

CLINICAL EXPERIENCE IN INDUCTION OF LABOUR AT TERM BY LAMINARIA TENT*

by

JALAJAKSHI KOTHANDRAM

SUMMARY

During the years 1977-1984 the author has induced labour in 200 patients of varied maturity (36 to 42 weeks) with laminaria-tent without the aid of sophisticated machinery, at Lady Goschen Hospital, Mangalore; S.M.T. Hospital, Mysore and Women and Childrens Hospital, Mercara. Vaginal delivery was achieved in all the cases without fetal loss or neonatal death (except in anencephaly, fetal death in utero and other congenital abnormality) and no complications such as sepsis or perforation.

Laminaria is of special value, where a child is required in those cases with poor inducibility prospectus and in conditions like anencephaly, fetal death "in utero" post-maturity, trachelorrhaphy and high presenting part, where amniotomy is better avoided or delayed. Laminaria with oxytocin infusion is particularly effective in a stubborn and unyielding cervix and obviates the need for caesarean section.

Introduction

Use of laminaria-tent to dilate the cervix and induce labour dates back to over a century (Wilson 1865) quoted from Kerr. M. 1977). Laminaria is a powerful device to soften the rigid cervix (Manabe 1971; Hale and Peon 1972) and thereby induce labor, it is less frequently used compared to bougies, catheter, oxytocin and prostaglandins. This communication describes a simple approach to term induction in a ripe as well as in an unripe cervix specially in cases where amniotomy is not advisable.

* A part of this paper has been accepted to be read at the Xth World Congress of Gynaecology and Obstetrics, California, U.S.A., 1982.

From: Women and Children Hospital, Mercara, India.

Accepted for publication on 4-10-85.

Material and Methods

Of the 200 patients induced with this method, 116 were primigravida and 84 were parous. Their ages ranged from 16 to 41 years. The maturity of the pregnancies varied from 36 to 42 weeks.

The indication for induction are shown in Table I.

Table II depicts status of the cervix (Bishop'score) as assessed at the time of induction.

Procedure

After an enema, the vagina, cervix and endocervix is cleansed with iodine in acriflavine and laminaria-tent of appropriate size (3 to 10 mm) and number (1 to 5

TABLE I
Indications

1. Post Term	62
2. Anencephaly	26
3. Fetal death "in utero"	44
4. Hydramnios	2
5. Trachelorrhaphy	3
6. Manchesler, operation	4
7. Unstable lie	1
8. High rupture of membrane	14
9. Low rupture of membrane	1
10. Pre-eclampsia	24
11. Hypertension	2
12. Others	17

Results

Uterine activity was successfully stimulated in all cases, as judged by the establishment of regular uterine contractions. Vaginal delivery was achieved in all the cases without having resort to caesarean section. Of the 200 patients induced, 126 babies were delivered with Apgar score of 7 and above, 4 babies with poor Apgar score had congenited heart disease. Of the 26 anencephalic cases, 14 were delivered alive and 12 died due to shoulder dystocia.

TABLE II

No. of cases		Bishop's Score	
144	Primigravida	— 80	} Unfavourable 0-5
	Parous	— 64	
56	Primigravida	— 36	} Favourable more than 5
	Parous	— 20	

depending on the width of the cervical canal) was inserted into the cervical canal in such a way that the tip of the tent procedures just beyond the internal os as shown in Fig. (1) taking care not to puncture the amniotic membrane. The tent was then anchored to the vaginal pack and left in situ.

The patient was allowed to walk until labor pains were severe. A record of maternal pulse, temperature, blood pressure, fetal heart sounds and fluid balance chart were maintained. The strength, frequency and duration of uterine contractions were observed by palpation. Sedation was not given as a routine. Strepto-penicillin was given to all the cases with ruptured membrane. If the uterine contractions were not satisfactory, 8 hours after the insertion of the tent, an oxytocin infusion of 5 to 15 units was given.

