

CLINICAL STUDY ON FOETAL HYPOXIA IN RELATION TO CAESAREAN SECTION

by
PRASUN KUMAR PAL
and
JAGABANDHU MITRA

SUMMARY

Incidence of foetal distress alone as an indication of Caesarean section was in 38.5 per cent of cases. Perinatal mortality rate in foetal distress where Caesarean section was done was 93 per thousand. Severity of foetal hypoxia was more noticed in elderly patients. In postdated pregnancies foetal hypoxia was more severe. Severity of foetal hypoxia was more in babies of lower weight group.

Hypoxia score increases proportionately with lowering of Apgar score and 73.3 per cent of neonatal deaths had Apgar Score below 5 and Hypoxia score 8 or above.

Amongst the signs of foetal hypoxia, tachycardia in 80 per cent, irregular rhythm in 53.1 per cent and meconium in the liquor in 71.2 per cent were found.

Introduction

The aim of modern obstetrics is mostly oriented in such a fashion as to bring about the foetal salvage to a desired level. Although the maternal mortality and morbidity are in the decline, yet due to various reasons the perinatal loss could not be reduced to the minimum, specially the still birth rate; and according to Wood and Pinkerton (1961) this has remained unchanged since 1948. He also stated that by careful observation and management of

these cases the obstetrician has endeavoured to reduce the number of still births, and with the diminished risks of caesarean section in recent years he has often performed this operation for foetal distress.

So although it is difficult to assess properly, yet our main object of study is to see how much foetal hypoxia develops in cases where caesarean sections are performed due to various reasons.

Material and Methods

Cases were collected from the department of Obstetrics and Gynaecology, S.S.K.M. Hospital, Calcutta during the 3 year period from April 1968 upto March 1971. During this period, caesarean sec-

From: Baranagar State General Hospital and Department of Obstetrics and Gynaecology, Institute of Post Graduate Medical Education and Research, S.S.K.M. Hospital, Calcutta.

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tions were performed in 831 cases. Out of these 320 caesarean sections were done solely for foetal indications.

Besides careful history of the patients, special notes were kept regarding the condition of the liquor amnii in cases where

(a) foetal heart rate—tachycardia, above 160/minute or bradycardia, below 110/minute, (b) arrhythmicity of foetal heart, (c) abnormal foetal movement, (d) condition of liquor amnii; and a new method of scoring to judge the degree of hypoxia was done as follows:

Sign.	0	1	2
Heart rate	110-160	More than 160	Less than 110
Rhythm	Regular	Occasionally irregular	Irregular
Foetal movement	Normal	Excessive	Diminished
Character of liquor	Clear	Lightly stained	Thickly stained
Associate maternal hypoxia	Nil	Mild	Severe

the patients were in labour and the membranes were ruptured. The cases where induction of labour was given were also noted.

Before the birth of the baby the following parameters were taken into consideration to diagnose foetal hypoxia, viz.

The score below 5 indicates mild hypoxia, between 5 to 7 moderate hypoxia, and 8 or above—severe hypoxia.

After the birth of the baby main stress was given on 'Apgar' score; and autopsy was done in dead babies.

Apgar score was below 5 in (21.8%),

TABLE I
Analysis of Indications Where Caesarean Sections Were Done

Causes	Foetal distress	Maternal indications	Both	Total
1. Accidental haemorrhage	4	4	2	10
2. Placenta praevia	62	16	70	148
3. P. E. T.	100	—	48	148
4. Post maturity	8	—	—	8
5. Essential hypertension	10	12	8	30
6. Diabetes	7	—	—	7
7. Rh-iso-immunisation	6	—	—	6
8. Cord prolapse	3	—	—	3
9. Post C.S. pregnancy	—	125	60	185
10. Cephalo-pelvic disproportion	—	108	32	140
11. Abnormal uterine action	28	—	—	28
12. Multiple pregnancy	2	—	—	2
13. Malpresentation	90	—	—	90
14. Others	—	16	10	26
Total	320	281	230	831

Foetal distress alone was the indication for caesarean section in 38.5% of cases.

TABLE II
Factors for Judging Foetal Hypoxia Clinically Before Birth

	110-160 per minute	More than 160/min.	Less than 110/min.
(a) Altered heart rate	14 (4.3%)	256 (80%)	50 (15.6%)
(b) Altered Rhythm	Regular 150 (46.8%)		Irregular 170 (53.1%)
(c) Abnormal move- ments	Normal 175 (54.6%)		Excessive 145 (51.5%)
(d) Meconium in liquor	Clear 92 (28.7%)	Mild 132 (41.2%)	Severe 96 (30%)

Tachycardia (80%), irregular rhythm (53.1%), meconium in the liquor (71.2%) were found in 320 cases of foetal distress.

