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Case Report

A third-trimester pregnancy complicated by moderate flame burn injury: clinical course and outcome

Harshitha S.[1]*, Rania Madari[2], Sushmitha S.[2]

[1]Department of Obstetrics and Gynaecology, Sri Devaraj Urs Medical College, SDUMC, Kolar, Karnataka, India
[2]Sri Devaraj Urs Medical College, SDUMC, Kolar, Karnataka, India

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***Correspondence:**
Dr. Harshitha S.,
E-mail: research.relearn.7.7.2025@gmail.com

ABSTRACT

Burn injuries during pregnancy are rare but represent a significant obstetric emergency with potential adverse maternal and fetal outcomes. Physiological changes of pregnancy, combined with the systemic inflammatory response to burns, complicate resuscitation, infection control, and obstetric decision-making, particularly in late gestation. Management becomes more complex in the third trimester due to fetal viability and the need to consider timing and mode of delivery. We report a case of a 21-year-old multigravida at 36 weeks of gestation with moderate-severity accidental flame burns involving 20–25% total body surface area (TBSA). The patient was managed at a tertiary care centre with prompt maternal stabilization, multidisciplinary coordination, and elective lower segment caesarean section (LSCS). Both maternal and neonatal outcomes were favourable. This case highlights the importance of early referral to tertiary care, individualized obstetric decision-making, and multidisciplinary management in achieving optimal outcomes in third-trimester burn injuries.

Keywords: Pregnancy, Flame burn injury, Body surface area

INTRODUCTION

Burn injuries complicating pregnancy are uncommon yet associated with disproportionately high maternal and fetal morbidity and mortality.[1,2] The physiological adaptations of pregnancy including increased plasma volume, altered immune response, and increased metabolic demand can significantly influence burn pathophysiology and management.[3,4]

Gestational age and total body surface area (TBSA) burned are the most important determinants of outcome. Burns sustained during the third trimester pose additional challenges due to advanced fetal maturity, increased risk of preterm labour, and the need for timely decisions regarding delivery.[2,5] While severe burns in pregnancy have been reported more frequently, evidence guiding the management of moderate-severity burns remains limited.[5]

Evidence from tertiary care centres suggests that early referral, multidisciplinary management, and structured maternal–fetal monitoring significantly improve outcomes in pregnant burn patients.[1] However, standardized protocols regarding timing and mode of delivery in late pregnancy remain lacking, necessitating individualized clinical decision-making. This case report aims to contribute to the limited literature on third-trimester burns managed in a tertiary care setting.

CASE REPORT

A 21-year-old booked antenatal patient belonging to a lower middle–socioeconomic background, gravida 3 para 1 living 1 abortion 1 (G3P1L1A1), with a history of one previous lower segment caesarean section, presented at 36 weeks of gestation with accidental flame burns sustained while cooking at home. The patient had no known medical comorbidities.

On admission, the patient was conscious, oriented, and hemodynamically stable. Clinical examination revealed superficial burn injuries involving approximately 20–25% of the total body surface area. The burns primarily involved the upper limbs and trunk. There was no involvement of the face, airway, or perineum, and no clinical evidence of inhalational injury.

Management was guided by the fundamental burn care dictum that maternal stabilization is the priority, as fetal outcome is directly dependent on maternal physiological status. Initial assessment followed standard trauma principles with attention to airway, breathing, and circulation. Fluid resuscitation was initiated using crystalloid solutions, guided by urine output and hemodynamic parameters, in line with standard burn management principles. Adequate analgesia was provided, and strict aseptic wound care was maintained. Obstetric evaluation revealed a singleton live intrauterine pregnancy corresponding to gestational age, with reassuring fetal heart rate patterns. Routine laboratory investigations were within normal limits.

Blood investigation showed haemoglobin of 13.0 g/dl, with normal total, differential blood counts, platelets count, renal function test, liver function test, and blood sugar levels.

In view of advanced gestational age, previous caesarean section, and the need to facilitate optimal maternal burn management, a decision was made for emergency lower segment caesarean section following adequate stabilization. The procedure was performed on the day following admission under multidisciplinary supervision involving obstetrics, surgery, anaesthesia, and neonatology.

A healthy female neonate weighing 2.4 kg was delivered, with an APGAR score of 8 at birth and baby cried immediately after birth. The postoperative period was uneventful. There were no maternal or neonatal complications, and the neonate did not require neonatal intensive care. Both mother and baby were discharged in stable condition.

Figure 1: Burns injury involving thigh.

