



FPQC Guidance for the **Promoting Primary Vaginal Deliveries (PROVIDE)** Initiative

## Early Amniotomy – Helpful or Harmful?

### Promoting Vaginal Birth in Nulliparous Labor Induction

Many care providers routinely perform amniotomy as part of induction procedures in order to shorten labor in an induced patient. What role does early amniotomy (defined as amniotomy <4 cm dilation) have in the labor process, and does it increase risk of nulliparous cesarean section? Is there a more effective method of decreasing time to delivery in a nulliparous patient?

#### EXISTING RESEARCH/EVIDENCE

Known risks of doing amniotomy too early in labor include: cord prolapse (Kawakita et al 2018), potential increased risk of chorioamnionitis and neonatal sepsis (Heinemann et al, 2008), and an increase in fetal heart rate abnormalities and cesareans (Goffinet et al, 1997).

We know that in spontaneous labor, evidence does not show a shortening of the first stage of labor, and that there may be a possible increase in cesarean surgery (Smyth, Markham, Dowswell 2013).

Frazier, et al found early artificial rupture of membranes (AROM) to be an effective method of shortening the duration of labor and reducing the frequency of dystocia among nulliparous women in *spontaneous* labor (only among patients > 3 cm dilated at the time of ROM) with no reduction in cesarean section (Frazier et al 1993).

A Cochrane review on early amniotomy and early oxytocin in spontaneous labors found a reduction in length of labor and a modest reduction in cesarean reduction (Wei et al 2013), however there is very little research regarding the role of early amniotomy related to induction of labor.

A study by Macones, et al. noted that early amniotomy (defined as amniotomy at  $\leq 4$  cm dilation) was a safe and efficacious adjunct in nulliparous labor inductions (Macones et al 2012). However, there was no stratification on patients on the basis of

#### Advantages of Early AROM in Induced Patients:

- May prevent labor dystocia in patients >3cm dilated.

#### Disadvantages of Early AROM in Induced Patients:

- Potential increased risk of chorioamnionitis
- Potential increased risk of neonatal sepsis
- Potential increased risk of NICU admission
- Slight increased risk of cord prolapse
- Commits patient to a path towards delivery, whether her cervix is favorable or not
- Precludes the option of sending the woman home to allow her cervix to ripen naturally



Bishop scores in this study. Of interest is that 73% of the patients (n=585) had more than one cervical ripening agent administered prior to the amniotomy and the average cervical dilatation at AROM was 3.2 cm.

A 2012 study of 500 cases found that early rupture of membranes (<4 cm dilation) during induction of labor in term nulliparas was associated with an increased risk of cesarean section (Lee et al 2012).

According to data from a meta-analysis of studies *on nulliparous and multiparous populations* published in 2019, after cervical ripening, early amniotomy did not increase the risk of cesarean delivery and reduces the interval from induction to delivery (De Vivo et al 2020).

## FPQC RECOMMENDATIONS

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*The PROVIDE advisor committee recommends a reduced use of early AROM, and an increase in cervical ripening methods that may be more successful in shortening labor time in induced patients. Mechanical cervical ripening and cervical ripening using more than one method either sequentially or together should be considered.*

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Levine, et al published a study comparing four induction methods: Misoprostol alone, Foley alone, Misoprostol–cervical Foley concurrently, and Foley–oxytocin concurrently. Women undergoing labor induction with full term ( $\geq 37$  weeks), singleton, vertex presenting gestations, with no contraindication to vaginal delivery, intact membranes, Bishop score  $\leq 6$ , and cervical dilation  $\leq 2$ cm were included. After censoring for cesarean and adjusting for parity, misoprostol–cervical Foley resulted in twice the chance of delivering before either single-agent method (Levine et al 2016).

Salome and Shaw published a review of cervical dilation methods finding that mechanical cervical preparation with transcervical balloons are the most effective option for decreasing time to delivery in the nulliparous patient. Single and double balloons were found to be equally effective, with a volume of more 30 ml being more effective. The addition of misoprostol or oxytocin concurrently with a balloon further shortened time to delivery (Salome & Shaw 2020).

*In conclusion, like all interventions, early amniotomy must be carefully considered in the context of the labor process. As with any intervention, a shared decision-making process is the ideal.*



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