

PREDICTIVE VALUE OF CERVICAL DILATATION RATES IN THE OUTCOME OF LABOUR IN PRIMIGRAVIDAE

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The pattern of cervical dilatation during active labour and the length of labour are vital to the obstetrician's understanding of the process of parturition. The obstetrician's concepts of this process will inevitably affect his obstetric teaching and practice.

During the past few years, notable progress has been made in obstetrics. The physiology of labour has been described in better perspective. Following the course of labour through serial vaginal examinations has improved the clinician's ability to assess the quality of labour and its probable outcome.

The current trend towards graphing cervical dilatation against time is due largely to the efforts of Friedman (1967) who deserves major credit for developing

and popularising "graphico-statistical analysis" of labour.

In Philpott's (1972) partogram (Graph I), which can be very effectively utilised

PHILPOTT'S PARTOGRAM

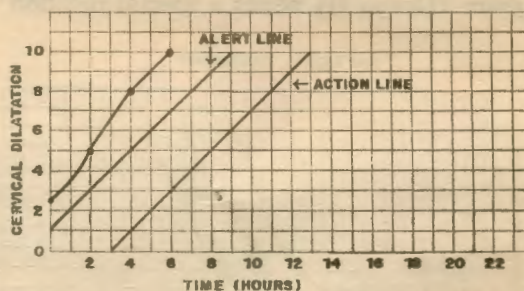


Fig. 1.

to analyse the pattern of labour in primigravida, the Alert line is applicable from 3 cm dilatation of the cervix onwards and fits in with Friedman's differentiation between latent and active phases of first stage of labour.⁴ (The Alert line³ is a modification of mean cervicographic progress of the slowest 10% of normal African primigravid patients admitted in active phase of labour. It is a straight line drawn on cervicograph beginning at 1.00 cm/hour to full dilatation at 9 hours

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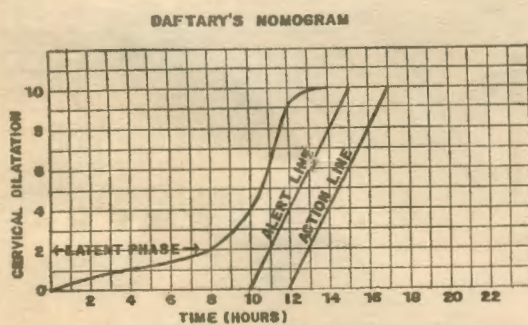
Paper presented in the XXIInd All India Obstetrics & Gynaecology Conference held at Indore (M.P.), December 1978.

Accepted for publication on 2-10-79.

from admission. This line compares with Friedman's statistical limit for cervicographic progress in primigravid patients in active phase of labour of 1.2 cm an hour and therefore has universal application.

The purpose of Alert line is to aid the attending physician to detect at the earliest possible moment, the abnormal labour. Should cervicograph cross the Alert line, then within 4 hours of crossing this line active management can be effectively commenced (Philpott 1972). Hence action line is drawn arbitrarily parallel and 4 hours to the right of Alert line. This allows time for the patient to deliver normally without any active interference provided there is no obvious factor for hampering the progress of labour, like cephalopelvic disproportion, malpresentation, or incoordinate uterine action.

Daftary and Mahtre's (1977) normogram (Graph II) needs a special mention



here. On the basis of cervicographic recordings of 96 primigravidae who had normal labours, a standard normogram was prepared.

In this normogram, Alert line is drawn 2 hours to the right of phase of maximum slope of normogram. When the cervicograph strayed 2 hours to the right of Alert line, patient was said to enter the Action zone.

The Alert line is useful in detecting a labour which is progressing slowly. Timely interference can be of help in accelerating such a labour. The Action line is effective in early identification of dystocic labours.

(Any of these above mentioned cervicographs can be of help in detecting the initial rate (IR) of cervical dilatation, which according to Herzl Melmed (1976) appears to be an accurate predictor of outcome of labour and gives an early warning of impending difficulties with labour) In his series, it was found that those primigravidae who delivered normally, 93 per cent showed an IR of 1.00 cm/hour or more and 76 per cent of those with IR less than 1.00 cm/hour required an assisted delivery (forceps or vacuum) or caesarean section. Taking these results into consideration, a preliminary study on 100 primigravidae in labour was carried out and depending upon the IR of cervical dilatation, outcome of labour was predicted for each of them.)

