



## DENTAL CONSIDERATIONS IN PREGNANCY: review

### *Considerações odontológicas na gravidez: revisão*

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#### Abstract

**OBJECTIVE:** This article is aimed to review the changes occurring in a woman during pregnancy. Dentists should know what procedures are safe and those to be avoided during various phases of pregnancy.

**DISCUSSION AND CONCLUSION:** This article reflects the various systemic and local changes seen in a pregnant woman and how these changes should be considered while carrying out dental procedures. Dentists should have a sound knowledge about effects of radiation on the fetus and also effects of various drugs used during dental treatment. With proper communication and good knowledge, various complications can be avoided during pregnancy and would be beneficial to both the mother and the fetus.

**Keywords:** Pregnancy. Dental considerations. Hormones.

#### Resumo

**OBJETIVO:** Este artigo propõem-se a revisar as alterações ocorridas na mulher durante a gravidez. Os cirurgiões-dentistas devem conhecer os procedimentos seguros e os que devem ser evitados durante as várias fases da gravidez.

**DISCUSSÃO E CONCLUSÃO:** Este artigo aborda as várias alterações sistêmicas vistas na mulher grávida e como essas alterações devem ser manejadas na execução de procedimentos odontológicos. Os cirurgiões-dentistas devem ter sólido conhecimento a respeito dos efeitos da radiação sobre o feto e também dos efeitos de várias drogas usadas durante o tratamento odontológico. Com comunicação adequada e bom conhecimento, várias complicações podem ser evitadas durante a gravidez, culminando em benefícios para a mãe e o bebê.

**Palavras-chave:** Leucoplasia. Quimioprofilaxia. Vitamina A. Tretinoides.

## INTRODUCTION

Pregnancy is an exquisite yet a complex state in women's life. It involves various physiological as well as physical changes due to the interaction of hormones (1). There is increase in sex hormones, prolactin and thyroid hormone during pregnancy (2). This increase in hormonal secretion and growth of the fetus brings about various systemic as well as local physiologic and physical changes. The systems mainly involved are cardiovascular, hematologic, respiratory, renal, gastrointestinal, endocrine and genitourinary (1).

### Physiological changes during pregnancy

Pregnancy leads to various changes in almost all organ systems. The most common complaints include nausea, vomiting, heart burn, food cravings, shortness of breath and fatigue (2). They most commonly occur due to certain physiologic changes occurring in various systems (3). These changes may pose various challenges in providing dental care for pregnant patient. Therefore, understanding physiologic changes of the body and effects of certain dental procedures, dental radiation and medications used in dentistry on pregnant patients and fetus is essential for the management of the pregnant woman.

### Cardiovascular system changes

The cardiovascular system undergoes tremendous changes during pregnancy. The main changes seen are; Increase in Blood volume and cardiac output due to increase in the demand by the fetus (1). Decrease in blood pressure is often seen at later stages of pregnancy. Supine hypotensive syndrome which is seen to affect about 8% of pregnant women occurs at the end of the second trimester. It occurs when the pregnant woman is in supine position, causing compression of the inferior vena cava and aorta by the fetus. This leads to decrease in the venous return to the heart, thereby causing hypotension, nausea, dizziness and fainting. The best way to prevent this from happening in the dental chair is to elevate the hip of the pregnant woman by 10 - 12cm or simply to roll her to the

left side. This will lift the uterus off the inferior vena cava and hence prevent hypotension from occurring (1, 3).

### Respiratory system changes

There is an increase in the demand of oxygen during pregnancy. The changes seen are dyspnoea, hyperventilation which is due to oxygen demand or decrease in the residual capacity of lungs (3). Also there is an increase in circulating estrogen which causes the engorgement of nasal capillaries and rhinitis which leads to nosebleed and predisposes the pregnant women to various upper respiratory infections (1).

### Gastrointestinal system changes

Nausea, vomiting, heartburn (pyrosis) are common symptoms seen in most pregnant women in the first trimester (1). These symptoms make the pregnant woman very uncomfortable and so difficult for the practitioner to carry out dental procedures.

### Haematological system changes

During pregnancy there is an increase in the red blood cells, white blood cells and ESR whereas, there is decrease in haemoglobin which leads to anaemia (1). Also all coagulation factors except XI and XIII are increased. This increase in the clotting factors is responsible for hypercoagulable state of the women during pregnancy. These factors can cause deep vein thrombosis and pulmonary oedema. Before carrying out any minor surgeries involving oral tissue or any procedure involving loss of blood it is very important that the practitioner review hemoglobin level and the red blood cell count of the pregnant woman to prevent any further complications.

### Endocrine system changes

Estrogen, progesterone, human gonadotrophin are the female sex hormones and are secreted by placenta. These hormones are responsible for

the various physiologic changes occurring during pregnancy. Along with these hormones, thyroxin, steroid and insulin levels also increase. Increase in the size of thyroid gland is seen in almost 50% of pregnant woman(1). Women who have a positive family history of *diabetes mellitus* (type II) are at a higher risk of developing Gestational Diabetes, due to increase in the insulin resistance during pregnancy (1). Hence, the practitioner should perform tests to check the blood sugar level before carrying out any dental procedure.

## Oral Changes

Changes in the mouth are due to the alteration in the levels of estrogen and progesterone. This variation in the female sex hormones causes an increase in oral vasculature permeability and decrease in the host immunity, thus making the pregnant woman more prone to oral infections.

