

Foetal salvage by Caesarean section in a case of maternal burn injury

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ABSTRACT Burn injury sustained during pregnancy is a serious clinical complication that requires individualisation of management. We describe the case of a 30-week pregnant woman who presented to the hospital in a state of shock with approximately 90% burn injuries. Resuscitation was carried out, and the patient's family consented to an emergency Caesarean section in view of the grave prognosis of such burn injuries. A live male infant was delivered via emergency Caesarean section. However, the mother succumbed to her injuries two days after the operation, while the baby was successfully resuscitated and discharged after ten days. This case highlights the importance of timely decision-making and coordination, which are required to salvage a near-term foetus. It also underscores that emergent resuscitation and timely operative procedures might be able to salvage a living foetus, particularly in patients with burns covering more than 60% of total body surface area.

Keywords: burn, pregnancy, Caesarean section, resuscitation
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INTRODUCTION

Burn injury during pregnancy is a serious clinical problem that demands special management and requires close cooperation among surgical, obstetric and anaesthetic teams.⁽¹⁾ This is a clinical state that needs early resuscitation, surgical intervention and individualisation of management.

CASE REPORT

A 23-year-old Indian woman was brought to the emergency department of our hospital in a state of shock, with severe burn and inhalational injuries. She sustained accidental burns while cooking on a kerosene stove that had caught fire. She was about 30 weeks pregnant. On examination, she had approximately 90% burns involving her whole body except part of the anterior abdomen and the anterior-lateral part of her left thigh. She had swelling of the face, lips and tongue. There were features of inhalation burn injury with carbon deposits in both the mouth and nostrils. She had severe difficulty in breathing. Blood pressure was not recordable. Foetal heart sounds were present. Resuscitation was started immediately and the case was referred to the plastic surgeon and obstetrician. The patient's family was counselled about the grave prognosis of such a severe degree of burns, and it was decided to perform an emergent lower segment Caesarean section to salvage the foetus. The patient was promptly moved to the operating theatre. Invasive monitoring was instituted and general anaesthesia was induced by rapid sequence induction technique. Lower segment Caesarean section was performed and a live male baby was delivered. The baby was moved to the neonatal intensive care unit for observation.

The amnion was taken from the placenta and applied over the mother's chest wound. Postoperatively, she was moved to the

intensive care unit for ventilatory support and further management. She went into a state of refractory shock and died after two days of intensive treatment. Meanwhile, the baby suffered respiratory distress and had to be intubated for a few days. He was treated with steroids and after a hospital stay of ten days, the baby was discharged home.

DISCUSSION

Not much information on the topic of burns during pregnancy is available. The incidence of burn patients in the reproductive age group as compared to the total number of female burn patients is unremarkable.⁽²⁻⁵⁾ The incidence of burn injuries during pregnancy, as reported by various authors, ranges from 7% to 15%,^(6,7) with the highest incidence found in India.⁽⁸⁾ There is a steep rise in foetal mortality once the total body surface area (TBSA) of burn exceeds 60%.^(9,10) Apart from burn injuries with a high percentage of TBSA, those with suicidal intent or inhalation injury also had higher mortality rates.⁽¹¹⁾ The gestational period is one of the most important factors that determines the kind of obstetric procedure required.⁽⁸⁾ Other important factors are the severity of burn and the viability of the foetus, which must be confirmed immediately. A live foetus in a mother with burn injuries delivered after 32 weeks has a good prognosis with modern neonatal intensive care, provided that there has been no episode of birth trauma or hypoxia during delivery.^(8,12) Pregnant patients with gestational periods between 24 to 32 weeks are the most difficult group to manage because the ultimate survival of the baby is nearly impossible to predict if delivery is contemplated.⁽⁸⁾

Burn patients have altered physiologies that create an environment that is unfavourable to foetal survival. Therefore,

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immediate delivery is justified even when the degree of burn injury is more than 50% in advanced gestational ages. Some authors contemplate emergency Caesarean section when encountering more than 50% TBSA burn in gestational periods greater than 26 weeks.⁽¹³⁾ Severe burn leads to maternal shock, and as a result, uterine blood flow decreases, which in turn leads to persistent foetal hypoxia. This is complicated in cases with inhalation injuries in which the degree of reduction of maternal PO₂ is even higher, thus leading to an increased incidence of foetal hypoxia and subsequently, acidosis. The early phase of maternal hypoxia may be tolerated by the foetus, but foetal affection due to hypoxia becomes prominent when there is maternal cardiovascular decompensation in the advanced phase of burn injury.⁽¹⁴⁾ The amniotic fluid is in constant equilibrium with the maternal intravascular space. Therefore, any reduction of the maternal intravascular space would consequently result in a decrease in amniotic fluid volume, which if severe, may lead to intrauterine foetal death.

In this case, the patient had presented with a severe burn injury involving 90% of the body surface area, along with inhalation injuries. She was in a state of shock with respiratory distress. Although the foetus had not attained lung maturity (as gestational period was less than 32 weeks), delivery of the foetus was necessary in order to salvage it. Any delay in the delivery might have compromised foetal well-being due to maternal shock and hypoxaemia. It is thus justified to perform a Caesarean section through the burned abdomen of the mother in order to ensure foetal salvage in critically burned patients with near-term pregnancy when the foetus is still viable. This is particularly applicable to major burn injuries with more than 60% TBSA. This was our rationale for performing an emergency Caesarean section in order to give the foetus a chance at life.

We report this case to highlight the importance of timely decision-making and coordination, which are required to perform a Caesarean section in such an unusual case to salvage a near-term foetus. This also underscores that emergent resuscitation and timely operative procedures could salvage a living foetus, even in patients with burn injuries with a very high percentage of TBSA.⁽¹⁵⁾

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