

PREGNANCY AND DENTISTRY- LITERATURE REVIEW ON RISK MANAGEMENT DURING DENTAL TREATMENTS- A REVIEW

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ABSTRACT

Pregnancy is a unique moment in a woman's life, accompanied with several physiologic changes that have an impact on oral health. Due to the increased inflammatory and immune body response that characterizes pregnancy, periodontal conditions are often aggravated during pregnancy and periodontal disease encountered frequently in pregnant patients. Many dentists, often due to lack of information, are reluctant to provide dental treatment to pregnant women. However, preventive and restorative dental treatment is safe during pregnancy. Diagnostic radiographs may be performed after the first trimester if absolutely necessary. Analgesics (such as paracetamol) and anesthetics (such as lidocaine) are also considered safe. The ideal time to perform dental treatment is the second trimester (week 17 to 28). However, acute pain or infections make the intervention of the dentist absolutely necessary and emergency treatment can be performed during the whole pregnancy period. Hence, the purpose of the present research was to evaluate literature on risk management of pregnant patients during various dental procedures.

Keywords pregnancy; dentistry; oral surgery; risk management

INTRODUCTION

Dental treatment during pregnancy has been recommended by systematic reviews and several institutions, with guidelines on oral health care during pregnancy being widely available.^{1,2,3,4} Such recommendations are important to assure women's well-being during their lifetime^{5,6} and to control the changes that occur in their oral health during pregnancy, since this condition can increase the prevalence of oral diseases.^{7,8} It is also relevant to determine the relationship between pregnant women's oral health and negative outcomes that can occur during and after delivery.^{9,10} Moreover, pregnancy is considered an ideal time to establish educational and preventive programs, as pregnant women are more receptive to information about themselves and their babies' wellbeing and to adopt better health practices.¹¹ Some studies have shown that the demand for dental services is low during pregnancy, regardless of the country of origin. The utilization of dental care reported ranged from 27 to 53%. The main reason for seeking attendance was related to dental pain (72.2%). Studies have found multiple factors influencing the use of dental services for pregnant women: marital status, ethnicity, income, education level, health insurance, receipt of oral health education and hygiene practices, enrolment in governmental programs, medical referral or advice for dental visits. Some of the barriers to the utilization of oral health care services described are misconception, dental fear, difficulty of access to dental treatment, time constraints, dissatisfaction with the quality of services, and beliefs that dental treatment is unsafe.¹² Dentists are reluctant to provide dental care during pregnancy due to uncertainty over the risks that might hamper the development of child, the mother's health and the natural process of gestation. Even the literature mentions that dental care to the pregnant women should be performed only during the second trimester or only in special cases.¹³ A survey by Tanq et al showed that most pregnant women had a positive attitude towards oral health. However, only 44.62% of the subjects had adequate knowledge on oral health and correct oral health caring behavior. The ratio of the subjects who had oral examination before getting pregnant was 29.85%, while 39.08% of the pregnant

women didn't plan to brush teeth or just gargle after parturition.¹⁴ A study by Abiola et al indicated that there is a need to provide oral health education for pregnant women during antenatal care in order to highlight the importance of good oral health in achieving good health for both mother and her baby.¹⁵ It is very important that the dentist takes into account the physiological changes that occur throughout pregnancy and be aware that his intervention through dental treatments may have effects on the lives of two people (the mother and the baby). Consequently, the clinician should adopt all measures necessary to minimize the risk of adverse events. The changes that occur during pregnancy involve the cardiovascular, respiratory, renal, gastrointestinal, and hematological systems. The purpose of the present research was to evaluate literature on risk management of pregnant patients during various dental procedures.

DENTAL TREATMENT IN PREGNANT WOMEN

Dental emergencies, acute pain, and infections make the dentist's intervention necessary, and treatment should not be postponed. The American Academy of Periodontology advises dental professionals to treat acute periodontal infections or infectious foci regardless of the pregnancy stage. Caries treatment is recommended to reduce the level of bacteria causing the disease. If the pregnant woman does not undergo conservative treatment, her baby's chances of acquiring cariogenic bacteria increase due to the transmission through saliva from the mother to the child. Research shows that while nonsurgical periodontal therapy during the second trimester is safe, it does not reduce the incidence of negative pregnancy outcomes. The main role of periodontal treatment during pregnancy is to improve the periodontal and general health of the pregnant woman. Non-surgical periodontal therapy improves the periodontal conditions of most pregnant women with periodontal disease. The use of local anesthesia is also considered safe. Although said studies were performed during 13–23 weeks of gestation, it does not mean that the treatment performed before or after is not equally safe. It is fundamental to remember that emotions and anxiety are accentuated during pregnancy, and this can intensify the fear and perception of pain in the dental chair.¹⁶

THE POSITIONING OF THE PATIENT

Pregnant women, during the third trimester, are at risk of experiencing hypotensive supine syndrome. When the patient is lying in supine position, the enlarged uterus presses against the vena cava, which carries blood to the heart. This pressure exerted by the fetus causes a sudden drop in blood pressure. To avoid dizziness and fainting, the dentist should position the patient in semi-reclined position. A maneuver that could help is to tell the patient to move to the left side or place a cushion under the right-side lower back, to move the uterus towards the aorta, which does not collapse so easily.¹⁷

DRUGS DURING PREGNANCY

The potential risk of drugs in causing birth defects if used during pregnancy is expressed through the classification of the Food and Drug Administration (FDA). The FDA has divided drugs into five categories based on the reliability of existing scientific evidence and the cost/benefit ratio.

Category A: Adequate and well-controlled studies have failed to demonstrate a risk to the fetus in the first trimester of pregnancy (and there is no evidence of risk in later trimesters).

