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Pregnancy and Dentistry: A guide for the General Dental Practitioner. Part 1

Abstract: Pregnancy is a unique time in a woman's life when many physiological, physical, emotional and hormonal changes occur. It can also be quite an anxious time for women, particularly in the first trimester, when the risk of miscarriage is at its highest. Uncertainty still exists around the topic of dental treatment and care during pregnancy, which may create challenges for both the patient and the dental team.

CPD/Clinical Relevance: The common health and oral health conditions that occur in pregnancy are relevant to all clinicians.

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Pregnancy is a unique period in a woman's life which is marked by several physiological changes which occur in response to increased hormone secretion. These physiological changes impact upon the oral cavity and influence oral health. Equally these changes can complicate the provision of dental treatment and so, the general dental practitioner should be aware of them in order to safely treat the patient.

The importance of including oral health in the preventative healthcare of pregnant women has been highlighted by the World Health Organization (WHO) and the American College of Obstetricians and Gynaecologists.^{1,2}

In the United Kingdom, under the NHS dental contract, pregnant women can access free dental care for the duration of their pregnancy and for 12 months afterwards. However, despite the lack of financial barriers, the proportion of pregnant women that attend their dentist has been shown to be relatively low.^{3,4} Barriers to accessing dental care for pregnant women include illness, managing work and family responsibilities, and a lack of awareness that oral healthcare is provided free of charge in the NHS.⁵

A further barrier to care is hesitancy on the part of the dental professional to provide care. Several studies have highlighted a reluctance by many

dentists to treat pregnant patients, citing a lack of clear guidelines and insufficient knowledge about the safety and correct timings of dental procedures during pregnancy.^{6,7}

Common conditions in pregnancy

Common conditions that occur during pregnancy may affect the patient's oral health and the dental care that they receive.

Hypertensive disorders

Hypertensive disorders (Table 1) are estimated to affect 3–10% of pregnancies^{8–10} and can result in significant maternal and fetal morbidity. Pre-eclampsia, a severe hypertensive disorder characterized by hypertension and proteinuria, can result in intrauterine growth restriction for the baby and a risk of stroke or seizures for the mother.^{11,12}

The dental team, if seeing a pregnant patient regularly, may be well placed to identify a patient who is displaying signs

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Chronic hypertension	Hypertension that is present either before the pregnancy or diagnosed before 20 weeks' gestation
Gestational hypertension	Systolic blood pressure of over 140mmHg and/or a diastolic blood pressure of over 90mmHg after 20 weeks' gestation in a patient who previously had normal blood pressure
Pre-eclampsia	A multi-system disorder usually involving the liver and kidneys, which occurs in women who have gestational hypertension

Table 1. Types of hypertensive disorder in pregnancy.

First pregnancy
Age 40 years or older
Pregnancy interval of greater than 10 years
BMI of 35 kg/m ² at first visit
Family history of pre-eclampsia
Multi-fetal pregnancy
Hypertensive disease during a previous pregnancy
Chronic kidney disease
Autoimmune disease, such as systemic lupus erythematosus or antiphospholipid syndrome
Type 1 or type 2 diabetes
Chronic hypertension

Table 2. Risk factors for pre-eclampsia.

Severe headaches
Vision problems, eg blurring or seeing flashing lights
Severe heartburn
Pain just below ribs
Nausea or vomiting
Excessive weight gain caused by fluid retention
Feeling generally very unwell
Sudden increase in oedema – swelling of the feet, ankles, face and hands

Table 3. Signs and symptoms of pre-eclampsia.

of this condition and so, it is important to be aware of the risk factors for pre-eclampsia (Table 2) and the common signs and symptoms of which a patient may complain (Table 3).¹³ The patient should be advised to contact their medical team or midwife as soon as possible if they have any concerns.

