# PREGNANCY AND BURNS

by

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The obstetrician philosophically accepts his passive role in the management of pregnant women with burns. The only role that he plays is to wait quietly till the pregnant woman with burns either aborts or delivers prematurely. No serious attempt is made to study the pathophysiology of the burns in relation to the uterus and the placenta. Is it possible to prevent the woman from aborting or going into premature labour? The literature is very scant on this aspect of burns and pregnancy. Mulla, Anson, Schmitz have published their experience with cases of burns in pregnancy.

The pregnancy causes an increase in the circulating blood volume by about 30 per cent and it also raises the levels of corticosteroids. It is true that the increase in the blood volume during pregnancy is in blood volume during pregnancy is mainly diverted to foeto-placental unit and therefore there is no effective increase in the blood volume for general circulation. One would expect that a pregnant woman would be better prepared to withstand burns as compared to the non-pregnant woman because of higher levels of corticosteroids. She should be able to withstand the shock due to fluid loss in burns much better. The purpose of the present communication is to find out the effect of burns in the pregnant woman. We have included only burns due to fire only. Burns due to acids, chemicals and electricity are excluded.

## *Material and Methods*

Pregnant women with burns admitted in Shree Sayaji General Hospital from 1967 to 1971 (five years) are studied. They are analysed in relation to age, parity, duration of gestation, severity of burns and the outcome of pregnancy. The obstetrical complications are studied. The S. S. G. Hospital being the only big general hospital, all cases of burns are usually admitted here.

TABLE I

*Pregnancy and Burns—Incidence and Mortality*

| Cases | Males | Females | | Children |
|---|---|---|---|---|
| | | Pregnant | Nonpregnant | |
| Total cases .. | 577 | 28 | 841 | 493 |
| Mortality .. | 64 | 20 | 436 | 54 |
| | 11% | 71.4% | 51.9% | 11% |

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## *Analysis and Discussion*

Table I shows the cases of burns in men, women and children. It shows that the incidence of burns is very high in

women as compared to men and children. The mortality due to burns is also very high in women as compared to men and children. However, among women, pregnant women have a higher mortality due to burns as compared to non-pregnant women. In Gujarat, homicidal and suicidal burns are more common in females than in males. The saree that Gujarati women put on as their dress also is conducive to the accidental burns. Pack also agrees that three out of five deaths from burns are in women. Pack does not make any mention of the effect of pregnancy.

Majority of the women were in the age group of 21-30 years (22/28 women). It should be so because pregnancy is more common in that age group. There were five primigravidae, nine were second gravidae and 14 were of parity more than three. Twenty-one women were in the second trimester of pregnancy and seven were in the third trimester.

Table II shows the outcome of burns. All the six women who had burns less than 30 per cent survived. Only two women out of nine with burns between 30-50 per cent survived. All the 13 women with burns more than 50 per cent died. This is consistent with the general observation that the mortality increases with the percentage of the skin area that is burnt.

Table III shows the outcome of pregnancy in relation to the duration of gestation. All the 8 women with duration of gestation 11-20 weeks, aborted and then died. On the whole 17 women either aborted or went into premature labor. Six women died undelivered and only five women continued the pregnancy. Out of the five who continued the pregnancy, three delivered live and healthy babies and two had full term stillbirth.

Table IV gives the details about the interval between burns and the abortion or premature labor. Nine aborted or deli-

TABLE II

*Pregnancy and Burns—Outcome in Relation to Percentage of Burns*

| Percentage of burns | Living | Dead |
|---|---|---|
| Upto 30 .. .. | 6 | — |
| 30-50 .. .. | 2 | 7 |
| 51 + .. .. | — | 13 |

TABLE VI

*Pregnancy and Burns—Interval Between Burns and Abortion/delivery*

| Duration | No. of patients |
|---|---|
| Upto 24 hours .. .. .. | 3 |
| 25-48 hours .. .. .. | 4 |
| 49-72 hours .. .. .. | 2 |
| 3-5 days .. .. .. | 6 |
| More than 5 days .. .. | 2 |

