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RESEARCH ARTICLE

EXPECTED DENTAL TREATMENT FOR EXPECTING MOTHERS

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ABSTRACT

Oral Health, which is an essential component of the overall health of the mother and the foetus, undergoes significant changes during pregnancy. This article speaks about the physiological changes and oral diseases encountered by a pregnant patient and discusses the ideal treatment planning of such patients in a dental clinic. During pregnancy, dental treatment may be modified but need not be withheld, provided that the risk assessment is made properly for both the patient and the foetus.

Key words:

Pregnant Patient,
Dental Treatment Planning,
Safety of Foetus.

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INTRODUCTION

Oral Health undergoes significant changes during pregnancy. It is an essential component of the overall health of the mother and the foetus. Misconceptions and incomplete knowledge about pregnancy and foetal intolerance handicaps a dental practitioner in providing optimal dental care. The goal of a dentist is to provide timely preventive and therapeutic services, compatible with the patient's physical and emotional ability. The safety and well-being of the developing foetus is to be kept in mind.

Physiological Changes of concern during pregnancy

Supine hypotensive Syndrome

During the second and third trimesters, a decrease in blood pressure and cardiac output can occur while the patient is in supine position. This has been attributed to the decreased venous return to the heart, caused by the compression of the inferior vena cava by the gravid uterus, which can result in a 14% reduction of cardiac output. It manifests as lightheadedness, hypotension, tachycardia and syncope. This can be managed by rolling the patient onto her left side to lift the uterus off the vena cava and administering 100% oxygen.

To prevent supine hypotensive syndrome in a dental chair, the patient should be kept semi-reclined, ideally in a left lateral decubitus position with the right buttock and hip elevated by 15 degrees.¹ This can be achieved by placing a pillow or a folded blanket below the right hip (Durgesh).

Physiological anemia

During pregnancy, there is increase in red blood cell volume and a greater increase in plasma volume, leading to relative dilutional anemia. It reaches its maximum by 30 to 32 weeks of gestation (Sevi Burcak Cengiz, 2007).

Hypercoagulable state

Levels of the clotting factors increase in the body leading to a hypercoagulable state during pregnancy. But no published report claims of an increased incidence of deep vein thrombosis or pulmonary oedema in a pregnant woman during any kind of dental treatment (Sevi Burcak Cengiz, 2007).

Respiratory system

The respiratory tract becomes oedematous. The functional residual capacity reduces by 20% because of the elevation of the diaphragm by the gravid uterus. Oxygen reserve diminishes with decrease in functional residual capacity and increase in oxygen consumption (Sevi Burcak Cengiz, 2007).

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Prevalence of Oral diseases

Pregnancy gingivitis (gingivitis gravidarum)

Affects 25% to 100% of pregnant patients and typically occurs in the second to eighth month of pregnancy. Inflammatory changes appear to be in response to poor oral hygiene related plaque accumulation exacerbated by increased estrogen, progesterone, and prostaglandin synthesis (Susan et al., 2006). Although some gynecologists are aware of the higher prevalence of periodontal diseases in pregnant women and also of the risk of periodontal disease to the outcome of delivery, not all of them opt for a multidisciplinary approach along with an oral health care professional. Efforts should be made to increase the awareness about this relation and encourage a bilateral, interdisciplinary protocol for the prevention of PLBW (preterm low-birth-weight) cases by the integration of periodontal care with obstetric management, thereby reducing the incidence of maternal and neonatal complications (Nutalapati, 2011).

Pregnancy tumor (granuloma gravidarum):- They are clinically similar to pyogenic granuloma and appear most frequently during the second trimester. These rapidly growing lesions typically arise from the interdental papillae in the maxillary anterior area. They vary in colour from bright red to blue, bleed easily, and are usually painless. The mechanisms predisposing to pregnancy tumours are the same as those postulated for pregnancy gingivitis (Susan et al., 2006).

Tooth-mobility

Occasionally, generalized tooth mobility resulting from inflammatory changes in the gingiva, mineral changes in the lamina dura, and disturbances in the periodontal ligament may be observed. Tooth mobility appears to resolve following parturition (Susan et al., 2006).

