

## PREGNANCY WITH BURNS

MADHU JAIN ● SADHANA GUPTA ● PRADEEP JAIN ● J.K. SINHA.

### SUMMARY

Generally, pregnancy with burns is an uncommon clinical situation. Out of 236 women with burns, 25 pregnant women sustained burns ranging 25% TBSA to 98% TBSA. Only 52% of these burned mothers could be saved. The foetal loss amounted to 68% (Abortions - 48%, still births, 20%). Percentage total body surface area burned had strong association both with maternal mortality and foetal outcome. No mother died of burns with < 30% TBSA involvement, and delivered safely. Gestational age at time of burns also influenced foetomaternal outcome in our series. All Foetal losses took place within 10 days post-burn.

### KEY WORDS

TBSA - Total body surface area;

DFMR - Daily foetal movement recording

CTG - Cardiotocography

### INTRODUCTION

Burns in pregnancy are uncommon rather than rare. It can occur at any time and usually at home by flame and hot liquids. While minor burns are treated as outpatients with proper wound care, pregnant women with > 15% total body surface area

(TBSA) burned pose a special challenging problem. Till now, information about extensive burns during pregnancy is very limited. Therefore, in the present study, an attempt has been made to find out foetal and maternal outcome in 25 pregnant patients burns. It is also essential to prepare the patients and their family members for any untoward eventuality like abortion, still births, premature delivery, impaired foetal growth, or malformation.

### OBJECTIVES

The present study was undertaken with following objectives in mind :

*Dept. of Obst & Gyn. and Div. of Plastic Surgery  
Institute of Medical Sciences Banaras Hindu University,  
Varanasi.*

*Accepted for Publication on 17.1.1995*

1. To find out the incidence of Pregnancy with burns.
2. Maternal mortality and foetal outcome in women with burns.
3. To find out correlation, if any, between % TBSA burns and foetomaternal outcome.
4. To find out any relation between gestational age - at burn and foetomaternal outcome.

#### PATIENTS AND METHODS

A total of 236 female patients ranging in age from infancy-65 years were treated in the Burn unit over four years (March 1989 - Feb. 1993). Twenty-five of these patients were pregnant at the time of admission. All sustained flame burns while cooking on kerosene stove or LPG, or while handling an open kerosene lamp.

The patients were resuscitated as usual along the standard line of management. Prophylactic antibiotic (Cefotaxime) and

Tetanus prophylaxis were administered to all. Skin grafting was done under light plane of Anesthesia about three weeks postburn after separation of slough in 15 patients. Five patients with superficial second degree burn healed spontaneously in 3-4 weeks. The remaining five died within a week of admission before any surgical intervention could be done. The patients with < 34 weeks of gestation were operated under cover of Isoxsuprine (Duvadilan), which continued in the postoperative period. Foetal growth and well-being were assessed in all patients clinically and by DFMR, CTG, and Biophysical profile. Foetal outcome was recorded in form of spontaneous abortion, still births, birth weight preterm labour, and gross malformations among newborn.

#### RESULTS

Out of 236 women admitted with burns 25 were pregnant (10.5%). However, the incidence in the reproductive age group

**Table I**  
**Age Distribution of Female Patients with burn (1989-93)**

Age (yrs)	No.	%
1 - 18	72	30.5
19 - 45	152	64.4
> 45	12	5.0
Total	236	99.98

Pregnancy with burn 25 (10.5%)  
Reproductive age group - 16.4%

was 16.4% (Table - I).

Face, neck, and the extremities were the commonly involved sites. Lower abdomen and perineum were burned only in four pregnant women with > 50% TBSA burn.

Twelve out of twenty five (48%) pregnant women with burns died with increased risk of foetal loss - abortion 12 (48%) and still births, 5 (20%). No women died with < 30% TBSA burn. Maximum maternal mortality (88.8%) was associated with > 50% TBSA burn (Table - II).

There was also an increase in stillbirths and abortions with an increase in % TBSA burn. While < 30% TBSA burn was not

associated with any pregnancy loss, all twelve abortions and five stillbirths occurred when burned area in mothers exceeded 30%. No full term alive baby was born when the burned area was beyond 50% ( Table II).

8 full term alive babies had birth weight varying from 2 Kg to 2.6 kg. (Average birth weight 2.3 kg). No congenital abnormality could be detected in any one of them. All were vaginal deliveries. P.P.H. was noticed only in septicaemic cases requiring curettage in three.

A positive correlation was also found between gestational age and maternal mortality (Table - III). Out of 8 pregnant

Table II

Relation between percentage TBSA Burn & Prognosis

TBSA Burn	PROGNOSIS					
	Pregnant Women			Foetuses		
	Cases	Lived	Died	Abort. Birth	Still	FT
<30 (%)	4	4 100	-	-	-	4 100
30-50 (%)	12	8 66.6	4 33.3	6 50.0	2 16.6	4 33.3
>50 (%)	9	1 11.1	8 88.8	6 66.6	3 33.3	-
Total (%)	25	13 52.0	12 48.0	12 48.0	5 20.0	8 32.0

Table III

## Relation between Gestational age at Burn and Prognosis

Gestational Age	PROGNOSIS					
	Pregnant Women			Foetuses		
	Cases	Lived	Died	Abort. Birth	Still	FT
1st Trimester (%)	5	3 60.0	2	3	-	2 40
2nd Trimester (%)	12	8 66.6	4 33.3	9 75.0	1 8.3	2 16.6
3rd Trimester (%)	8	2 25.0	6 75.0	-	4 50.0	4 50.0
Total (%)	25	13 52.0	12 48.0	12 48.0	5 20.0	8 32.0

women with burn in third trimester, 6 died (75% mortality) with 4 still births from preterm labour (50%). The exact time of foetal loss was difficult to find but all were expelled within 10 days of burn.

