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## Case Report

# Squamous cell carcinoma of the oral alveolus during pregnancy: Perioperative management in a rural setting

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## ABSTRACT

A 30-year old pregnant woman presented to our hospital with stage 4 squamous cell carcinoma of the lower alveolus of the mouth. She underwent a transoral segmental resection of the tumour and left-modified radical neck dissection at 29 weeks of gestation. A multidisciplinary team was formed and careful consideration was given to preoperative evaluation, surgical and anaesthesia management, and postoperative care. The pregnancy was continued and the patient delivered a healthy baby at 35 weeks. This case highlights the perioperative interventions required to ensure the best possible outcomes for the mother and the baby.

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## 1. Introduction

The incidence of cancer in pregnancy is 0.02-0.1%, of which oral cancers are rare and constitute only 2%.<sup>1</sup> Given their rarity, there are no standard guidelines for the management of these cancers in pregnancy. The timing of treatment and the modality used should take into consideration the disease factors, the health of the foetus and pregnancy term in accordance with the wishes of the patient and her family. We report a rare case of cancer of the alveolus of the mandible in a pregnant woman who underwent radical surgery during pregnancy.

## 2. Case Presentation

A 30-year-old lady presented to our hospital in rural central India at 26 weeks of gestation with a lesion in her lower jaw for one month, diagnosed elsewhere to be squamous cell carcinoma. She had a history of chewing tobacco for 2 years prior to her diagnosis. There was no history of smoking or

alcohol consumption.

Local examination revealed a 4 x 3cm ulceroproliferative lesion extending from the left lower canine to the third molar (Figure 1). The retromolar trigone, commissure of the lip and skin were free of disease. There were no palpable neck nodes. A computerized tomography (CT) scan showed destruction of the cortical bone of the mandible and the tumour was classified as stage IV (T4aN0M0). Options of management were discussed in a multidisciplinary team meeting comprising of an obstetrician, maxillofacial surgeon, oncologist, and paediatrician.

As the family had financial constraints, the burden of taking care of an extremely premature infant and the associated expenses played a major role in the decision-making. After discussion with the patient and her family, it was decided to go ahead with the surgery and plan delivery after 3–4 weeks. Because the foetus was viable at the time of surgery, the possibility of continuous intraoperative foetal monitoring and intra-operative caesarean section in the event of foetal hypoxia was discussed, however, the patient did not consent for it. She had moderate anaemia and received two units of blood transfusions.

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**Fig. 1:** Ulceroproliferative lesion on the left lower alveolus of the oral cavity

A course of corticosteroids was given for foetal lung maturity. Measures taken for thromboprophylaxis were anti-embolism stockings and injection Enoxaparin. Electronic foetal monitoring and contraction testing were done before and after the surgery.

Surgery was performed at 29 weeks of gestation. The patient was positioned supine with a left lateral tilt, and a tracheostomy was done. Propofol and scoline were used for anaesthesia induction and nitrous oxide and sevoflurane were used for maintenance. A left-modified radical neck dissection and a transoral segmental resection of the tumour from the midline to the angle of the mandible were performed. A free fibula osteocutaneous flap was harvested simultaneously by a second team of surgeons. Microsurgical anastomosis of the peroneal artery of the flap to the superior thyroid artery and the peroneal vein to the common facial vein was done. The flap appeared satisfactorily perfused. Vigilant monitoring was carried out throughout the entire procedure, and hypotension and hypoxia were promptly managed. The duration of anaesthesia and surgery were 5 hours and 4 hours and 30 minutes, respectively.

The patient was monitored in an intensive care unit for 24 hours. Electronic foetal monitoring was done every 8 hours. The vascularity of the flap was checked by the dermal pin prick method every 2 hours. Nasogastric feeds were started 12 hours following the procedure. She was given a blood transfusion as there was a drop in haemoglobin of 28 g/L after surgery. She was discharged seven days after surgery. The biopsy revealed a moderately differentiated squamous cell carcinoma of 1.2 x 0.5 cm

with perineural and lymphovascular space invasion. The tumour free margins were 0.5-2 cm away, and the lymph nodes were free of tumour. She developed a wound infection in her neck and required daily dressings and secondary suturing. She was followed up on a weekly basis and foetal growth and well-being were monitored. She was given one rescue dose of steroids and labour was induced at 35 weeks in order to initiate adjuvant chemo-radiation. She had an uncomplicated vaginal delivery of a healthy baby girl weighing 1.8kg with an APGAR of 8 and 9 at 1 and 5 minutes. The baby was admitted to the neonatal intensive care unit for monitoring and discharged after one week. Concurrent chemo-radiation was started three days after delivery and six cycles were given. She is currently disease free at six months post-surgery.