TABLE III
Distribution of Cases of Foetal Hypoxia in Re-
lation to Apgar Score and Neonatal Death

Score	No. of cases %	Neonatal death %
Below 5	70 (21.8)	22 (73.3)
5-7	225 (70.3)	8 (26.6)
8 or above	25 (7.9)	0

5 to 7 in 70.3% and 8 or above in 7.9% of cases; 73.3% of neonatal death were from the below 5 group.

Hypoxic score was 8 or above in

TABLE IV
Distribution of Cases of Foetal Hypoxia in Re-
lation to "Hypoxic Score" and Neonatal Death

Score	No. of cases %	Death %
Below 5	12 (3.7)	Nil
5-7	236 (73.7)	8 (26.6)
8 or above	72 (22.6)	22 (73.3)

22.6%, 5 to 7 in 73.7% and below 5 in 3.7% of cases; 73.3% of neonatal death were from the 8 or above hypoxic score

group.

TABLE V

Autopsy Findings in 30 Neonatal Deaths From Foetal Hypoxia

	No. of cases	Per cent
I. Asphyxial haemorrhage on pleura	30	100
II. Meconium in airway	10	33.3
III. Sub-arachnoid haemorrhage	5	16.6
IV. Others	3	10

Asphyxial haemorrhage on pleura was present in 100% of neonatal deaths.

TABLE VI
Correlation of Foetal Hypoxia With the Age of the Patients

Age in years	No. of cases	No. of foetal hypoxia		
		Mild	Moderate	Severe
Below 25	68	3 (4.4%)	67 (83.8%)	8 (11.7%)
25-35	204	7 (3.4%)	151 (74%)	46 (22.5%)
Above 35	48	2 (4.1%)	28 (58.3%)	18 (37.5%)

Comparatively severe hypoxia was more in patients aged 35 years or above (37.5%).

TABLE VII
Co-relation of Duration of Pregnancy With Foetal Hypoxia

Duration in weeks	No. of cases	No. of foetal hypoxia		
		Mild	Moderate	Severe
36 to 38	137	2 (1.4%)	104 (72.9%)	31 (22.6%)
39 to 40	175	10 (5.7%)	130 (74.2%)	35 (20%)
40 and above	8	Nil	2 (25%)	6 (75%)
Total	320	12	236	72

Severe foetal hypoxia was maximum in postdated pregnancy (75%).

TABLE VIII
Correlation of Baby Weight in Relation to Foetal Hypoxia

Weight in gram	No. of cases	Foetal hypoxia		
		Mild	Moderate	Severe
2,500 and less	112	5 (4.4%)	63 (56.2%)	44 (39.2%)
More than 2,500	208	7 (3.3%)	173 (83.1%)	28 (13.4%)
Total	320	12	236	72

Babies weighing 2,500 gm. or less, had severe hypoxia in (39.2%) in comparison to (13.4%) in babies weighing more than 2,500 gm.

Discussion

Menon (1964) after an extensive study concluded that for foetal distress alone, the incidence of caesarean section is gradually increasing. The same thing we have also noticed in our observation, where for better foetal salvage caesarean section had to be done in 38.5 per cent cases mainly for foetal distress. Dawkins *et al* (1961) are also of the same opinion that increased use of caesarean section has resulted in a satisfactory reduction of intra-partum asphyxia and foetal death.

In our observation we have found that the foetal heart sound is the most important and valuable criteria to assess the ante-partum foetal hypoxia, which also supports the view of Fitzgerald *et al* (1955) so far

as the meconium staining of the liquor is concerned. In the series of Wood and Pinkerton (1961), out of 55 still births in no less than 14 cases they found meconium in liquor. In our series we also found meconium staining of liquor in 71.2 per cent cases where the foetus was in distress condition showing the importance of examining liquor.

In support of Ginsburg and Gerstley (1965) neonatal mortality was more in lower Apgar group. The present findings of 73.3 per cent of babies died when Apgar Scoring was below 5. And in our new method of scoring as discussed earlier it has become more apparent that most of the fatalities depend on the degree of foetal hypoxia; where 73.3 per cent of foetus died when the score was 8 or above.

During autopsy, asphyxial haemorrhage on the pleura was almost a constant feature in our cases. Similar was the findings of other authors like Dawkins *et al* (1961).

It is an universally accepted fact that the placental insufficiency is most common in elderly patients. We in our series also found severe asphyxia in 37.5 per cent of cases where the mothers were above 35 years of age, as compared to earlier age group.

The question of duration of pregnancy and baby weight is an almost interrelated factor, because of prematurity all the vital centres are also premature. Consequently with lack of oxygen tension these babies behave badly as compared to the mature ones as also postulated by Walker (1959).

Postmaturity, like prematurity also carries the same risk to the foetus due to placental insufficiency as evidenced in the present work.

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