Dental caries

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The increased caries activity may be related to oral neglect, dietary changes such as an increase in the frequency and amount of carbohydrate-containing food, inadequate brushing and flossing due to gingival tenderness and enamel demineralization secondary to vomiting associated with morning sickness and hyperemesis gravidarum (Susan et al., 2006).

Facial pigmentation (melasma Melasma (chloasma) is a common skin condition characterized by hyperpigmentation of sun-exposed areas. The most likely etiological factors seem to be the high levels of oestrogen and progesterone, which stimulate melanin production. It is most commonly detected in the second trimester as symmetric but irregular brown blotches on the face. Melasma which persists postpartum may be treated with Hydroquinone or Tretinoin preparations (Susan et al., 2006).

Effects of mother's condition on the foetus

Effect of periodontal disease on the foetus

Chronic periodontal disease during pregnancy increases the likelihood of preterm delivery four- to seven-folds and the risk increases with the severity of maternal periodontal disease.

Inflammatory mediators, such as cytokines, interleukin-1, interleukin-6, and TNF-alpha associated with periodontal disease, adversely affect the placenta and the foetus. They also stimulate prostaglandin E2 synthesis, which affects uterine contraction and increases the likelihood of premature labour.³

Effect of caries on the foetus

It is hypothesized that *Actinomyces naeslundii*, an oral bacterium associated with dental caries travel to the uterus and initiate the release of proinflammatory cytokines, which in turn induce uterine contractions and cervical dilation. As the cervix becomes dilated, more bacteria enter and eventually cause the uterine membranes to rupture and preterm birth to occur (Susan et al., 2006).

Pregnancy-related effects on the developing tooth

Rhesus-factor incompatibility may cause intrinsic discoloration of teeth. Tetracyclines, including doxycycline, are contraindicated during pregnancy because of their potential to discolour the dentition of the developing foetus. Pregnancy-related toxemia, prolonged or difficult delivery, and breach positioning of delivery have been associated with enamel hypoplasia (Susan et al., 2006).

Management of a pregnant patient Case-history

The first step in the management of oral health in a pregnant patient is the recording of a good case history. It forms a good patient-dentist relation, encourages openness, honesty and trust, reduce stress and anxiety of the patient.² The history of previous pregnancies should be discussed, including previous miscarriages, gestational diabetes mellitus, hypertension, and preeclampsia or eclampsia. A consultation with the patient's physician, usually an obstetrician, should be undertaken to establish the risk status of the patient prior to the initiation of required dental treatment (Susan et al., 2006).

Physical examination

It is imperative that the blood pressure, pulse pressure, rate and rhythm, and respiration of the pregnant patient be monitored carefully in the oral health care setting. Hypotension is often associated with unexplained symptoms such as tiredness, chronic fatigue syndrome, and recurrent syncope (orthostatic hypotension), especially among underweight women with low muscle mass. Hypertension, associated with preeclampsia and eclampsia during pregnancy, occurs after the 20th week of gestation (Susan et al., 2006).

Dental radiography

For dental radiography, the primary beam is restricted to the head and neck region.³ Animal and human data concludes that no increase in gross congenital anomalies occurs as from exposures totalling less than 0.05 to 0.1 Gy during pregnancy. The amount of radiation used in dental radiographs is well below the threshold dose. For comparison, 18 intraoral dental radiographs with a D film and a lead apron result in an estimated foetal embryonic dose of 0.0000001 Gy. Dental radiographs are optimally taken in the second trimester.¹ However, it is prudent to avoid or minimize the use of diagnostic radiography during pregnancy, especially during the first trimester, the period of organogenesis (Susan et al., 2006).

Standard radiation hygiene practices like the use of Lead apron with thyroid collar, Collimation, Filtration and Fast exposure techniques should be used. Elective radiographic procedures like bitewing radiograph should not be done (James).

Preventive strategies

Preventive strategies aimed at attaining optimal oral hygiene should be developed and implemented early (Susan et al., 2006).

Prevention of dental erosion

The low pH of vomit, which is very common, may lead to erosion of the dental enamel (Susan et al., 2006). After vomiting, patients should rinse with water, ideally using one teaspoon of baking soda mixed with eight ounces of water. Brushing should be avoided for an hour after vomiting and a soft bristle brush should be used. Acidic beverages should ideally be avoided. If consumed, a straw should be used (Nancy, 2012).

