DISCUSSION
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A women in labour poses one of the most critical of all problems to the Anaesthetist. The hazard of two lives has to be considered and either or both of these may already have been jeopardised by disease or abnormal labour.

There are two special feature of anaesthesia in obstetrics. First, the mother and her unborn child share the same anaesthetic. Second, maternal deaths associated with anaesthesia are peculiarly tragic.

With this in mind the present study was conducted on 55 parturients undergoing LSCS, to assess the efficacy of the existing anaesthetic facilities in this hospital as far as the maternal and fetal well being are concerned.

Anaesthesia and the mother

The maternal well being during the study was assessed by the changes in pulse and BP as also the degree of blood loss.

A.G. Davis (1982) reported that G.A. was the prominent cause of maternal deaths most of which were due to aspiration or hypoxic cardiac arrest associated with failed or difficult in intubation.

All precaution were taken in the present study to avoid the latter two causes of maternal mortality so that no such catastrophe occurred in groups I & II.

Although there was some degree of insignificant fall in the systolic blood pressure in all the groups (33.33% in grps I & II 53.33% in group III & 26.66% in group IV - Table - IV), this fall except in one case in grp I & one in grp III could well be explained on the basis of the elimination of labour pain and apprehension on part of the mother.
One case each in groups I, III and IV had serious fall in blood pressure which were effectively treated by fast I/V fluid, oxygenation and left lateral tilt and vasopressor.

Similarly the pulse rate also showed considerable stability ranging between 60 - 120/min. Although there was some fluctuation from the initial reading during intubation or delivery but on the whole it remained quite stable.

It is generally accepted that maternal hypotension adversely affects the neonate by causing foetal depression and has to be avoided at all costs. Many workers (Gaudell 1965), Wollman & Marx (1968), have advocated prehydration in the prevention of maternal hypotension during caesarean section. Cosni and Marx (1969) compared prehydration with therapeutic hydration in the prevention of hypotension and found the former to be more effective than the latter.

This compares favourably with our results, where all the patients were prehydrated with 1000 ml of Ringer's Lactate, and only 3 patients showed profound fall in their blood pressure.

Patients given G.A. appeared to have consistently more blood loss than those given regional blocks. It was found that blood loss in grp I & II ranged between 700 ml to 1000 ml where as in grp III & IV it was between 400 ml to 700 ml only one case in grp I had blood loss more than 1000 ml.

The exact cause of this disparity is not clearly understood although Moir DD (1970) believes that inhalational anaesthetics inhibit uterine contraction after delivery and cause more haemorrhage.
Anaesthesia and the Neonate

Anaesthesia administered to mother before delivery affects the foetus in two ways:

1. Foetal central nervous system depression which may follow transfer of drugs across the placenta.

2. Foetal acidosis may develop secondary to impairment of placental perfusion of maternal hypoxia.

The first factor is intrinsically associated with prolonged general anaesthesia while the second factor constitutes a preventable complication of spinal analgesia.

In the present study 30 cases out of total of 55 cases were administered general anaesthesia: 15 cases were given general anaesthesia with controlled ventilation and 15 cases with spontaneous ventilation the technique used was the standard technique which is most commonly used these days: pre-oxygenation for 3 - 4 minutes increases the oxygen saturation and oxygen content of maternal blood and hence indirectly that of foetal blood. This prevents the possible occurrence of oxygen lack when the patient is being intubated especially if intubation is difficult. Any degree of hypoxia during induction raises the possibility of intrauterine asphyxia of the baby (Donald, 1954).

In this series all the patients were pre-oxygenated to avoid any hypoxia. Standard technique of balanced anaesthesia was used consisting of induction by thiopentone followed by suxamethonium - endo - tracheal intubation and this anaesthesia was maintained on nitrous oxide and oxygen mixture till the delivery of the foetus. This technique is believed to cause least foetal depression (Hodges et al., 1961, Hartridge et al., 1963, Crawford, 1966).

Hyperventilation and excessive inflatory pressure were avoided.
since maternal alkalosis thus produced may cause foetal hypoxia (Holmen, F. 1963). 15 cases of general anaesthesia were kept on controlled ventilation by giving repeated doses of suxamethonium till the caesarean gets over.

Maternal Hypotension was prevented in cases of spinal analgesia by infusing 540 ml of 5% Dextrose and sodium chloride within 30 minutes before giving the block. This method of infusing 1000 ml of Ringer's lactate before giving a block was suggested by Greiss and Crandell (1965), Wollman and Marx (1968). Only one case of spinal analgesia group developed hypotension in which systolic blood pressure came down up to 68 Torr. It was treated with fast intravenous infusion and vasopressor.

Clinically nearly all the infants in our study were vigorous and in good condition immediately after delivery. Only six infants were having Apgar score of 6 at 1 minute and 2 of them having Apgar score of 7 at 5 minutes. Mean Apgar score of newborn at 1 minute in group I 7.6 and in group II i.e. 7.8 - which was less than the spinal and epidural group which was 8.6 and 8.1 respectively, but there was no statistically significant difference between the four anesthetic techniques used on the basis of Apgar score. Mean Apgar score at 5 minutes was 9.2 and 9.3 in general anaesthesia group I & II respectively and 9.6 in both spinal and epidural group.

These data suggest that if properly conducted none of these four techniques in anaesthesia have significant depressant effect on neonates. Downing et al (1979) also found no difference in clinical and biochemical status of newborn when he compared conduction block and general anaesthesia for caesarean section.
Although it is the simplest and quickest method of assessment of well being of newborn, reliance on the Apgar score as the sole criterion of neonatal well being or as the sole index of potential effects of perinatally administered drugs was never intended (Apgar, 1953 Apgar and James, 1962) nor does it seem justifiable today in view of the increased sophistication of our knowledge of the complexity of newborn behaviour (Scanlon, 1973 Brazelto (1973). In the present study therefore more complex tests for newborn behaviour were applied to study the effect of agents and technique of anaesthesia used for caesarean section.

Study of lignocaine used for regional analgesia in healthy mothers with full term infants have shown that the motor performance of the newborn is initially depressed for about 12 hrs (Scanlon, 1974) After the age of 1 day, however, there was no difference in the study of Tronick et al (1976). We found a trend to greater depression of rooting and sucking reflexes lasting to 2 days of age. (Hollman et al 1978).

Most commonly used reflexes and the most sensitive indicators of neonatal depression are those related to feeding, namely rooting and sucking. Performance of these was significantly depressed in infants whose mother developed hypotension before delivery.

A severe long lasting decrease in maternal blood pressure can lead to decreased intervillous blood flow, foetal hypoxia and hypotension, decreased cerebral perfusion and neonatal insults (Myers, 1972). In one of our case No 3 Table 10 there was post spinal hypotension, which added to the normal obstetric stress factors acting on the foetus. The chronic decrease in placental blood flow caused by diabetes added to the acute maternal
hypotension could explain the neurologic abnormalities in infants (Case No 10) Table X.

It was observed that even short lived maternal hypotension alone resulted in neurologic abnormalities (Case No 45). This finding was in contrast to that observed by Rorke et al. (1982) who found that a short period of hypotension does not affect the neurobehavioural well being of the neonate.

Chronic antenatal stresses such as diabetes, pregnancy induced hypertension which decreases placental blood flow during late pregnancy, combined with the acute stress of abdominal delivery, seem to depress the neurologic activity of an infant. In our study all infants of high risk obstetric patients showed abnormal neurologic recovery independent of anaesthetic technique where as infants of mothers with no complicating factor generally did well. These finding are similar to those of Hollman et al (1978).