

PROLAPSE OF UMBILICAL CORD

by

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It is fortunate for the foetus that the incidence of cord prolapse is rare. No antenatal care can prevent it. By electronic foetal monitor one can guess cord complication, otherwise this complication occurs without warning and is always dangerous for the foetus.

In this paper 50 cases of cord prolapse are presented with a view to find out factors responsible for this complication and foetal outcome in cord prolapse.

Material and Methods

A retrospective study of 50 cord prolapse cases which occurred in 17,544 deliveries in Eden Hospital, Medical College, Calcutta from June 1977 to March 1979 was made. Factors responsible for cord

prolapse and management were studied. Foetal outcome has been studied from labour records and nursery records etc.

Incidence: In most of the text books incidence of cord prolapse has been stated to be 1 in 200-400 deliveries. In the present series it was 1 in 350 deliveries (i.e. 0.28%) lowest incidence (0.18%) has been quoted by Biskind (1958) and highest (0.62%) by Savage *et al* (1970).

Observation and Analysis

(1) *Age and Parity:* Table 1 shows the distribution of cord prolapse in different age and parity. From Table 1 it is observed that incidence is more in mothers above 26 years and mothers having more

TABLE I
Age and Parity (50 cases)

Age	P ₀ (7013)	P ₁ (4752)	P ₂ (2933)	P ₃ (1429)	P ₄ (1427)	Total
20 yrs. (3514)	5	0	4	1	0	0.28%
20-25 (11015)	6	8	5	5	1	0.23%
26-30 (2380)	1	3	0	2	3	0.37%
31 + (635)	0	1	0	2	3	0.94%
Total	0.17%	0.25%	0.3%	7.0%	4.9%	

(Figures in paranthesis indicates no. of deliveries).

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than 3 children are 16 times more susceptible to have cord prolapse than those with less parity. Savage *et al* (1970) are of the same opinion.

(2) *Presentation*: Table II shows the incidence of cord prolapse in different presentation in this series.

foetal loss" is nearly 20-30% less in 'booked' than in 'emergency' cases. Bock and Weise (1972) observed that in cephalic

TABLE II
Cord Prolapse in Different Presentation (50 cases)

Presentation	Vertex	Breech	Transverse	Compound
No. of cases	16737	603	157	47
No. of cord prolapse	27	11	3	9
% of cord prolapse	0.16	1.8	1.9	19.5

In this series incidence of cord prolapse was maximum in compound presentation. Fenton and D'Espo (1951) were of the same opinion. Savage *et al* (1970) showed that maximum incidence was in transverse presentation (7.1%) and breech (6.6%). Incidence as stated in various text books are 5% in flexed breech and 15% in transverse presentation. In this series incidence in breech and transverse presentation was nearly the same.

(3) *Other Factors*: Hydramnios, twins, contracted pelvis and surgical manipulation are some of the factors favouring cord prolapse. In this series, there was 1 case of cord prolapse in contracted pelvis and in 2 cases cord prolapse occurred after artificial rupture of membranes (one for hastening first stage of labour and one for accidental haemorrhage).

Foetal Outcome: Average incidence of foetal death in cord prolapse as quoted in most of the text books is over 25%. In this series, total perinatal death was 60% (38% died during delivery and 22% within seven days after delivery). In Morgan's (1948) series it was 40%. Goldthrop's (1967); Clark *et al* (1968) and Bock and Weise's (1972) series corrected perinatal loss was 10.7%, 16.8% and 1.5% respectively. Munro Kerr in his operative text book wrote "chance of

presentation delay by half an hour doubles foetal death. Rhodes (1959) suggested that it is the spasm of cord vessels, (not the cord compression) is responsible for foetal death during delivery and in the neonatal period due to prematurity and congenital anomalies. In this series, 50% babies were alive at the time of delivery but only 40% were discharged alive. Savage *et al* (1970) discharged 61.8% infants alive. In our series, there were 24 stillbirths, 1 grossly asphyxiated and could not be revived, the rest 5 out of 25 living babies died in the nursery mainly due to asphyxia and prematurity.

(B) *Factors Responsible for Foetal Death*

(a) *Presentation and Foetal Death*: Fenton and D. Espo (1951) showed the foetal death rate in various presentations which is tabulated in Table III along with present series. It is evident from the above Table that foetal loss is more in transverse and compound presentation and goes in favour of the spasm of the cord vessels suggested by Rhodes (1959).