### 3. Discussion

Oral cancer is a major public health burden in rural India and may be largely attributed to the extensive and socially acceptable use of tobacco in various forms. In rural areas, inability to access trained health providers due to distance, cost of treatment, and ignorance of the seriousness of the condition causes patients to present late, after significant disfigurement has occurred. This patient had a history of using "gutka," which is a dry mixture of lime, areca nut shavings, and tobacco that is typically chewed or placed in the cheek.<sup>2</sup> The incidence of oral malignancy in pregnancy is expected to rise due to changes in lifestyle and increased pregnancies among women in their late reproductive years. Changes in physiology induced by pregnancy, such as high metabolism, placental growth factor-induced neoangiogenesis, and amplified hormonal responses, have been postulated to induce neoplastic changes. Reduced immunosurveillance and high levels of oestrogen in pregnancy may contribute to the enhanced carcinogenesis and progression of cancer.<sup>3</sup> Imaging of the head and neck should be carried out if clinically indicated and should not be delayed due to foetal risks. Computerized Topography (CT) of the head and neck can safely be done if MRI is not available, as the foetal dose of ionising radiation is very low.<sup>4</sup>

#### 3.1. Preoperative considerations

Surgery for oral cancer should take into consideration the gestational age, type of procedure, and type of anaesthesia. Preoperative hemoglobin should be optimised to more than 110 g/L in pregnant women undergoing major surgery.<sup>5</sup> Surgery in the third trimester can lead to preterm labour; hence, prophylactic corticosteroids should be considered for viable premature infants. Prophylactic tocolysis is controversial due to its unproven benefit and maternal side effects. Antacid prophylaxis with H<sub>2</sub>-receptor antagonists and non-particulate antacids

is beneficial as pregnant women have a higher chance of aspiration.<sup>6</sup> The hypercoagulable state induced by pregnancy can predispose to venous thromboembolism and thrombosis in the microvascular anastomosis. Hence, prophylactic anticoagulation should be given peri-operatively. Crossmatched blood should be made available for transfusion.

### 3.2. Intraoperative considerations

Surgery for head and neck tumours is usually long and technically demanding. Reduced uteroplacental blood flow due to compression of the inferior vena cava by the gravid uterus can cause asphyxia of the fetus. This can be prevented by providing a left lateral tilt, especially in the third trimester. Pregnant women were observed to have a higher Mallampati airway grade and more difficult intubations. Avoiding hypoxia during intubation and extubation is critical to ensure foetal oxygenation. Monitoring and maintenance of oxygenation, carbon dioxide, euglycemia and normotension is essential.<sup>7</sup> The currently used anaesthetic medications in their standard doses have not shown to cause teratogenicity and can be safely administered.<sup>8</sup> Surgery by experienced surgeons and simultaneous surgery by two teams help to reduce the operative time. Intra-operative continuous monitoring of the foetus is recommended in selected cases depending on the surgery, gestational age of the foetus, and considering the wishes of the mother. At the very least, contractions and electronic foetal heart monitoring should be done before and after the surgery.<sup>8</sup> If continuous foetal monitoring is being used, it is important to note that decreased foetal heart variability may be due to the drugs used rather than foetal acidosis.<sup>7</sup>

### 3.3. Postoperative considerations

The metabolic needs of the mother to ensure nutrition of the foetus are under strain due to the cachexial state caused by cancer, which is further enhanced by the disease in the oral cavity or its treatment, which can compromise the intake of food. We observed foetal growth retardation, which could be attributed to poor maternal nutrition. Postoperative drug orders should be reviewed to ensure that the prescribed antibiotics and analgesics have a good safety profile in pregnancy. After 30 weeks of gestation, paracetamol and short-term opioids are considered safe analgesic options, and non-steroidal anti-inflammatory agents are generally avoided.<sup>9</sup> Surgery during pregnancy is considered to be a transient risk factor for venous thromboembolism, hence antenatal thromboprophylaxis should be given. The risk factors should be reassessed periodically to decide the duration of thromboprophylaxis. Due to the ease of monitoring and dosage, low molecular weight heparin is the agent of choice.<sup>10</sup>

Management of oral malignancies in pregnancy poses a unique ethical dilemma in balancing the treatment of the mother with the continuation of the pregnancy safely. Multidisciplinary management is required to enable the clinicians to decide the best clinical treatment plan, taking into consideration the wishes of the patient. Thorough preoperative optimization and planning, careful intra-operative anesthesia management with reduced operative time, good postoperative care, and meticulous attention to detail will ensure the best outcomes for the mother and baby.

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## 5. Conflict of Interest

The authors declare no competing interests.

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