

ACCELERATION OF LABOUR†

by

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In today's jet-age both the obstetrician as well as the woman in labour would like to accomplish the delivery in the shortest possible time compatible with the safety of the mother and the foetus. Any measures that would hasten labour without adding to the maternal and perinatal mortality and morbidity are most welcome. Friedmann (1967), Philpott and Castle (1972) and O'Driscoll (1972) are of the opinion that in a primigravida, labour should be over within 12 hours. Amniotomy and oxytocin stimulation are accepted means for achieving this. The present study was undertaken to find out the value of artificial rupture of membranes (ARM) and intravenous oxytocin drip in acceleration of labour.

Material

Primigravidae less than 35 years old having no medical or obstetric complication and expected to progress normally in labour were taken up for study when in established labour.

Patient was considered to be in established labour if she fulfilled any 3 of the following criteria:

- (1) Cervical dilatation of 2 cms or more.
- (2) Cervical effacement of 60% or more.
- (3) Formation of bag of waters.
- (4) Presence of 3 uterine contractions in 10 minutes.
- (5) Presence of show.

Of the 125 patients taken up for study, every alternate patient was studied as a control and the rest formed the acceleration or study group.

Methodology of Study

Patient in acceleration group had ARM done at 0 hours i.e. when first seen to fulfill the criteria for inclusion in the study. Re-examination was done 4 hours later and if cervical dilatation did not progress at the rate of 1 cm/hour, intravenous oxytocin drip was administered.

In control group, no ARM was done and labour was watched carefully. If cervical dilatation proceeded at the rate of 1 cm/hour, the patient was left alone otherwise ARM was done and later on oxytocin drip if required was employed in the same manner as in acceleration group.

All patients after amniotomy were given prophylactic antibiotics.

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Partograms were prepared for each patient depicting cervical dilatation, descent of head, foetal and maternal well-being and uterine contractions.

Results

Table I shows the age distribution of the patients. Majority of them were in the age group of 16-25 years. There was no difference between the control and study groups.

TABLE I
Age Distribution

Age in years	Number of cases	
	Control	ARM
16-20	21	21
21-25	25	28
26-30	13	13
31-35	3	1

Thirty-seven patients in control group needed no ARM and 50 patients in the acceleration group needed no oxytocin stimulation. Table II shows mean duration of time required to complete first stage of labour in these two groups of 37 and 50 patients.

The results obtained were statistically analysed. The difference in duration of first stage of labour in the 2 groups was not significant when initial dilatation was 2 cms. It was significant at 5 per cent level ($p < 0.05$) when initial dilatation was 3 cms and highly significant ($p < 0.01$) when initial dilatation was 4 or 5 cms.

Table III shows the rates of cervical dilatation/hour in the 2 groups. The difference in the rate of cervical dilatation in these 2 groups was highly significant ($p < 0.01$) when ARM was done at initial dilatation of 3 cms or more. Philpott and Castle (1972) found the rate of 1.7 cms/hour at and after 4 cms dilatation.

Table III also shows that in patients who are expected to progress normally in labour, the rate of cervical dilatation per hour is 1.45 cms and more.

Table IV shows the additional measures required to achieve cervical dilatation of 1 cm/hour in both control and amniotomy groups.

Forty per cent of the patients in control group required ARM to accelerate

TABLE II
Mean duration of Time Required to Complete First Stage

Initial dilatation in cms	Control cases		ARM cases	
	No. of patients	Mean duration in hours	No. of patients	Mean duration in hours
2	7	5.14	8	5.06
3	19	4.4	18	3.08
4	7	4.0	16	2.92
5	4	3.56	8	1.97

Our results are comparable to those of Friedman (1967) who found that after amniotomy done at and after 2.5 cms cervical dilatation, mean duration of first stage was 5.8 hours.

labour while only 20.6% in amniotomy group required further stimulation by oxytocin. It is interesting that 4 out of 25 patients needing ARM in control group (i.e. 16%) required further oxy-

TABLE III
Rate of Cervical Dilatation

Initial dilatation in cms	Control cases		Amniotomy cases	
	No. of patients	Mean cervical dilatation cm/hour	No. of patients	Mean cervical dilatation cm/hour
2	7	1.7	8	1.6
3	19	1.6	18	2.2
4	7	1.7	16	2.66
5	4	1.45	8	2.9

TABLE V
Additional Measures

Control group	ARM only	ARM + oxytocin	ARM group	ARM + oxytocin
62	25 (40%)	4 (16%)	63	13 (20.6%)

tocin stimulation. This is comparable to the 20.6% in the ARM group needing oxytocin stimulation.