(b) *Management and Foetal Outcome*: The outcome of 44 living foetus at the time of diagnosis according to different management is shown in Table IV. By

TABLE III
Foetal Death in Different Presentation

Presentation	Vertex	Breech	Transverse	Compound
Fenton & D. Esopo (1951)	25%	34%	45%	37%
Present series	44.4%	45.4%	66.6%	66.6%

TABLE IV
Type of Management and Foetal Outcome

Management	Normal delivery	Breech	Forceps	Caesarean	Destructive
Living	6 (35)	6 (60)	1 (100)	12 (85.7)	—
Stillborn	11 (65)	4 (40)	—	2 (14.3)	2 (100)

(Figures in paranthesis indicatets percentage).

early diagnosis of the condition soon after the rupture of membrances and adopting immediate delivery Clark *et al* (1968) reduced the foetal loss to 5.5 and Cox (1951) saved all consequitive 29 foetuses. But the definitive management depends on degree of cervical dilatation at the time of diagnosis. In Suraiya *et al* (1966) series, in 36% cases cervix was fully dilated at the time of diagnosis, suggest possible instrumental vaginal delivery or breech extraction. According to Daly and Griffs (1968) breech extraction results 40% foetal death. In this series, 68% were delivered vaginally and 56.6% babies died during delivery and in 32% cases caesarean section was done and 85.7% were alive at the time of delivery.

(C) Foetal weight and Foetal Out-

come; From Table V it is evident that more mature (27%) is the baby there is more chance of survival (67%). Savage *et al* (1970) series 54.4% infants weighed more than 2.5 Kg and 83.2% of them survived.

TABLE V
Foetal Outcome in Cord Pro-lapse in Different Foetal Weight

Weight	2 Kg.	2-2.5 Kg.	2.5 Kg.
Live	2 (22.2%)	12 (52.1%)	8 (66.6%)
Dead	7 (77.8%)	11 (47.9%)	4 (33.4%)
Total	9	23	12

(D) Foetal Outcome and Management in Different Weight Group

From Table V it is observed that lesser the weight higher the death rate of the

TABLE VI
Foetal Outcome and Management in Different Weight Group

Weight Method	2 Kg.		2-2.5 Kg.		2.5 Kg.	
	Living	Dead	Living	Dead	Living	Dead
Normal Delivery	1	4	3	6	0	3
Breech	0	2	3	4	1	0
Forceps	0	0	0	0	1	0
Caesarean section	1	1	5	1	6	0

foetus. Table IV shows babies delivered by caesarean section have more chance of survival.

Table VI shows the types of management in different weight group with foetal outcome. It is observed that operative intervention was less frequently associated with delivery of infants weighing less than 2 Kg. Two out of 9 babies weighing less than 2 Kg. delivered by caesarean section and 50% survived. Seven babies of similar weight delivered vaginally, 85.7% died. Infants weighing between 2-2.5 Kg., delivered by L.U.C.S., 83.3% foetus survived and those delivered vaginally 37.5% babies survived. Six out of the 11 babies weighing more than 2.5 Kg. was delivered by caesarean section and all survived. Five babies of similar weight were delivered vaginally and 40% survived. Savage *et al* (1970) showed that in 38.8% cases having similar weight, delivered by L.U.C.S. and 98% of those infants were discharged alive, but in this series only 83% infants were discharged alive. This indicates that unless the paediatric service is improved, caesarean section alone will not be able to increase foetal survival.

Conclusion

It is concluded that cord prolapse is one of the commonest complications in compound presentation and transverse lie. Caesarean section improves the foetal

outcome and sooner the baby is delivered better is the foetal survival. Improved Paediatric service will give further good result and more caesarean sections can be done in less mature foetuses.

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References

1. Biskind, J. L.: Am. J. Obstet. Gynec. 75: 111, 1958.
2. Bock, J. E. and Weise, J.: Act. Obstet. Gynec. Scand. 51: 303, 1972.
3. Clark, D. O., Copeland, W. and Ullery, J. C.: Am. J. Obstet. Gynec. 101: 84, 1968.
4. Cox, L. W.: Lancet. 1: 561, 1951.
5. Daly, J. W. and Griffs, C. E.: Am. J. Obstet. Gynec. 100: 264, 1968.
6. Fenton, A. N. and D'Espo, D. A.: Am. J. Obstet. Gynec. 61: 52, 1951.
7. Goldthorp, W. O.: Brit. J. Clinical Practice 21: 21, 1967.
8. Morgan, J.: Brit. Med. Jour. 2: 820, 1948.
9. Munrokerr, J.: Operative Obstetrics, 9th Edition 1977 Page 199. Published Bailliere Tindall, London.
10. Rhodes P.: Proc. roy. soc. Med. 49: 977, 1956.
11. Savage, E. W., Khol, S. G. and Wymn. R. M.: Obstet. Gynec. 36: 502, 1970.
12. Saraiya, U. and Fernandez, W.: J. Obstet. Gynec. India. 16: 188, 1966.