

SPONTANEOUS PREMATURE RUPTURE OF MEMBRANES

by

A. K. GIRI*, M.O. (Cal.),

and

C. L. MUKHERJEE**, M.O. (Cal.), Ph.D. (Glas.), F.R.C.O.G. (Lond.).

"Membrane is a liability than an asset". This statement demands re-consideration of the older view that premature rupture of membranes leads to so many complications ending in prolonged labour. Many recent literatures, including that of Calkin (1952) and Corn (1952), amply prove that labour is hastened in these cases.

To search for the underlying cause of rapid labour the present studies of 48 cases (19 primigravidae and 29 multiparae), with leaking membranes, admitted in Seth Sukhlall Karnani Memorial Hospital in 1956-57 were undertaken along with the

study of control series of 41 cases, 16 primigravidae and 25 multiparae. In these cases uterine contractions were recorded in labour with the aid of Lorand's tocograph and tocometer, in (a) early first stage, (b) late first stage, and (c) second stage. Early first stage has been considered up to dilatation of the cervix, admitting two fingers. Contractions were recorded for about an hour or more in each phase and from those graphs average tone, amplitude, duration, number, rhythm and other characters of contractions were analysed. These are being presented in the following Table.

TABLE

	Early first stage		Late first stage		Second stage	
	P.R.M.	Control	P.R.M.	Control	P.R.M.	Control
Tone in m.m. (Primi.	6.46	5.07	6.58	6.49	6.62	8.7
(Multi.	1.62	2.63	2.8	2.93	5.4	6.51
Amplitude in m.m.	6.26	5.06	6.1	6.25	7.01	7.22
Duration in second	102.5	94.34	117.51	112.6	99.54	86.06
No. of contractions per hour	18.33	13.4	17.7	17.2	22.4	25.2

*Resident Surgeon and Addl. Lecturer, Department of Obstetrics and Gynaecology, N.R.S. Medical College, Calcutta.

**Director, Department of Obstetrics and Gynaecology, S.S.K.H. Hospital, Calcutta.

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Character of Contractions

Tone. Average tone was observed to be higher in the primigravidae than in the multiparae, in both P.R.M. and control series. There had been no significant difference of tone between the P.R.M. and control series, in any of the 3 stages, either in primigravidae or in multiparae.

Only the average figures, irrespective of parity, as regards amplitude, duration and frequency of contractions have been presented as the average figures in primigravidae and multiparae failed to be significantly different.

Amplitude. Average amplitude of contractions in the early first stage in P.R.M. group was higher by 1.2 m.m. than that in the control, which was found to be statistically significant ($F = 4.8$). But no significant difference was revealed in the late first stage and second stage between the two series.

Duration. Average duration of contractions did not point out any significant difference between P.R.M. and control series in any of the 3 stages. The apparently longer duration in P.R.M. series was proved to be insignificant.

Frequency. Higher number of 4.9 contractions per hour in the early first stage in the P.R.M. group, as compared to that in the control, was proved to be significant ($F = 3.5$). But the figures in the late first stage and second stage did not reveal any significant difference.

Rhythm and Other Characters. Each pattern of contractions was peculiar to particular individual. Contractions maintained the same rhythm throughout labour. Graphs depicted irregular contractions in 50% cases and regular pattern in 50% in the P.R.M. series. This incidence of irregular uterine action was higher than 10% incidence in the control. In P.R.M. group in 6, 12.5%, cases descending limbs of the waves were more or less straight.

*Five case-records with tocographic tracings are presented.

Case 1. 8th gravida — one in the control.

- (a) 1st. graph was started 6 hrs. 20 mins. after the onset of labour—shows regular infrequent contractions of short amplitude and duration. Some sudden spikes indicate foetal movements.
- (b) 2nd one — 8-20 min. after onset of labour — regular more frequent contractions. (os — 2 fing.) Both of them were recorded in early first stage.
- (c) 3rd one — 15 hrs. 30 min. after onset was taken in late first stage — regular and more frequent contractions of greater amplitude and duration.

Duration of labour — 22 hrs. 15 mins.

Case 2. Primigravida 38 wks. in P.R.M. series — membranes leaking 7 hrs. before labour.

- (a) 1st. graph — recorded about 1 hr. after onset of labour with os — 2 fingers but pain sensation was completely absent during recording of the graph — showing frequent and irregular contractions as regards amplitude, duration and interval.
- (b) 2nd graph — 5 hrs. 10 mins. after onset in late first stage — showing contractions of greater amplitude and longer duration but pattern remained irregular to some extent.

Duration of labour — 10 hrs. 14 mins.

Case 3. 4th gravida started dribbling 4 hrs. before onset.