Forty-four fetal death occurred "in utero", prior to induction. Induction delivery interval (I.D.I.) varied from 8 to 27 hours. Mean I.D.I. was 11 hours 30 minutes. Eleven cases required re-insertion of tents after 24 hours. Sixty-five cases were given oxytocin infusion. There was no significant blood loss during delivery nor injury to the cervix nor any evidence of puerperal sepsis. There was no neonatal infection or death except in anencephalic fetus and fetus with congenital abnormality.

Discussion

It has been found that with laminaria, softening of the cervix and initiation of uterine contraction can be achieved at any stage of gestation. The action is slow and sustained. Unlike other mechanical devices like bougies and balloon catheter, laminaria plays a dual role of dilating the os

gradually and stimulating the uterine contractions gently and by the "feed-back" mechanism the softening of the cervix and dilatation of the os achieved is remarkable and labour gets progressively established. Accidental puncture of hind water and placenta (Calder *et al* 1974), premature extrusion which is so consistently seen with balloon catheter (Miller and Mack 1974) and displacement of the presenting part, which is more common with bougies and catheter (Embrey and Mollison 1967) (as the catheter has to invade a minimum 10 to 12 cm in the extra-amniotic space—Fig. 2) has not been encountered with laminaria as the tip of the tent extends only up to the internal os (Fig. 1).

Although prostaglandin is enjoying enormous popularity in some countries, and while conceding the efficiency of the newer prostaglandins, intra-vaginal and intra-cervical gel, the distinct disadvantages of the drug, in the form of uncontrolled absorption, with distressing side effects unpredictable oxytocic activity, (Editor B.M.J. 1981) increased incidence of neonatal jaundice in drug assisted delivery with the further disadvantage of perplexing biological action alarming respiratory and cardiac complication, necessity of expensive monitoring machinery (Cardiotocogram Tromans 1981) and high cost. Laminaria on the other hand is very efficient and convenient device with negligible side effects and possesses considerable dilating powers. It is cheap and unlike other methods does not make big demand either on the patient or the staff.

A well-timed oxytocin infusion is an adjuvant particularly in an unripe cervix and when started 6 to 8 hours after the insertion of the tent, at a time when laminaria attains its maximum swelling, shortens the induction delivery interval. Infusion started too late may not give the

desired result.

Care at the time of insertion prevents accidental puncture of amniotic sac and trauma to the cervix uteri. Removal of the tent after 24 hours and re-insertion of fresh tent (if necessary) reduces the risk of infection. The complication of sepsis and perforation with laminaries have been very much exaggerated in the past. Although every material has got its own hazard, analysis of our clinical experience suggests that laminaria is an ideal device for safe dilatation and worth investing our clinical trial effort, either complementary or competitive to other methods.

Acknowledgement

I wish to thank Dr. M. K. Krishna Menon, Regional W.H.O. consultant, Former Director of Post Graduate Institution, Maternity Hospital, Egmore, Madras.

I thank Dr. Jowre Gowda, Director of Health and Family Welfare Planning Services, Karnataka State, for permission to publish this paper.

References

1. Bishop, E. H.: *Obstet. Gynec.*, 24: 266, 1964.
2. Calder, A. A., Embrey, M. P. and Hillier, K. J.: *Obstet. Gynec. Brit. C'wealth.* 81: 39, 1974.
3. Donald, I.: In *Practical Obstetric Problems*. 5th edition. 480, 1979.
4. Embrey, M. P. and Mollison, P. C.: *J. Obstet. Gynec. Brit. C'wealth.* 74: 44, 1967.
5. Editor, B. M. J.: 282: 418: 418, 1981.
6. Hale, R. W. and Peon, R. J.: *Clinical Obstet. Gynec.*, 15: 829, 1972.
7. Manabe, Y.: *Am. J. Obstet. Gynec.* 110: 743, 1971.
8. Miller, A. W. F. and Mack, D. S.: *J. Obstet. Gynec. Brit. C'wlth.*, 81: 706, 1974.
9. Tromans, P. M., Beazley, J. M. and Shenouda, P. I.: *Brit. Med. J.* 282: 679, 1981.
10. Wilson (1865): Kerr, M.: *Operative Obstetrics*, 9th edition, 447, 1977.

See Figs. on Art Paper III