Vomiting and gastro-oesophageal reflux disease (GORD)

Nausea and vomiting affect approximately 80% of pregnancies, particularly in the first trimester. Although generally referred to as 'morning sickness', this nausea and vomiting may occur at any time of the day or night.^{14,15} Hyperemesis gravidarum is a more severe form of nausea and vomiting that occurs in approximately 0.3–1% of pregnancies.^{14,15} It is described as intractable nausea and vomiting that has resulted in more than 5% pre-pregnancy weight loss, dehydration and

electrolyte imbalance.¹⁶ Hyperemesis gravidarum may result in hospitalization of the pregnant woman and has been associated with significant psychological implications and morbidity.¹⁷

GORD is also a very common complaint during pregnancy with an estimated incidence of between 40% and 85% of women.^{18,19} It occurs when gastric contents enter the oesophagus causing damage to the mucosa and resulting in symptoms such as heartburn, nausea and chest pain.²⁰ Owing to repeated vomiting or GORD and, therefore, repeated exposure of the teeth to gastric acid, there is a risk of a pregnant woman developing signs and symptoms of erosive tooth loss.²¹

Gestational diabetes

Gestational diabetes occurs in approximately 1–14% of pregnant women.²² Risk factors for developing gestational diabetes include a high BMI (greater than 30 kg/m²), previous delivery of a baby larger than 4.5 kg, gestational diabetes diagnosed during a previous pregnancy or a South Asian, Chinese, African-Caribbean or Middle Eastern ethnic origin.²³

Patients with gestational diabetes may be able to manage the condition with just diet and exercise alone although some women will also be taking metformin or insulin to control their blood glucose levels.²³

The dental team should be aware of pregnant patients who have gestational diabetes and plan their care appropriately. This includes timing appointments after a meal to reduce the risk of the patient becoming hypoglycaemic while in the surgery. The signs and symptoms of hypoglycaemia include dizziness, nausea, sweating, shaking, anxiety, irritability and fainting. Management of a hypoglycaemic episode is a medical emergency and a pregnant patient should be managed in the same way as someone with type 1 or type 2 diabetes.²⁴

Oral conditions associated with pregnancy

Pregnancy can be associated with some significant changes within the oral cavity of which dental practitioners need to be aware.

Pregnancy-associated gingivitis

The prevalence and severity of gingivitis increases during pregnancy,²⁵ although pregnancy itself does not cause gingivitis. A healthy periodontium at the onset of pregnancy should not show signs of inflammation during pregnancy if excellent plaque control is maintained. The inflammatory changes may begin from the second month of gestation up until the eighth month when some improvement may occur. Pregnancy-associated gingivitis is more apparent in the anterior region²⁵ and is often accompanied by intense bleeding and gingival sensitivity.²⁶

Pregnancy-associated gingivitis is clinically and histologically similar in appearance to plaque-induced gingivitis.²⁷ However, it exhibits a much higher reactivity to plaque, with studies demonstrating higher levels of gingival inflammation in pregnant patients relative to non-pregnant controls despite no significant differences in plaque control.^{28,29}

The association between pregnancy and gingivitis is thought to be multifactorial, encompassing changes in the maternal immune response and changes in the local periodontal microflora.²⁶

In general, clinical attachment loss remains unchanged during the pregnancy, and gingival inflammatory changes observed during pregnancy usually resolve postpartum.²⁸ However, a pre-existing periodontal condition may progress during the pregnancy if not addressed.³⁰

Pyogenic granuloma in pregnancy

Pyogenic granuloma of the gingiva develops in up to 5% of pregnancies.³¹ Owing to its frequency of occurrence, terms such as pregnancy granuloma, pregnancy tumour, pregnancy epulis, epulis gravidarum are commonly used to describe this lesion.³² Pyogenic granulomas may develop at any stage during pregnancy³¹ with a tendency to increase in incidence as the pregnancy progresses owing to the effect of more circulating oestrogen and progesterone.³³

Pyogenic granulomas that occur during pregnancy are clinically and histologically identical to pyogenic granulomas that develop in non-pregnant patients.³¹ The granuloma commonly presents as a rapidly growing sessile or pedunculated gingival mass that may bleed profusely when touched owing to its excessive vascularity.^{34,35} The mass can vary in colour from pink to bright red,³⁴ may be ulcerated and covered with a yellowish fibrinous membrane.³⁶ Typically, it has an interdental attachment and occurs labially in the maxillary anterior region.³¹ Most lesions occur in areas of chronic gingival inflammation, but may also be associated with trauma or the presence of local irritants such as calculus and poorly fitting restorations.^{35,36} Bone destruction around the affected teeth is rare.³¹

