Review Article

Dental Health and Pregnancy – An Overview

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Abstract

Pregnancy is a physiological state with significant changes in a woman's body. Pregnant women are more prone to gingival diseases due high levels of fluctuating pregnancy hormones.The aim of this article is to bring to light the changes in oral cavity during pregnancy, the consequences of not treating them and the current recommendations for dental management of pregnant patients in different trimesters.

Key Words: *Pregnancy, Safety recommendations, Radiation, Premature delivery, Low-birth weight*

Introduction

Every woman deserves to have a healthy pregnancy. Pregnancy is a physiological state with transient changes. A pregnant woman requires support in different levels in terms of physical, mental, and emotional needs. Dental Management in pregnant women is critical and requires special care. Dentists might postpone elective procedures during first trimester which can interfere with organogenesis of the foetus, while at other times of pregnancy, treatment altered to best suit the patient and the foetal demands. It is important and essential to seek oral health counselling, oral examinations, and dental care during pregnancy.

Physiology of pregnancy and symptoms in oral cavity:

A 30-fold increase in Progesterone and a 10-fold increase in oestrogen cause pregnancy induced changes in mother's body and theoral cavity is no exception. [1]

Morning sickness and tooth erosion:

Nausea and vomiting are observed in 66% of all pregnant women starting approximately 5 weeks after Last menstrual period (LMP) extending up to 12 weeks.[2] In the first trimester, nausea and vomiting are associated with increased levels of progesterone. The gastric acids present in the emesis with hyperemesis gravidarum, erode the enamel mostlyon the palatal and lingual surfaces of anterior teeth.Both endogenous and exogenous acids are associated with enamel erosion. Endogenous acids have a pH of approximately 1.2 which is below the critical pH for dissolution of hydroxyapatite and fluorapatite crystals.This low pH rapidly causes demineralisation. [3,4] Erosion of the enamel can easily be controlled by advising the patients to rinse their mouths after vomiting, with a solution that contains sodium bicarbonate that neutralises the pH.[5] Morning dental appointments can be avoided for patients with morning sickness. Resin based viscous varnishes, resin based clear adhesives or cements and casein based remineralizing pastes can act as artificial bio film and help in remineralisation.[6]

Pregnancy gingivitis:

Pregnancy gingivitis and gingival hyperplasia aredue to Elevated levels of the oestrogen. This can cause an increased capillary permeability. Pregnancy gingivitis usually affects the marginal and the interdental papilla, aggravating the pre-existing gingivitis.[7] In a study performed by D.J Erchick on oral hygiene and prevalence of gingivitis among 1452 pregnant women in Nepal, 40% had gingivitis among which 80% had localised gingivitis and the remaining 20% had generalised gingivitis.[8]

Increased progesterone in the blood alters the collagen production in gingiva, thereby reducing the

body's ability to repair.Folic acid deficiency due to high levels of progesterone and oestrogen prevents gingiva repair. Gingivitis generally occurs in 60 to75% women during pregnancy, but its incidence is only 0.03% in plaque-free environment at the beginning of pregnancy and is maintained throughout pregnancy. [9]

In a study by J.E Raber et al, where they induced experimental gingivitis during pregnancy and post-partum where the level of hormones were monitored throughout the study and the amount of plaque was constant, it was inferred that the bleeding and gingival inflammation were increased during pregnancy and the microbiota level (Prevotella intermedia) was more due to underlying pregnancy related physiological changes. Whereas, post-partum the levels in microbiota did not change.[10]Another study by Maria et al, suggested a high prevalence of Porphyromonas gingivalis , in association with T. forsythia and T. denticola and increased risk of developing periodontitis in pregnant women aged 30 years or older.[11]Literature states that there is a connection between the influence of sex hormones and a directly proportional decrease in periodontal health. The hormonal levels of oestrogen and progesterone triggers a spectrum of inflammatory responses in the gingival tissue and influence the subgingival microbiota. Influence of sex hormones can be minimized by maintaining good plaque control.[12]

Pyogenic Granuloma (Granuloma Gravidarum):

1-5 % prevalence in pregnancy. High levels of oestrogen and progesterone causes increase angiogenesis, when coupled with gingival irritation by contributing local factors such as plaque whichcan lead to this pregnancy tumour in the labial region of teeth usually in the interdental papilla.It happens usually in the first and the second trimester and regresses after parturition.The Oestrogen enhances vascular endothelial growth factor production in macrophages, related to the development of pregnancy tumour.[13] It is proposed that the disappearance of the tumour after parturition is unknown but can be attributed to the regression of the blood vessels.