- (a) 1st. graph — was started 1 hr. — 30 minutes after onset os admitting 1 finger Cervix — partially taken up—shows irregular type of contractions.
- (b) 2nd graph — recorded 3 hrs. 30 mins. after onset showing more frequent but irregular contractions, with some compound waves.
- (c & d) 3rd and 4th graph — in late first stage 10 hrs. 20 mins. and 17 hrs. 20 min. after onset — showing irregular contractions. Contractions maintained same pattern all along.

Duration of labour—19 hrs. 5 mins.

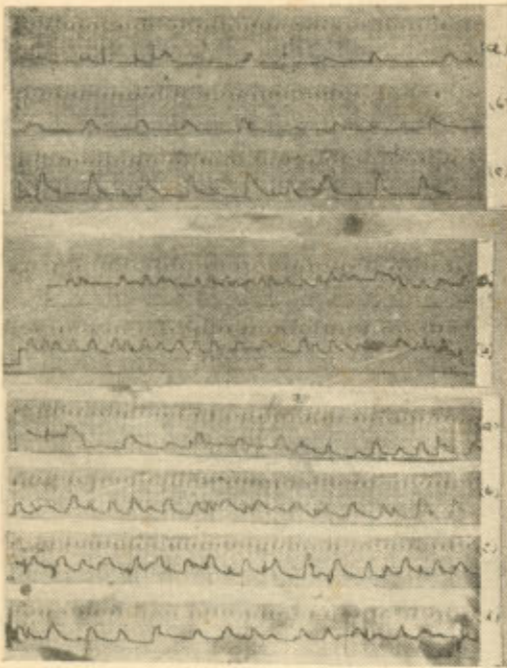


Fig. 1

Case 4. Primi. with R.O.P., pain starting within a few minutes of rupture of membrane.

- (a) 1st. graph — taken 11 hrs. 30 mins. after onset Os 3 fingers — shows prolonged and straight descending waves with regular rhythm.
- (b) 2nd one — 14 hrs. 52 mins. after onset in the second stage, delivery completed with forceps, under anaesthesia.

Duration of labour—15 hrs. 24 mins.

Case 5. Primi. 37 wks. (leakage of mem. and onset of labour were simultaneous) with prolonged labour.

- (a) 1st. graph — 4 hrs. 50 minutes.
- (b) 2nd one — 10 hrs. 50 minutes.
- (c) 3rd one — 25 hrs. 50 minutes.
- (d) 4th one — 27 hrs. after onset.

All were recorded during early first stage (os 1 finger cx. thick)—showing regular contraction of shorter amplitude and duration. Later part of labour was not studied with toco-graph.

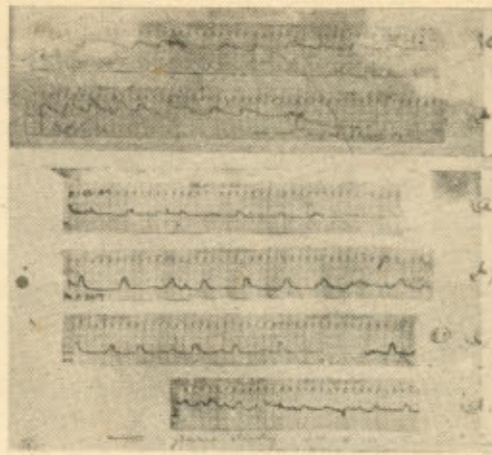


Fig. 2

Duration of labour — 52 hrs. and prolonged, instead of having hyperbolic curves, i.e. earlier part more vertical and later part more horizontal, as were usually found in normal cases. Weak uterine contractions, with short duration and small amplitude were associated with one case of prolonged labour.

*(Tocographic tracings of 5 cases are presented)

Duration of Labour

Labour lasted on an average, in primigravidae 12 hrs. and 15 minutes in P.R.M. group and 16 hrs. and 36 minutes in the control. In the multi-gravidae the duration was 7 hrs. 7 mins. in the P.R.M. series and 9 hrs. and 25 minutes in the control. Labour lasted more than 24 hrs. in 2 cases. Calkin in a large series of cases with leaking membranes observed 10 hrs. and 32 minutes and 6 hrs. and 5 minutes as the duration of labour, in the primigravidae and multiparae, respectively.

Summary and Conclusion

Frequency and amplitude of uterine contractions in the early first

stage in P.R.M. group were higher than those in early first stage of control series. Incidence of irregular uterine action in P.R.M. series was higher than that in control cases, but the type of irregular contractions did not lead to prolongation of labour. Duration of labour was shortened both in primigravidae and multiparae, which may be attributed to stronger and more frequent uterine action in early first stage.

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