Pyogenic granulomas occurring during pregnancy can vary in size but rarely exceed 1.5 cm in diameter. However more extensive and florid reactions have been reported.³²

Pyogenic granulomas in pregnancy are usually painless³⁴ and the majority of patient complaints relate to poor aesthetics and gingival bleeding.³⁵ Usually, the lesions undergo spontaneous partial or complete resolution postpartum as pregnancy hormones begin to wane.³⁵

Surgical excision is not recommended unless the lesion is posing significant functional or aesthetic problems.³⁷ This lesion is readily recurrent for the duration of the pregnancy³² and, coupled with the tendency for the lesion to regress, most pyogenic granulomas are

observed until after delivery and surgical revision is delayed until the lesion has regressed maximally.³² Consequently, supportive periodontal therapy involving supragingival scaling, the correction of local plaque retentive factors and comprehensive oral hygiene instruction is the mainstay of treatment.³⁸

Rarely, pyogenic granulomas can pose more serious complications and, in one notable case report, a severe, uncontrollable haemorrhage from a pyogenic granuloma necessitated premature delivery of the infant to save the mother's life.³⁹

Periodontitis and adverse pregnancy outcomes

More recently there has been a greater awareness of a potential association between periodontal diseases and systemic health.⁴⁰ There is much interest in exploring a potential association between maternal periodontal disease and adverse pregnancy outcomes including pre-term birth, low birthweight, pre-eclampsia, miscarriage and/or stillbirth.⁴¹

The evidence does not substantiate the relationship between periodontitis and adverse pregnancy outcomes.⁴² A systematic review of the literature found a modest, but significant, association between maternal periodontal disease and low birthweight and pre-term birth (<37 weeks' gestation) and a significant association with pre-eclampsia.⁴¹ The studies included in this analysis exhibited a high degree of heterogeneity however, and the results cannot be considered definitive.

Further research has investigated the impact of periodontal treatment on adverse pregnancy outcomes. A recent Cochrane review and meta-analysis examined the effect of interventions to treat periodontitis in pregnant women and concluded that periodontal treatment did not have an effect on pre-term birth (<37 weeks' gestation). However, there is low quality evidence that periodontal treatment may reduce the incidence of low birthweight (<2500g) by 33% in pregnant women.⁴³

Pregnancy and dental caries

It has not been definitively established that pregnant women are more susceptible to developing dental caries.⁴⁴ Nonetheless, hormonal and behavioural changes occur during pregnancy that

might increase the likelihood of caries development and progression.⁴⁵

The composition of saliva changes during pregnancy. There are reductions in both salivary phosphate and calcium levels, and decreases in salivary pH and buffering capacity in pregnant women compared with non-pregnant controls.⁴⁶ Pregnant women undergo taste changes towards a preference for sweet flavours.⁴⁷ Dietary changes are commonly observed, particularly in early pregnancy with increases in the consumption of carbohydrates to satisfy the energy demands of the growing fetus.⁴⁸ Furthermore, there is often more frequent consumption of sweet snacks and drinks to satisfy cravings⁴⁹ or to ameliorate nausea.⁴⁵ Oral hygiene practices may also deteriorate as the pregnancy progresses⁴⁵ and the tastes of mouthwashes and toothpastes may become unpleasant to pregnant patients.⁵⁰

The impact of these changes can be significant. The prevalence of dental pain during pregnancy is high, with studies detailing that 39.1–54.9% of pregnant women report pain (with dental caries being the main determinant) during their pregnancy.^{51,52} Oral pain can be a source of significant distress and may necessitate self-medication with painkillers with the potential for inappropriate use and harm to the fetus.⁵³

Conclusion

Pregnancy is a unique period that can significantly affect the patient's systemic and oral health. Dentists should have an awareness of the more common systemic conditions that occur during pregnancy, identifying the signs and symptoms, and directing the patient to seek medical care where necessary. Dentists should also have a comprehensive knowledge of the common oral conditions that occur during pregnancy, as well as the potential adverse effects of pregnancy on the patient's oral health.

Compliance with Ethical Standards

Conflict of Interest: The authors declare that they have no conflict of interest.

Informed Consent: Informed consent was obtained from all individual participants included in the article.

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