This can make brushing and the routine dental care uncomfortable, eventually causing tooth decay.An increase salivary oestrogen increases the desquamation of the oral mucosal cells. This combined with increased sub gingival crevicular fluid levels promote bacterial growth by providing required nutrition causing an elevated risk for dental caries.[14] Excision of this tumour 4 weeks post-partum is the best treatment option.

Periodontitis in pregnancy:

The recent studies have suggested a link between periodontal disease and preterm and low birth weight.A study on 400 women with gingivitis and periodontal disease demonstrated a positive correlation between periodontal disease and low birth weight.[9] Periodontitis, if present before pregnancy can aggravate with the poor oral hygiene during pregnancy.

In a systematic review published by Amare Teshome et al, the focus was on preterm birth, low birth weight and periodontitis. Of the selected ten studies out of 229 articles, 9 concluded an association between periodontal disease and low birth weight. Pregnant women who are diagnosed with periodontal issues may have a high risk of delivering premature and low birth weight child regardless of other associated risk factors.[15] In a case report of still birth, by Yiping et al in 2010, it was found that a pregnant woman who had pregnancy associated gingivitis experienced an upper respiratory tract infection at term, which was followed by a still birth. They isolated Fusobacterium nucleatum in the placenta which was also present in the mother's sub-gingival plaque but not in vagina, cervix, or rectum. [16]

Dental Management during Pregnancy:

Dental Radiography and pregnancy:

Depending on the amount of radiation and the stages of pregnancy, damage to the foetus may result in various complications. However, the dental radiation exposure of the foetus is negligible. Several precautions can be taken to avoid the foetal exposure when radiographs aretaken. Using a lead shield over the patient's abdomen, a collimated beam, and a high-speed film, can reduce the foetal exposure to a large extent. The greatest risk to the foetus is during the first 10 days after the conception followed by 4-18 weeks, also very crucial. The National Commission for Radiation Protective (NCRP) recommends that the cumulative foetal exposure to radiation should not exceed more than

0.20 Gy, over which can cause microcephaly and mental retardation [17]

First Trimester 1-12 Weeks:

It is recommended to avoid dental treatment in this period. The concern about doing procedures during the first trimester is that the developing child is at a greatest risk during organogenesis. Dental procedures performed at this time leads to spontaneous abortion.[1]

The current recommendations are to emphasize importance of oral hygiene, avoiding any elective dental procedures and radiographs.

Second Trimester 13-24 Weeks*:*

It is safe to perform elective dental care during this time.

The current recommendations are:

1. Oral Hygiene – Plaque control by Scaling, polishing and curettage.

2. Elective dental care - Restorations, root canals and extractions

3. Radiographs to be used selectively ensuring proper protection and radiation safety for the foetus.

Third trimester 25-40 Weeks:

It is safe to perform a routine dental treatment in the early part of the 3rd trimester, but better to avoid after that.

The current recommendations are:

1. Oral Hygiene – Plaque control by Scaling, polishing and curettage may be performed if necessary.

2. Avoid an elective dental care during the 2nd half of the third trimester.

3. Radiographs to be used selectively while ensuring radiation safety for the foetus.In the end of second and third trimester foetus has grown considerably. The gravid uterus can compress the vena cava while the mother is in supine position. This can impede the blood flow by causing constriction of major vessels resulting in supine hypotension. This can lead to near syncopal episode. Therefore, proper positioning of the patient is required by asking the patient to lie down on her left side and elevating the chair head.[18]

Conclusion

Every woman should be educated to seek proper dental care during pregnancy. It is very important for the gynaecologists to advice pregnant women to get a dental check-up during their pre-natal counselling. The gynaecologists must enquire about the history of gingival bleeding or any difficulty in brushing due to swelling on the gingiva and if the response is positive, they can refer the patients to the dentist without any hesitation regardless of the trimester the patient is in. It will be ideal if the obstetricians join hands with the dentists in educating the women about the importance of seeking dental care during pregnancy. It is recommended to include oral health screening as a part of pre-natal counselling. This way, the dentist can treat any big cavities or open lesions prophylactically.

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