TABLE III

*Pregnancy and Burns—Outcome in Relation to Gestation*

| Duration of gestation in weeks | Died | | Alive | |
|---|---|---|---|---|
| | Aborted/deliv. | Undeliv. | Aborted/deliv. | Cont. preg. |
| Upto 10 .. | — | — | — | — |
| 11-20 .. .. | 8 | — | — | — |
| 21-30 .. .. | 4 | 5 | — | 4 |
| 31-40 .. .. | 2 | 1 | 3 | 1 |
| Total .. .. | 14 | 6 | 3 | 5 |

vered prematurely within 72 hours after burns.

One patient had retained placenta after premature labor and she died. One patient needed low midcavity forceps. There is difficulty in giving the lithotomy position to these patients. If the burns are on the anterior abdominal wall, palpation of the foetus and auscultation of the foetal heart is difficult. The progress of labor is thus difficult by abdominal examination alone. The fall of blood pressure disturbs the placental circulation and may bring about foetal anoxia and death. The absorption of the toxic products of the dead skin is likely to induce uterine activity. The cause of premature onset of labor is variously described. Tica (1969) believes that there is increase in serotinin levels in blood and it causes the premature onset of labor. Mulla (1958) believes that in burns there is greater loss of plasma. Plasma contains pitocinase which prevents labor. The loss of plasma containing pitocinase triggers the release of posterior pituitary hormone. The recent evidence postulates the release of prostaglandin-like substances from the infused skin as the cause of onset of labor. Anggard and Johnson (1968) found that scalded dog's paw released a substance in the peripheral lymph. This substance was identified as prostaglandin $E_2$. Human skin from fresh surgical specimen has also shown the capability of producing large amount of prostaglandin $E_2$ after scalding. The mechanism of prostaglandin release is explained as follows. The injured skin brings about release of phospholipases. Those phospholipases act on the phospholipids of the cell membrane to cause local concentration of poly unsaturated fatty acid. These poly unsaturated fatty acids are known precursors of prostaglandins.

If one believes that release of prostaglandin as the cause of premature onset of labor, it should be possible to prevent the onset of labor. It is known that progesterone blocks the effect of prostaglandin $E_2$ and so administration of progesterone to a pregnant woman with burns may prevent the onset of labor. Unless the woman is already full term at the time of burns, the babies are usually small and so there is little risk of obstructed labor. If a pregnant woman with burns on the anterior abdominal wall needs a caesarean section for central placenta previa or contracted pelvis, it would pose special problem.

Hunt (1881) reported an instance of a fatal burns in a pregnant woman who on the second day after burning, gave birth to a dead infant who was blistered and otherwise marked in extent and places corresponding exactly to the burns of the mother. Asherton (1927) reports continuation of pregnancy after severe burns which required amputation of both legs. Schmitz (1971) reported six cases of burns in pregnancy. All these women survived. He concludes that burns less than 10-15 per cent have no effect on pregnancy. Pregnancy did not have harmful effect on burns in his cases.

Cases of severe burns are usually admitted in the surgical wards or special burns ward. If they abort or go into premature labor, no special obstetric treatment is called for except maintaining blood pressure, circulating blood volume, administration of oxytocin to prevent postpartum haemorrhage, and to prevent infection. The pregnancy could be continued if the uterine activity is controlled by progesterone and foetal circulation maintained by adequate quantity of maternal blood volume. This should prevent foetal death. If a live child is born, breast feeding would be difficult because

of burns and so the child should be given top feeds.

Prevention of infection through the burnt area is a great problem. It is difficult to maintain the burnt area sterile. The treatment of burns is a problem which concerns the surgeon.

*Summary and Conclusions*

1. It is a study of 28 cases of burns in pregnancy.

2. Seventeen women aborted or delivered prematurely. Only three women delivered live and healthy babies.

3. Six mothers died undelivered. Totally 20 women died, mortality of 71 per cent.

4. Obstetrical complications and problems in the management are discussed.

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