Material and Methods

Subjects selected for the study were all primigravidae with vertex presentation who came in early labour at Nowrosjee Wadia Maternity Hospital from October 1977 to August 1978. The subjects were selected at random. Frequent vaginal examinations were carried out with all due care and precautions to assess clinically the dilatation of cervix. The initial rate which commenced with the onset of acceleration phase i.e. 3 cm cervical dilatation was calculated for each patient. A repeat examination was done every 2 hours to note the cervical dilatation, effacement, station of the fetal head and position of the presenting part. The interval, length and severity of uterine contractions were also noted. The IR was

calculated only after the repeat examination showed a 2.00 cm increase in the dilatation or more (Graph III). Fetal condition was assessed half hourly.

RATE OF CERVICAL DILATATION

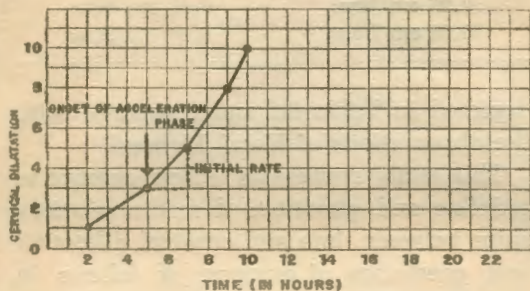


Fig. 3.

Subjects were divided into 3 categories according to the type of delivery: spontaneous, assisted or caesarean section as seen in Table I.

TABLE I

Prediction of Labour According to IR of Cervical Dilatation

	IR of cervical dilatation	Prediction of labour
Group I	1.00 cm/hour or more	Normal spontaneous delivery
Group II	Less than 1.00 cm/hour	Assisted delivery (forceps or vacuum)
Group III	Less than 0.5 cm/hour	Caesarean section

Results

As seen in Table II accurate prediction was made in 88 out of 100 primiparas and in 12 patients prediction went wrong.

In Group I: Seventy-six patients delivered spontaneously. The remaining 8 needed assisted delivery. One patient delivered by outlet forceps and the other 7 by low-mid-cavity forceps. The indications for assisted delivery were fetal distress or prolonged second stage or both.

In Group II: Two patients delivered spontaneously in spite of IR 0.8 cm/hour. This delay in initial dilatation in both these patients could be contributed to hypotonic uterine activity. One patient whose IR was 0.66 cm/hour required a caesarean section. This patient could have been delivered by rotation forceps, but because of fetal distress with bad obstetric history, forceps delivery was not attempted.

In Group III: Prediction was correct in 80 per cent of cases. One patient who had IR less than 0.5 cm/hour delivered spontaneously after a trial of labour, though patient had a prolonged labour of 13 hours from the onset of acceleration phase. This could be attributed to a good sized baby giving rise to mid-pelvic C.P.D. and hypotonic uterine activity.

Discussion

The initial rate (IR) of cervical dilatation in active labour appears to be an

TABLE II

Accuracy of Initial Cervical Dilatation Rate in Predicting Method of Delivery

Prediction of labour	Outcome of labour		
	Spontaneous	Assisted	Caesarean section
Group I	76	8	0
Group II	2	8	1
Group III	1	0	4

TABLE III
Mean Cervical Dilatation Rates

	Spontaneous delivery	Assisted delivery	Caesarean section
Herzl Melmed	1.75 cm/hour	0.93 cm/hour	0.42 cm/hour
Present series	1.43 cm/hour	0.93 cm/hour	0.49 cm/hour

accurate predictor of the outcome of labour and it proves to be useful in early identification of those patients whose deliveries are complicated. If the IR of cervical dilatation is slow, patient can be reassessed in good time to rule out any malpresentation, cephalopelvic disproportion or inco-ordinate uterine action, all of which affect the cervical dilatation rates. Besides that, the outcome of labour can be predicted and accordingly the patient can be prepared for any obstetric interference in labour, if needed.

In conclusion, the principal contribution of IR measurements is, in reliably labeling potential problem deliveries. In present series 90.5 per cent of primigravidae with IR of 1.00 cm/hour or more delivered spontaneously, while 81.2 per cent of all patients with an IR of less than 1.00 cm/hour required an assisted delivery or caesarean section. The mean cervical dilatation rates for spontaneous, assisted and caesarean deliveries are

depicted in Table III and compared with the observations of Herzl Melmed.

This study represents a new attempt to redefine and quantitate the interrelationships between time and cervical dilatation and prediction of outcome of labour in primigravidae.

The method avoids complicated cervicographs and is simple and reliable.

Acknowledgement

Thanks are due to Dr. (Miss) D. N. Patel, M.D., F.C.P.S., F.I.C.S., Dean, Nowrosjee Wadia Maternity Hospital, Parel, Bombay 400 012, for permitting us to report and publish the hospital data.

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