental problems during the second trimester to facilitate intubation during labor if necessary.^[14]

POSITIONING OF PREGNANT WOMEN IN DENTAL CHAIR

During the third trimester of pregnancy, when the pregnant woman is supine, the uterus may press on the inferior vena cava and impede venous return to the heart, which may lead to hypotensive syndrome and loss of consciousness.

To prevent this, the pregnant woman's head should always be placed higher than her feet in the dental chair, and if necessary, a small pillow should be placed under her right hip ("left uterine displacement") so that the uterus is moved away from the inferior vena cava.^[15]

ORAL RADIOGRAPHY

According to the American Dental Association and American College of Obstetricians and Gynecologists, having dental X-ray during pregnancy is considered safe with appropriate shielding which does not cause any adverse effects in a developing embryo or fetus. More recent evidence suggests that ionizing radiation at a dose of <5 rad does not increase the risk of malformation, growth retardation, or miscarriage.^[16]

Hence, dental radiographs are considered safe to be given at any time that it is deemed necessary during pregnancy, provided that the dentist follows all the proper radiologic practices, i.e. using a radiation protective apron with a thyroid collar, using high-speed films, following the proper procedures to take the radiograph, and following the as low as reasonably achievable principle.^[21]

Recently, the use of cone-beam computerized tomography (CBCT) scanners has become an ever increasing part of dentistry. If CBCT is deemed to be the necessary imaging modality, then the best decision is to limit the field of capture as much as possible to only the required anatomical structures.

The fundamental principle that should be maintained at all times is that the patient should be exposed to the lowest dose imaging modality possible, while still achieving the necessary diagnostic data.^[17]

PREGNANCY GINGIVITIS

Pregnant women are more likely to develop gingivitis during the first trimester of pregnancy due to increased levels of progesterone and estrogen. The gingiva become red, edematous, bleed, and tender to palpation.

In some patients, the condition will progress to become a pyogenic granuloma or “pregnancy tumor,” which is commonly seen on the labial surface of the papilla. Small lesions respond well to local debridement, chlorhexidine rinses, and improved oral hygiene measures, but large lesions require deep excision.^[18]

PERIODONTITIS

Periodontitis is a more severe form of gingival disease, and there is a loss of tissues and bone. Periodontal treatment is very important during pregnancy. The hormonal changes during pregnancy will increase the susceptible to plaque. Severe periodontitis may increase the risk of premature (preterm) births and low birth weight, pre-eclampsia (toxemia), pregnancy diabetes (gestational diabetes), pregnancy epulis, and tooth mobility.^[19]

Some studies have been carried out, such as periodontal infections and prematurity study and obstetrics and periodontal therapy, which focus on the benefits of periodontal treatment and the prevention of pre-term and low birth weight infants.^[20]

TOOTH DECAY AND ENAMEL EROSION

Usually, during the 2nd to 4th month, morning sickness can cause nausea and vomiting. Frequent snacks and carbonated drinks/soft drinks to alleviate nausea and cravings for particular foods like sweet and sticky foods can increase the risk for decay in pregnancy. Ptyalism (excessive secretion of saliva) is a complication of pregnancy which can be reduced by the consumption of complex carbohydrates such as whole wheat bread, rice, oats, and corn.

Enamel erosion caused by frequent vomiting which can also cause irritation of gingiva. It can be prevented by rinsing mouth with water or antacid after vomiting, application of fluoridated toothpaste over the teeth, and avoid brushing the teeth while the enamel surface is softened by the gastric acids.^[21]

MEDICATIONS

During pregnancy, when prescribing medications, the main concern is the risk of teratogenesis, because drugs can cross the placenta by simple diffusion. The drug of choice should always be the one that is the least toxic.

Antibiotics and antimicrobials: Acetaminophen is the safest analgesic for use during pregnancy. Tetracyclines can accumulate in fetal dental tissue during the calcification stage, causing discoloration of the teeth, so it is contraindicated during pregnancy. The safest choice is paracetamol, as it is not teratogenic. The absorption of the usual recommended dose in the body does not seem to change during pregnancy.^[22]

Ciprofloxacin, a broad-spectrum fluoroquinolone antibiotic used to treat periodontal disease, but during pregnancy, it is restricted because of arthropathy and adverse effects on cartilage development.

Metronidazole is recommended by some authors. It should be used with caution during the first trimester because of potential harm to the fetus; however, recent studies showed no definitive teratogenic effects. Chlorhexidine gluconate is antimicrobial mouth rinse which can be administered safely.^[22]

Antibiotic prophylaxis before dental procedure: Pregnancy by itself is not an indication for administering prophylactic antibiotics. Transient bacteremia may occur as a result of certain dental procedures, such as tooth extractions, supra- or sub-gingival scaling, and gingivectomy. However, there are no studies documented that this transient bacteremia is harmful to the fetus. Prophylactic antibiotics are administered only if there is a risk of developing infective endocarditis.