#### DISCUSSION

As the likelihood of spontaneous labour increases after burn injury, the possibility of pregnancy must be considered in every burned woman of reproductive age group. Burns during pregnancy needs a special

care and attention. It assumes greater significance now a days as we are not only concerned about maternal survival but also with improved foetal outcome under safe motherhood programme.

The incidence of pregnant women with burn injuries has been variously reported in world literature (7-7.9%) by various authors (Matthews, 1982; Srivastava and Bang 1988; Gang et al., 1992). The incidence of pregnancy with burn, 10.5% in our study shows that it is really not rare in this part of

our country. Socioeconomic status, and illiteracy may influence its occurrence.

Some feel that survival rate of burned, pregnant patients is same as that for other burned patients of same age and burn extent (Zhang and Zhang 1980; Gang et al., 1992). However, we found 48% maternal mortality, 8% more than in nonpregnant group. Takkar and Gupta (1978) from New Delhi, India also reported 42.5% maternal mortality among pregnant ladies with burn compared to only 29% among non-Pregnant women.

It requires very close observations of both mother and the foetus. Ultrasonography should be carried out, daily if feasible, for first ten postburn days as the foetal loss in all out 17 cases occurred within that time limit. Zhang and Zhang (1980) reported all abortions and still births in first post-burn week Rayburn et al. (1984) reported spontaneous vaginal delivery within five days after burn in 75% of the cases of foetal death. Srivastava and Bang (1988) also agreed that most foetal complications occur in first post-burn week. Gang et al. (1992) reported most of the intrauterine deaths within 132 hours.

Maternal mortality in our patients rose with the increase in % TBSA burn. The adverse effect of % TBSA burn on maternal survival is acknowledged almost by all (Zhang and Zhang, 1980); Rayburn et al., 1984; Srivastava and Bang 1988. Gang et al., (1992), report similar survival rate in pregnant and non-pregnant women with similar burned TBSA.

Whereas, Zhang and Zhang (1980) and Gang et al. (1992) are of the opinion that gestational stage has no direct bearing on prognosis, 75% of our pregnant burned patients in third trimester died. Rayburn

et al. (1984) also share our opinion.

From the moment of thermal trauma to the mother, the foetus has to fight against detrimental factors like hypovolaemia, hypoxia, acidosis and electrolyte imbalance together with sepsis all of which can lead to foetal distress and spontaneous uterine contractions.

As the gravid uterus and foetoplacental unit are considered less preferred circulatory sites, hypovolaemia and hypotension may lead to acute ischaemic changes in the placenta resulting into foetal hypoxia and acidosis (Taylor, 1979). Foetal hypoxia may also result from acute maternal respiratory insufficiency.

Prostaglandin E<sub>2</sub>, liberated from the burned tissue, bacteria, or from the membranes as a result of infection, may also cause premature labour in pregnant burned women. Therefore, it is essential to prevent sepsis in such cases. State (1973) opined that a lethal lipoid protein complex produced as a result of thermal injury is most likely the aetiologic factor responsible for poor outcome of the foetus in severely burned patients.

Intrauterine death, abortion and premature labour are the most common foetal complications, which in our study are influenced by % TBSA burn mothers. Rayburn et al. 1984; Benmeir et al. (1988) and Srivastava and Bang, 1988 also share the same view. Whereas we came across foetal loss in 68% of pregnant women with burn, much less foetal mortality has been reported by others (Zhang and Zhang, 1980 - 29%; Rayburn et al. 1984 - 40%. Benmeir et al, 1988 - 37.5%, Srivastava and Bang, 1988 - 25%, Gang et al. 1992 - 31%. This could have been due to greater number

of patients with extensive burn in our series (9, >50%), and poor transport facilities resulting into delay in fluid resuscitation. Increased foetal loss with advancing gestation as reported by us is also supported by Zhang and Zhang (1980).

#### CONCLUSION

Pregnancy with burn carries a high maternal mortality and morbidity with increased risk of foetal loss. Therefore, it is mandatory to rule out pregnancy in every burned women in reproductive age-group. A team approach is essential and a close monitoring of both mother and foetus is required. Maternal total body surface area burned and gestational age, both influence the foetomaternal outcome. By increasing the age of marriage, proper burn education, use of safety guards while cooking, immediate hospitalization, con-

trol of sepsis, and surgical intervention whenever needed can decrease foetomaternal mortality and fulfill the goal of safe motherhood programme.

#### REFERENCES

1. Benmeir P, Sagi A, Greber B, Bibi C, Hauben D, Rosenberg L, Ben-Yaqar Y, and Mahler D, *Burns* 14 : 233, 1988.
2. Gang R. K., Bajec J, and Tahboub M., *Burns* 18 : 317, 1992.
3. Matthews RN. *Brit J. Obstet. Gynec.* 89: 603, 1982.
4. Rayburn, W, Smith B, Feller I, Varner M, and Cruikshank D. *Obstet. Gynec.* 63: 392, 1984.
5. Srivastava S, and Bang RL., *Burns* 14 : 228, 1988.
6. Stage A.M. *Obstet. Gynec.* 42 : 259, 1973.
7. Takkar KL, and Gupta JU., *Ind. J. Plastic Surgery* 11 : 36, 1978.
8. Taylor J. : *Thermal buns, Trauma in Pregnancy*, 1979. p. 128, Editor H. Buchsbaum, Philadelphia, Saunders.
9. Zhang ZB and Zhang YJ., *Burns* 8 : 286, 1980.