

CERVICAL RIPENER WITH ELECTRICAL STIMULATION TO EXPEDITE LABOUR*

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SUMMARY

In primigravidas, due to electrical stimulation, the length of labour was shortened by 6 hrs.-10 mins., the latent phase by 4 hrs.-3 mins. active phase by 1 hr.-22mins., maximum dilatation was accelerated by 0.65 cm/hr. The second stage was shortened by 27 mins. The uterine contractions were enhanced and no significant untoward effects were seen regarding the mother and fetus.

Hence the cervical ripener has a definite place in expediting all the stages of labour. If used with pethidine or a spasmolytic like epidosin, the duration of labour would be further shortened.

Except for the cost and the delicate instrument, the labour onset elements ripener produces encouraging results.

Introduction

The phenomenon of labour is dynamic. From the onset of labour till the delivery of the newborn, its such a wonderful myriad of complexities ranging from physical, humoral, biochemical and hormonal activity, that the human mind till today cannot comprehend it in all its totality.

Hopeful expectancy of labour has outlived its utility in modern obstetrics. The obstetrician besides being actively involved in labour is now called upon to chart the course of labour in the interest of the mother and the fetus. This 'inter-

vention' in the natural run of the labour may produce encouraging results in many women and in some quite a disappointment.

So far, artificial labour pain induction methods by drugs like oxytocin or prostaglandins, or an instrument like bougie has been used to avoid danger to the foetus and mother. However, such methods would be unsuccessful if the physiological conditions essential for delivery, including ripening of the cervix, have not been established. Under insufficient conditions for delivery, the trial of an artificial labour-pain acceleration and hastening to dilate the cervix is fraught with dangers to the mother and the fetus.

Hence, we at the B.Y.L. Nair Ch. Hospital and Topiwala National Medi-

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cal College, Bombay, undertook a study to see how the electrical stimulation of the cervix in labour would hasten the cervical dilatation, reduce the duration of labour, enhance the uterine contractions and any untoward effects, if any, on the mother or the fetus. This electrical stimulation was provided by an instrument known as "Edel—LABOR ONSET ELEMENTS RIPENER".

Material and Methods

Study I: Seventy-five normal, nulliparous, full term, gravid women with vertex presentation were taken as a control study. This group was at term, with adequate pelvis, well flexed occipito-anterior position in labour with 2-2.5 cm. dilatation. After the routine abdominal and pelvic examination a partogram 1 was charted, with frequent vaginal examinations till they delivered. The various phases viz. latent phase, the active phase, maximum dilatation slope (cm./hr) and second stage duration was calculated.

Study II: Seventy-five full term women (36 weeks) with vertex presentation and no abnormality and applying the same criteria as for the Study I, were subjected to electrical stimulation when in early labour when the cervical dilatation was 2.5 cm. Partograms were similarly charted. (Fig. 1).

Instrument

Edel's Labour Onset Elements Ripener with electrical stimulation was developed by Tokuyama and Fujimoto of Tokyo. This instrument consists of the main unit, power cord, forceps-type current applicator, stimulation current cord and grounding wire. (Fig. 2).

After connecting the power cord and turning the power switch on, a green

light is indicated and the voltmeter for stimulatoin current indicates some value for 10 seconds and then returns to zero. It means that the current stimulation is given three times per minute with 10 seconds duration and 10 seconds interval. After connecting the forceps type current applicator to the connector of the stimulation cord, the forceps is applied to the cervix at 6 O'clock position after wiping away the cervical mucus with boric acid solution, so as to allow direct contact. (Fig. 3). After the frequency selector was put in position 1 and power at 1, the current was started. The stimulation current was kept at 10 mA. If it did not touch 10 mA then the power selector was moved to 2, 3 or 4. Rarely it required above 2 positions. Body movement was not allowed and the current application was done for 15 minutes. (Fig. 4).

Results

Study I: Standard labour pattern on partograms for 75 normal primigravidas were established. The average time duration of the different stages of labour is as in Table 1.

TABLE I
Average Duration of the Different Stages of Labour in Normal Cases (75)

Length of labour	: 14 hrs. 30 mins.
Latent phase	: 8 hrs. 30 mins.
Active phase	: 4 hrs. 28 mins.
Max dilatation in cm/hr.	: 2.95 cm/hr.
Second stage	: 1 hr. 15 mins.

Study II: The effect of electrical stimulation on 75 primigravidas were studied with partograms.

The results of the average time duration of the different stages is as in Table II.

TABLE II
Average Duration of the Different Stages of Labour in Study Group of Cervikator (75)

Length of labour	:	8 hrs. 20 mins.
Latent phase	:	4 hrs. 27 mins.
Active phase	:	3 hrs. 6 mins.
Max. dilatation in cm/hr.	:	3.6 cm/hr.
Second stage	:	48 mins.

Uterine Contractions

With the Cervical Ripener, the uterine contractions were of a greater intensity and they lasted longer. As compared with the control study, the frequency of contractions were more. Hence, it will be seen that the second stage is cut short by 27 mins.

No untoward effect was seen on the fetus. One case after 4 hours showed thick meconium stained liquor with fetal distress and a caesarean section was performed. The cause of the fetal distress could not be ascertained. Five cases did not show any appreciable change in the cervical dilatation or the course of labour. It is probable that they were either not well established in labour or the current to the cervix was not effective

due to the presence of mucus, 4 cases showed an eschar on the posterior lip of the cervix where the forceps was applied. This white area of burns was due to the current and it did not show any untoward effect in the immediate follow-up period. In the rest of the cases there were no complications to the mother.

In all the cases the stimulation current did not immediately reach 10 mA. In 25% of the cases the current was between 8-10 mA. In 10% of the cases the power had to be increased to 2.

The disadvantage of the instrument is that the forceps tends to slip away from the cervix at the height of uterine contraction. The forceps is delicate and it tends to snap due to frequent use.

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See Figs. on Art Paper I