Category B: Animal reproduction studies have failed to demonstrate a risk to the fetus and there are no adequate and well-controlled studies in pregnant women.

Category C: Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

Category D: There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

Category X: Studies in animals or humans have demonstrated fetal abnormalities and/or there is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience, and the risks involved in use of the drug in pregnant women clearly outweigh potential benefits.¹⁸

LOCAL ANESTHETICS

All local anesthetics can cross the placental barrier, with the possibility of producing effects on the fetus. These drugs can cause cardiovascular and neurological toxicity. Lidocaine is the most used local anesthetic during pregnancy; the proportion of lidocaine that circulates freely, i.e., not linked to transport proteins, is high and, therefore, the quantity of lidocaine transferred from the mother to the fetus is also high. Vasoconstrictors, such as epinephrine, are often added to lidocaine to increase the duration of its effect and to reduce toxicity. Epinephrine-induced vasoconstriction delays the absorption of the anesthetic and, therefore, the level of lidocaine in the blood increases gradually and without peaks.

ANTIBIOTICS, ANTIFUNGALS, AND ANTISEPTICS

Antibacterial drugs can be prescribed during pregnancy in the case of ongoing infectious pathological processes, choosing active ingredients with broad safety indices. Beta-lactams such as ampicillin, amoxicillin (not in association with clavulanic acid), and some cephalosporins, and macrolides such as clarithromycin and erythromycin, are considered safe at therapeutic dosages. Instead, tetracyclines such as doxycycline and minocycline, which can cause liver damage to the pregnant woman and dyschromia of the dental enamel of the baby, as well as gentamicin, which causes fetal ototoxicity, should be avoided. As for antifungals, nystatin and clotrimazole are safe, while it is preferable to avoid fluconazole and ketoconazole which are toxic to the fetus. Chlorhexidine (in concentrations 0.05–0.2%) is an antiseptic active ingredient present in many types of mouthwash. It belongs to the FDA category B since animal studies have not shown teratogenicity at high doses, but there are no controlled data obtained from human pregnancies and, therefore, its use in pregnancy is recommended only in case of need. In addition, all products that contain alcohol should be avoided during pregnancy.¹⁹

ANALGESICS

Acetylsalicylic acid is not recommended due to the risk of postpartum hemorrhage. It is preferable to administer paracetamol, which also causes less gastric inflammation. The use of NSAIDs in the early months of pregnancy is also to be avoided as some authors report increased risk of septal heart defects in the newborns of mothers that have assumed NSAIDs such as ibuprofen, naproxen, and ketoprofen. The new category of cyclooxygenase inhibitors type 2 (celecoxib and rofecoxib) has been classified into category C. These drugs should also be avoided in the first trimester because they could cause premature closure of the arterial duct.²⁰

RESTORATION MATERIALS

Amalgam is a restoration material commonly used in the past, now supplanted by composite materials. The mercury present in amalgam fillings is inorganic, unlike the organic mercury found in fish, for example. During chewing, especially chewing gum, and in bruxism, the inorganic mercury of the amalgam restorations is continuously released in the oral cavity during the chewing process (especially chewing gums) and ends up in the bloodstream. Similarly, the use of hydrogen peroxide-based toothpastes and whitening products also causes inorganic mercury release from amalgam fillings; therefore, their use is not recommended during pregnancy. The placement and removal of amalgam restorations cause a temporary increase in inorganic mercury levels in the bloodstream. Mercury vapors are inhaled, brought to the lungs where they can enter the bloodstream and reach the fetus through the placenta. The use of the rubber dam and a powerful aspiration system can reduce the amount of inhaled vapors. It is recommended to postpone the removal of amalgam restorations until the end of pregnancy if it is not possible to operate safely. Nevertheless, studies report no adverse effects during amalgam placement or removal. Composite resins, glass ionomers, gold, and porcelain are alternative restoration materials to amalgam. Composite resins are made up of polymerized resin and an inorganic filler. Although BPA may not be a direct component of resin composite or sealants, it may be a by-product of the degradation of other monomers contained in the restoration materials, caused by salivary enzymes. Joskow et al. reported small traces of BPA in the saliva, a few hours after the dental sealants had been placed. Short-term exposure did not show any health risk, however, there is a lack of data on long-term effects.²¹

SURGICAL PROCEDURES

Under urgent circumstances, dentoalveolar surgery directed towards the elimination of pain, infection, and neoplasia can be performed during pregnancy. These procedures include tooth extractions, incisions, and drainage of dental infections. Clearly, oral surgery during pregnancy should be considered only if absolutely necessary. Surgery for aesthetic purposes such as orthodontic treatment or orthognathic surgery must be delayed to the postpartum period. The second trimester is the safest period to provide dental treatment. Local anesthesia can be administered during oral surgery procedures. The dentist should use anesthetics that are considered safe (such as lidocaine), avoid high doses of epinephrine and be extremely careful during the injection procedure (the intravascular injection of epinephrine causes uterine artery vasoconstriction and decreased blood flow). Radiographs should be performed as little as possible and protective equipment must always be used. Oral cancers represent nearly 2% of all malignant tumors during pregnancy. The safest period for surgery is the second trimester. The risk of postoperative infection is high because of the physiological suppression of cell-mediated and humoral immunity during pregnancy. Whenever planning to perform oral surgery, the dentist or oral surgeon should consult the patient's obstetrician before the procedure.²²

CONCLUSION

Published literature states that there is a correlation between pregnancy and exacerbation of gingivitis and periodontitis, but further studies are needed to investigate the association and effects of dental treatment in

preventing adverse pregnancy outcomes. We suggest that there should be a direct line between pharmacological research (arrival of new drugs) and adequate communication, not only to obstetricians but to dentists as well.

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