Table V shows the mean duration of second stage in different groups. This ranged from 19.27 minutes to 36.22 minutes except in those patients in con-

trol group who required not only ARM but also oxytocin drip. Even in that group, second stage was within accepted limits.

Table VI shows the outcome of labour in the two groups. It can be easily seen

TABLE V
Mean Duration of Second Stage in Minutes

Control only	Control group		ARM group	
	ARM only	ARM + oxytocin	ARM only	ARM + Oxytocin
36.22	34.11	69.50	29.68	19.27

TABLE VI
Outcome of Labour

	Normal delivery		Forceps delivery		Vacuum Extraction		Caesarean section	
	No.	%	No.	%	No.	%	No.	%
Control group (62)	50	80.7	9	14.5	1	1.6	2	3.2
Acceleration group (63)	53	84.1	8	12.7	-	-	2	3.18

that ARM did not result in any increase in operative deliveries.

Table VII shows the detailed analysis of the 20 cases in the control group where labour was initially not progressing well. By doing an ARM, the rate of cervical dilatation was remarkably increased.

TABLE VII

Cervical Dilatation (cm/hour) Before and After ARM

No. of cases	Initial dilatation in cms	Rate of cervical dilatation (cm/hour)	
		Before ARM	After ARM
9	2	0.37	2.7
7	3	0.50	2.47
2	4	0.125	1.83
2	5	0.375	2.0

Mortality and Morbidity

There was no maternal and perinatal mortality.

One baby from control group was born asphyxiated due to 4 tight loops of cord around the neck. Apgar score at 1 minute was 5 while at 5 minutes it was 9.

One baby from ARM group required resuscitation as Apgar score was 7 at 1 minute. At 5 minutes it was 10.

One patient from control group had pyrexia of 101°F for 2 days due to urinary infection.

Discussion

Our results show that ARM accelerates labour without producing any harmful

effects on the mother or her foetus. Neither does it lead to increased operative deliveries. Our findings are similar to those of Philpott and Castle (1972) and O'Driscoll *et al* (1973).

Our series also shows that ARM should be done at cervical dilatation of 3 cms or more. We have no explanation for the fact that ARM done at 2 cms dilatation did not hasten labour. It is also worth noting that the rate of cervical dilatation in our control group progressing normally was 1.45 cms/hour and over.

Normal labour is traditionally defined as one with vertex presentation and terminating naturally without artificial aid and without complication. We feel that some time-limit should be included in this definition of normal labour. We suggest this to be 12 hours for primigravid labour.

Lastly, gone are the days when an obstetrician would proudly boast of masterly inactivity. Timely action should replace masterly inactivity. The moment it is realised that cervical dilatation is not proceeding at the rate of 1 cm/hour labour must be accelerated. In fact, we wonder whether ARM in early labour should form a part of normal management of labour except in cases where ARM is contraindicated.

Summary

To find out the value of amniotomy in accelerating labour, 2 groups of patients were studied—one having ARM in early labour (ARM group—63 cases) and the other without ARM (control group—62 cases). It was found that ARM accelerated labour without producing any harm to the mother or foetus.

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for the fact that ARM was not used in the study. It is possible that the results obtained in this study might have been different if we had used group 1 as a control group.

Normal labour is traditionally defined as one with vertex presentation and the fetus naturally without artificial aid and without augmentation. We feel that some modification should be included in this definition of normal labour. We suggest this to be 12 hours for group 1 and 18 hours for group 2.

Early labour is defined as the first stage of labour which is usually of 12 hours or more. It is characterized by irregular contractions which gradually become regular and more frequent. The cervix gradually dilates and the fetal head descends into the birth canal. It is a period of relative calm and is usually followed by a period of active labour. In fact we would consider whether ARM is early labour or a part of normal management of labour except in cases where ARM is contraindicated.

To find out the value of aminocaproic acid in the management of postpartum haemorrhage, 2 groups of patients were studied—those having ARM in early labour (ARM group—42 cases) and the other without ARM (control group—42 cases). It was found that ARM accelerated labour without undue risk and helped to the mother or foetus.

TABLE I
Comparison of labour duration between ARM and non-ARM groups

Group	1st Stage (hrs)	2nd Stage (hrs)	3rd Stage (hrs)	Total (hrs)
ARM	1.5	0.5	0.2	2.2
Non-ARM	2.0	0.8	0.3	3.1

It is concluded that ARM is a safe and effective method of accelerating labour. It is particularly useful in cases where the labour is prolonged and the mother is exhausted.

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