Early amniotomy increased the rate of fetal heart decelerations


**Objective**
To determine whether routine early amniotomy increases the rate of fetal heart rate abnormalities and caesarean section in women who are in spontaneous labour with singleton pregnancies.

**Design**
Secondary analysis of a randomised controlled trial.

**Setting**
11 secondary and tertiary care teaching hospitals in North America.

**Patients**
925 women (mean age 26 y, mean gestational age 40 wk) who were in spontaneous labour with singleton pregnancies. Inclusion criteria were intact membranes, cervical dilatation < 6 cm, and availability of fetal monitoring records. Follow-up was 81%.

**Intervention**
Women were allocated to early amniotomy (membrane rupture as soon after randomisation as possible) or to no membrane rupture based only on medical indications. Analysis included 375 women allocated to early amniotomy and 377 to no membrane rupture.

**Main outcome measures**
Fetal heart decelerations (early, variable [severe or nonsevere], late, or prolonged) were measured, and an hourly rate of decelerations was calculated. The secondary outcomes were mode of delivery (spontaneous vaginal, instrumental extraction, and caesarean) and indications for caesarean section.

**Main results**
From the time of randomisation to full dilatation, the amniotomy group had higher mean hourly rates of early (3.0 vs 2.1, \( P = 0.048 \)), severe variable (1.4 vs 0.7, \( P = 0.011 \)), and late (3.3 vs 2.3, \( P = 0.021 \)) decelerations than in the usual care group. The groups did not differ for mild variable (\( P = 0.08 \)) or prolonged (\( P = 0.44 \)) decelerations; there was a need for epidural anaesthesia, oxytocin or narcotics; or mode of delivery (\( P = 0.55 \)). The rate of caesarean section for fetal distress alone or with dystocia was higher in the amniotomy group (6.9% vs 3.1%, \( P < 0.05 \)).

**Conclusions**
Routine early amniotomy for women in spontaneous labour was associated with a deceleration in higher hourly rates of early, late, and severe variable fetal heart rate. The rate of caesarean section for fetal distress, however, was increased.

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**Early amniotomy vs usual care**

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Amniotomy</th>
<th>Usual care</th>
<th>RRI (95% CI)</th>
<th>ARI (EER - CER)</th>
<th>NNH (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caesarean section</td>
<td>13.3%</td>
<td>11.4%</td>
<td>1.9%</td>
<td>(CI 2.8 to 6.7)</td>
<td>Not</td>
</tr>
<tr>
<td>Caesarean section for fetal distress</td>
<td>6.9%</td>
<td>3.1%</td>
<td>118%</td>
<td>(13 to 321)</td>
<td>27</td>
</tr>
</tbody>
</table>

**Abbreviations defined in Glossary; ARI, RRI, NNH, and CI calculated from data in article.**

**Commentary**
Although routine early amniotomy has been advocated to shorten labour and reduce caesarean section rates for dystocia (1, 2), little evidence of its risks and benefits is available. We do not know the effect on maternal and fetal heart patterns, use of oxytocin, maternal comfort, caesarean delivery, neonatal Apgar scores, and cord blood gas levels.

The original publication of this study by Fraser and colleagues (3) reported that early amniotomy shortened labour and decreased dystocia with no difference in caesarean section rate, Apgar scores, cord blood gas levels, or percentage of abnormal fetal heart rate tracings. The secondary analysis showed that women in the amniotomy group laboured more quickly and had a higher hourly rate of fetal heart rate decelerations. The findings are consistent with other studies (4).

Incomplete follow-up was a potential cause for bias. Fetal heart rate monitoring strips were available for only approximately 80% of the women. In addition, 51% of the women in the control group had amniotomy in the first stage of labour (3).

By reducing amniotic fluid volume, amniotomy increases the risk for umbilical cord compression, which may produce more variable decelerations. Decelerations alone are not necessarily clinically important; it is the clinical decision-making based on monitoring that affect maternal and neonatal morbidity. Such interventions as change in position or amnioinfusion may be more appropriate than operative delivery.

Additional beneficial effects of routine early amniotomy included a reduction in labour duration and pain, with no change in caesarean section rates and neonatal outcomes. The increased frequency of fetal heart rate abnormalities plus diagnosis of “fetal distress” has not been shown to be clinically important.

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**References**
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