Analgesics: Analgesic drug categories are based on short-term use to treat a specific disease process. Acetaminophen is the safest analgesic for use during pregnancy. However, because various strengths and preparations are available and because there is a potential for liver toxicity, patients should be instructed on how to take the drug and the maximum recommended daily dose (no more than 4 g/day for adults).

Ibuprofen is used in the first and second trimester of pregnancy. During the third trimester, it is contraindicated due to the lower levels of amniotic fluid, premature closure of the fetal ductus arteriosus, and inhibition of labor when taken during this time so after consultation with the obstetrician, it should be prescribed for pregnant women.

Obstetricians often prescribe a combination of acetaminophen and codeine or oxycodone in place of nonsteroidal anti-inflammatory drugs. Prolonged use

of narcotic analgesics in the third trimester can lead to neonatal respiratory depression. In some women, codeine is more rapidly metabolized into morphine, and the morphine can be passed along by a mother who is breastfeeding an infant.^[22]

Sedatives: Barbiturates and benzodiazepines should be avoided during pregnancy. Benzodiazepines, such as midazolam and diazepam, have been implicated as a possible cause of craniofacial defects, such as cleft lip and palate; however, no definitive causal link has been established.^[23]

Fluoride: Fluoride treatment may be needed for patients with severe gastric reflux caused by nausea and vomiting during early pregnancy, which can cause erosion of tooth enamel. In these cases, fluoride treatment and restorations to cover the exposed dentin can diminish the sensitivity of an injury to the dentition. Topical fluoride gel may cause nausea, so the application of a fluoride varnish may be better tolerated.^[23]

Nitrous oxide: Care to be taken while administering nitrous oxide or N₂O during the treatment of pregnant patients. Since N₂O affects vitamin B-12 metabolism, which in turn inactivates methionine synthase, an enzyme which is necessary for the production of DNA.

However, that N₂O affects vitamin B-12 metabolism, which in turn inactivates methionine synthase, an enzyme which is necessary for the production of DNA. Therefore, it is recommended that N₂O be avoided during the first trimester when organogenesis occurs.

If used, it is not recommended to exceed a 50% mixture of N₂O to oxygen. The long-term exposure to N₂O may be associated with spontaneous abortion and birth defects.^[23]

LOCAL ANESTHESIA

Usually, dentists prefer to administer local anesthesia with lignocaine 2% without vasoconstrictor. According to the Food and Drug Administration, lidocaine, prilocaine, and etidocaine have no evidence of risk for pregnant patient. The local anesthetics may be used with vasoconstrictors.

During administration of a local anesthetic with epinephrine, an intravascular injection may cause insufficiency of uteroplacental blood flow. However, for a healthy pregnant patient, the 1:100,000 epinephrine concentration used in dentistry, administered by proper aspiration technique, and limited to the minimal dose required is safe.^[24,25]

RECOMMENDATIONS

The following could ensure dentist to provide quality dental care:

- Explain the importance of oral hygiene and oral health care during pregnancy which is safe, effective, and essential for both mother and fetus.
- Explain the women that diagnosis (including dental X-rays) and treatment for conditions requiring immediate attention are safe during the first trimester of pregnancy.
- Advise the women that delaying necessary treatment could result in significant risk to the mother and indirectly to the fetus.
- Perform a comprehensive gingival and periodontal examination is required which includes a periodontal probing depth record.
- Discuss about comprehensive treatment plan that includes preventive, treatment, and maintenance care throughout pregnancy and also discusses the benefits, risks, and alternatives to treatments with the patients.
- Recommend brushing teeth twice daily with fluoridated toothpaste along with fluoride mouth rinses, especially before bedtime, and flossing daily and also recommend chlorhexidene mouth rinses. Restore untreated caries.
- Recommend to eat small amounts of nutritious foods throughout the day and chew sugarless or xylitol-containing chewing gum after meals for frequent nausea and vomiting.
- Advise the woman to obtain necessary follow-up dental care and oral health maintenance during the post-partum period thereafter.
- Ask all women of childbearing age if they take a multivitamin supplement containing folic acid and recommend initiation if they do not.
- Provide health education or anticipatory guidance about oral health practices for her children to prevent early childhood caries.
- Counsel women to adhere to their dentist's recommendations for treatment or follow-up.

CONCLUSION

Pregnancy is a life-changing event. It is an important time to access oral health care because the consequences of poor oral health may have a lifelong impact. Women with lower socioeconomic status and less education are more likely to be at higher risk of poor oral health. Therefore, oral health professionals should collaborate to ensure pregnant women receive proper oral assessment as well as oral health education.

The routine dental visits can be safely performed, including the use of radiographs, plaque removal, treatment of periodontitis, local anesthesia, and the provision of composite and amalgam fillings. Prescribing of systemic drugs of any kind ideally should be performed after consultation with the general medical practitioner or obstetrician. Hence, dentist must improve their attitudes to the link

between oral and systemic health. Undergraduate dentist curriculum should encourage opportunities for learning in this area in theoretical and real scenarios.

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