Treatment plan

Dental problem will Compromise nutritional status of Mother which will lead to Compromised nutritional status of the foetus. So, dental pain and infection should be treated regardless of the trimester. Access opening, incision and drainage, extraction and other routine oral hygiene procedures can be carried out, when needed (Prabhu). The second trimester is the safest time to perform routine dental care. In this period, treatment planning should include elimination of potential problems that could arise later in pregnancy or during the immediate postpartum period. The early part of the third trimester is still a relatively good time to provide routine dental care. However, no elective dental treatment is advisable late in the third trimester.¹ Oral condition assessment and necessary treatment should be started as early as possible. A gynaecologist/ obstetrician should be consulted whenever in doubt of treatment compatibility. Patients with morning sickness should be scheduled accordingly (Durgesh).

Dental treatment according to the trimester of pregnancy:-

First Trimester:- Only urgent dental care should be provided.⁵ Radiation exposure and surgical treatment should be avoided.⁸ Ideally no drugs should be prescribed during the first 13 weeks. Preventive and therapeutic management of dental erosion should be started (Prabhu).

2nd Trimester:- This is the most suitable time for routine dental treatment.⁵ Supine position of the patient is to be avoided during the second and third trimesters. Left lateral position should be maintained by elevating right hip (Ideally at an angle of 15 degrees). The appointments should be short with frequent change of position (Prabhu).

3rd Trimester: Routine dental care may be provided, as required.⁵ But this trimester is not suitable for traumatic treatment procedures because of risk of premature birth.⁸ The risk of syncope and hypertension, secondary to fetal position are greatest in this period (Durgesh).

Amalgam restorations: Mercury released from amalgam restorations may cause congenital malformations. Recent data have confirmed that about 1 to 3 µg per day of mercury vapour is released from amalgam restorations.

This amount is not high enough to produce any teratogenic effect (Sevi Burcak Cengiz, 2007).

Drugs during Pregnancy

The drug crosses the placenta by simple diffusion. So the drugs should be used in pregnancy when they offer a clear benefit to the mother. The least potentially toxic drug should be selected when alternatives are available. Consult Patient's obstetrician and gynecologist before prescribing medications especially narcotic analgesics (Prabhu). The period of maximum teratogenic risk is during the organogenesis. It starts from 2-4 weeks from the last menstrual period, till the end of 10th week after the last menstrual period. To determine the risk associated with the use of drugs in pregnancy, the United States Food and Drug Administration has classified drugs based on the level of risk they pose to the foetus (Sevi Burcak Cengiz, 2007).

The most commonly used drugs in dentistry are

Local anesthetics and their vasoconstrictors:- They are safe to administer to the pregnant and lactating patients, provided that aspiration is performed to minimise the risk of intravascular injection. The best ranked drugs in this group with the maximum recommended doses, when combined with vasoconstrictors are as follows: Lidocaine 500 mg, Prilocaine 600 mg, Articaine 500 mg, Bupivacaine 90 mg, and Etidocaine 400 mg (Sevi Burcak Cengiz, 2007).

Antibiotics:- Among antibiotics, penicillin V and amoxicillin are the safest and most commonly prescribed drugs during pregnancy (Sevi Burcak Cengiz, 2007).

Analgesics:- Acetaminophen is widely accepted for use during pregnancy since it has shown no evidence of teratogenicity (Sevi Burcak Cengiz, 2007).

Some authors suggest that Fluoride supplement from the third to the ninth month of pregnancy, can reduce the incidence of caries in 97% of the offsprings up to ten years (James). But this claim is debatable. Pregnant and lactating women require an increased intake of vitamin C to maintain optimal plasma vitamin C concentrations. The current recommended daily allowance of vitamin C for women during pregnancy and lactation is 85 and 120 mg/day, respectively (Susan et al., 2006).

Conclusion

While treating a pregnant mother, we are actually taking care of two patients at one time- the mother and the foetus. Overestimation of the risk of teratogenicity in the foetus resulting from medical and dental procedures or drugs may cause a clinician to avoid necessary treatment of the expectant mother. During pregnancy, dental treatment may be modified but need not be withheld, provided that the risk assessment is made properly for both the patient and the foetus. Oral condition assessment and necessary treatment should be started as early as possible.

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