Common oral problems seen in pregnancy are:

### a) Pregnancy gingivitis

Gingivitis is inflammation of gingiva which is commonly seen in pregnant women as a response to plaque which is present due to increase in circulating progesterone levels. This condition is ephemeral and recedes after delivery (4). Good oral hygiene can help in the prevention of gingivitis during pregnancy.

### b) Pregnancy tumour

Pregnancy tumour is seen in about 1-5% of pregnant women(5). Increase angiogenesis coupled with gingival irritation by local factors such as plaque is believed to be the cause (5). The lesion presents as an erythematous with smooth surface and lobulated painless swelling seen commonly on the labial aspect of interdental papilla. Other parts of the oral cavity like tongue, palate, buccal mucosa can also be involved. This lesion is benign and seen to occur at the end of first trimester (4). No treatment

is required unless some complications like bleeding from tumour or difficulty in mastication occurs. In such cases, tumour can be surgically removed. Oral prophylaxis coupled with good patient education and oral hygiene minimizes the frequency and severity of the lesion.

### c) Erosion

Vomiting is a very common symptom seen in pregnant women. Excessive vomiting causes erosion of the enamel of teeth due to continuous contact of teeth with gastric acid (5). To prevent erosion, pregnant women should be advised to use fluoride mouth wash and advised not to brush immediately after vomiting. Drugs like antiemetic and antacids can be prescribed to reduce vomiting (6). Other conditions like periodontitis, dental caries, loose/mobile teeth, pyilism may be seen during pregnancy.

## Dental considerations in pregnancy

Treatment of female patient should always include a comprehensive medical and surgical history. If the patient's pregnancy is not confirmed, unless it is an emergency, treatment should be deferred until a definitive documentation of patient's status is obtained by patient's physician. Recent research has shown that pathological changes in the oral health of pregnant mother can affect the health of their babies (7). It is very important that pregnant woman receive routine dental care throughout their pregnancy.

## Diagnosis

For the diagnosis of certain oral disease, radiographs are required. X-rays have the potential to ionize any matter through which it passes, thereby causing damage to the cells and DNA (1). Hence it is recommended that radiographs should be avoided in the first trimester as oogenesis takes place during that time and X rays can cause harm to the growing fetus. However with the advancement of fast films



and the use of lead aprons and thyroid shield one can reduce the risk to the mother and the fetus<sup>5</sup>. Studies have shown that the dose from dental x rays is almost negligible i.e.  $1 \times 10^{-6}$ Gy (1).

### Routine dental check up

During a routine dental check up, dentists should keep in mind that organogenesis usually takes place in the first trimester and is complete during the second trimester. So, all dental procedures must be avoided in the first trimester to prevent any harm to the fetus (5). However, in case of an emergency, dental treatment can be carried out at any time during the term of pregnancy.

Greatest challenge is faced by dentist to perform any dental procedure is during the third trimester as the pregnant women might develop Supine hypotensive syndrome. Certain procedures may also induce early labour (5).

### Amalgam restorations

Dental amalgam fillings release mercury which can cause congenital malformations. Its use in pregnant woman is contentious. Even though there is not much evidence regarding amalgam fillings and birth defects, clinicians should be cautious while removing or placing dental amalgam fillings in a pregnant woman (8).

A study concluded that mercury containing dental amalgam fillings in a pregnant woman did not result in low birth weight infant (9).

### Drugs

Drugs should be prescribed with great caution to the pregnant women as some drugs are known to cause miscarriage, teratogenicity and low birth weight of the fetus (1).

### Analgesics

Aspirin should be avoided at any cost as it can lead to constriction of ductus arteriosus of the fetus if prescribed during the third trimester

of pregnancy (1). Analgesics like acetaminophen are commonly prescribed during pregnancy as it is proved to be safe and effective pain killer.

### Antibiotics

Penicillin and cephalosporins are the most common antibiotics prescribed for oral infections. These drugs are found to be safe when used in pregnancy. For patients who are allergic to penicillin, macrolides such as erythromycin and clindamycin can be prescribed (1).

### Local anesthesia

Lidocaine is one of the most common local anaesthesia used during dental treatment. Lidocaine along with epinephrine when used in the correct dosage is safe during pregnancy (1, 7).

### Steroids

Corticosteroids are commonly used to reduce inflammation. When used locally they are safe but its systemic use can harm the mother and the fetus and thus should be avoided during pregnancy (1).

### Conscious sedation

Sedation with diazepam and midazolam are particularly hazardous and must be avoided in the first trimester and last month of the third trimester of pregnancy (5). Use of nitrous oxide in pregnancy is still contentious and so must be avoided during pregnancy till proper evidence is gained regarding its safety (1).

### CONCLUSION

Pregnancy has significant dental implications. Proper diagnosis and management of the pregnant patient is essential for the health of the mother and the baby. As dentists we should remember that along with the mother we need to take

care of the fetus as well. It all starts by counselling the pregnant mother regarding the importance of good oral hygiene during pregnancy and the methods that can be employed to do the same. Use radiographs only if necessary, low levels of local anesthetic used in clinical setting is not contraindicated. Antibiotics to be used only if required. Limit the use of narcotics, aspirin and ibuprofen due to their ill effects. Elective procedure can be avoided till the termination of pregnancy. Any emergency dental treatment, if possible, should to be delayed till the second trimester. With the advancement in Medicine and adequate knowledge we can carry out dental procedures during the term of pregnancy provided the safety protocol is kept in mind.

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