

# SHOULD LABOUR BE INDUCED USING A NON-PHARMACOLOGIC APPROACH?

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## ABSTRACT

The newer pharmacological approach for ripening the cervix for induction of labour is compared to the older method of inserting a catheter into the cervix. The comparison suggests that both approaches are acceptable but one or the other may be preferable in certain clinical situations.

*Key words: Labor, Induction of labour, prostaglandins, Foley catheter*

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Over the past decade, from 1989 to 2000, induction of labour (IOL) has increased from 9% to 19.9%, according to a National Center for Health Statistics report.<sup>1</sup> As perinatal morbidity and mortality are reduced with IOL at 41-42 weeks gestation, post-datism has become the most common reason for IOL.<sup>2</sup> Other indications include fetal growth restriction, non-reassuring fetal status, premature rupture of the membranes, maternal medical problems and intrauterine fetal death.<sup>3</sup>

The first step in inducing labour involves assessing the cervix for its favourability, as described by the Bishop score. This process involves assessment of dilation, effacement, station, consistency and position of the cervix. On a scale of 0 to 13, a higher score represents a more favourable or "ripe" cervix, which is a significant predictor for a successful induction.<sup>3</sup> An unfavourable cervix (Bishop score <6) requires ripening to increase the likelihood of a successful induction of labour and vaginal delivery. Ripening may be achieved by using prostaglandins or a mechanical technique, such as a Foley<sup>®</sup> catheter. The purpose of this paper is to compare the two methods of cervical ripening.

### Prostaglandins

Three different approaches using prostaglandin have been described:

1. Prostaglandin E1 (Misoprostol<sup>®</sup>) – This prostaglandin is effective in ripening the

cervix and inducing labour. However, its use outside clinical trials has not been endorsed by the Society of Obstetricians and Gynaecologists of Canada (SOGC).<sup>3</sup>

2. Prostaglandin E2 (Prostin<sup>®</sup>) – This prostaglandin is dissolved in a gel that is administered to the posterior fornix of the vagina. It may be repeated every 6 hours, to a maximum of three doses. Patients are often discharged after an hour of fetal monitoring.

3. Prostaglandin E2 vaginal insert (Cervidil<sup>®</sup>) – This prostaglandin is embedded in an insert that is placed in the posterior fornix of the vagina and provides a slow and constant release of prostaglandin over a 12 hour period. The insert is attached to a string and can be removed easily should hyperstimulation occur. Otherwise, it is usually removed at the onset of labour, with spontaneous rupture of membranes, or after 12 hours. Patients often remain in hospital although there is current evidence to support discharging the patient home during the twelve hour period.<sup>4</sup>

### Mechanical approaches

Since the late nineteenth century a variety of different catheters have been used to mechanically ripen the cervix.<sup>5</sup> The most common method involves introducing, under sterile technique, a no. 18 Foley<sup>®</sup> catheter through the cervical canal and internal os. The Foley<sup>®</sup> bulb is then inflated with 30 cc of water and the catheter is left in place until it spontaneously falls out. The catheter causes the release of prostaglandins by separation of the

amnion from the deciduas, as well as by the direct mechanical dilation of the cervix.

### Comparison of Prostaglandins and Foley® Catheter

The randomized trials that have compared the efficacy of the Foley® catheter to prostaglandins in achieving pre-induction cervical ripening are summarized in Table 1. Sciscione et al<sup>6</sup> performed a prospective randomized assessment of these two methods in 149 patients. The Foley® catheter was compared to PGE2 gel administration, repeated every six hours to a maximum of three doses. Patients ripened with a Foley® catheter demonstrated a significantly greater improvement in Bishop Score ( $P=0.02$ ). In addition, the Foley® catheter group had a shorter interval to a ripened cervix and to

delivery. St. Onge and Connors<sup>7</sup> found that both Foley® catheter and PGE2 gel methods led to similar improvement in the Bishop score.

However, the induction to delivery interval was significantly shorter in the Foley® catheter group ( $P=0.014$ ) (Table 1). Similar results were reported by Niromanesh et al<sup>8</sup> and Orhue et al.<sup>9</sup> A Cochrane review by Boulvain et al<sup>10</sup> concluded that there is insufficient evidence to assess the effectiveness of the Foley® catheter compared to prostaglandins. The use of the Foley® catheter was associated with less uterine hyperstimulation, a relative risk of 0.08 (95% CI 0.01-0.55). It is interesting to note that no study has reported a significant difference in the proportion of vaginal delivery or Caesarean section between the two induction methods.

**TABLE 1** Randomized controlled studies comparing prostaglandins and Foley catheter for induction of labour

Authors	Foley (n)	PGE2 (n)	Drug and dose	Improved Bishop score	Decreased time to delivery in Foley	Change in Cesarean rate between groups
Sciscione et al	77	72	0.5mg PGE2 gel endocervical	Foley Group	Foley Group	NO
St. Onge and Connors	34	30	0.5 PGE2 gel endocervical	Same	Foley Group	NO
Niromanesh et al	45	45	3mg vaginal PGE2 tablet	Same	N/A	NO
Orhue	30	34	3mg vaginal PGE2 tablet	N/A	Foley Group	NO

Both PGE2 and the Foley® catheter are effective means for pre-induction ripening of the cervix. However, there are specific situations that may call for the use of a catheter over prostaglandin. For example, the Foley® catheter is ideal for patients who have had a previous Caesarean section and require induction in a subsequent pregnancy.

A study by Lydon-Rochelle et al<sup>11</sup> reported a relative risk for uterine rupture of 15.6 (95%CI

8.1-30.0) for patients with a prior Caesarean section who underwent pre-induction cervical ripening with prostaglandins in comparison to patients with spontaneous labour. Following this study both the American College of Obstetrics and Gynecology and the Society of Obstetricians and Gynecologists of Canada stated that prostaglandins should not be used in women with uterine scar.

In these patients, a Foley® catheter may be a safe and effective alternative for pre-induction

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cervical ripening. In addition, the Foley® catheter is a less costly method of cervical ripening. There are several disadvantages to the Foley® catheter. Technically, it can be difficult to insert, particularly in the nulliparous patient with a long closed posterior cervix. In addition, insertion has been reported to cause pain and discomfort in patients. Foley® catheters have also been criticized for increasing the risk of cervical infection.<sup>12</sup>

### CONCLUSION

As more patients are induced for post-datism and other indications, the question of the best method of pre-induction cervical ripening remains controversial. The current literature supports both the Foley® catheter and the use of exogenous prostaglandins as effective and safe. However in specific patient populations, such as those with vaginal births after Caesarean section, the use of a Foley® catheter is a safer option. Both methods are widely used in medical practice today.

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