Figure 2: Burns injury including hands.

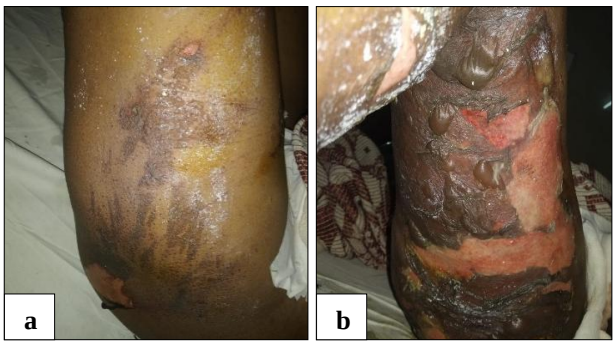

Figure 3 (a and b): Burns injury involving bilateral thigh.

DISCUSSION

Burn injuries during pregnancy represent a complex clinical entity in which maternal physiological adaptations, fetal viability, and burn severity interact to influence outcomes. Maternal stabilization remains the cornerstone of management, as fetal survival is closely dependent on maternal hemodynamic stability and metabolic status.[3,4,9] Several studies emphasize that early initiation of structured burn management protocols significantly improves both maternal and fetal outcomes.[1,7,10]

The fundamental dictum in the management of burns during pregnancy is that maternal stabilization must take precedence, as fetal survival is closely linked to maternal hemodynamic and metabolic stability. Standard burn management protocols, including early fluid resuscitation, infection prevention, and meticulous wound care, form the cornerstone of treatment, even in pregnant patients. These principles have been consistently emphasized across observational studies and systematic reviews, which highlight that adherence to protocol-based burn care significantly improves maternal and fetal outcomes when implemented in a tertiary care setting.[5,7,10]

The extent of burn injury and gestational age are well-established prognostic factors. Sarkar et al. demonstrated that maternal and fetal morbidity increases with higher total body surface area (TBSA) involvement, while moderate burns managed promptly at tertiary centres were

associated with good outcomes.[1] Similar observation were reported by Mishra et al, who noted improved fetal survival in cases with TBSA involvement below 30% and early presentation.[8] The present case involved moderate-severity burns (20–25% TBSA), aligning with these findings.

Burns occurring during the third trimester pose additional challenges due to advanced fetal maturity, increased risk of preterm labour, and the need to determine the optimal timing of delivery. Seyedzadeh et al reported that pregnancies beyond fetal viability may benefit from delivery after maternal stabilization, particularly when continuation of pregnancy may compromise maternal recovery.[3] Habibie and Kurniaputra similarly described successful maternal and neonatal outcomes following timely delivery in late pregnancy.[2] Decisions regarding timing and mode of delivery remain individualized, as highlighted in the systematic review by Dijkerman et al, which emphasized the lack of standardized guidelines and the need to tailor decisions based on gestational age, burn severity, and maternal condition.[5] In the present case, elective lower segment caesarean section was chosen due to advanced gestation, previous caesarean delivery, and the need to facilitate uninterrupted maternal burn care.

The importance of multidisciplinary management in tertiary care centres has been consistently emphasized in the literature. Nnadozie et al and Chfiri et al demonstrated that coordinated care involving obstetricians, surgeons, anaesthesiologists, and neonatologists significantly reduces maternal and fetal complications.[4,9] Similarly, Mabrouk et al, in a recent follow-up case series, reported improved outcomes in pregnant burn patients managed using protocol-based care and timely obstetric intervention.[7]

Comparison with cases of severe burns in pregnancy further highlights the impact of burn severity and early intervention. Pflaum et al reported increased maternal and fetal complications in cases involving extensive TBSA burns and delayed stabilization.[6] In contrast, the favourable outcome in the present case underscores the role of moderate burn severity, early presentation, and adherence to standard burn management principles.

Overall, this case adds to the limited body of literature on moderate-severity burns in third-trimester pregnancy by demonstrating that favourable maternal and neonatal outcomes can be achieved through early stabilization, protocol-based burn management, individualized obstetric decision-making, and multidisciplinary care in a tertiary care setting.

CONCLUSION

Burn injuries during late pregnancy pose significant clinical challenges due to competing maternal and fetal priorities. This case demonstrates that moderate-severity burns in the third trimester can be successfully managed with early maternal stabilization, multidisciplinary care, and appropriately timed caesarean delivery. Management in a tertiary care setting played a crucial role in achieving favourable maternal and neonatal outcomes.

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