Determining a Threshold for Defining Oligohydramnios in a Low-Risk Population at Term

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Studies Design: Prospective cohort study of patients at 37-40 weeks gestation during 2004-2008 at the Hospital of the University of Pennsylvania (n=195) and Lehigh Valley Health Network (n=113). Pregnancies were uncomplicated and antenatal testing was otherwise not indicated. Amniotic fluid was quantified by the AFI 4-quadrant technique and was repeated weekly until 40 weeks. Clinicians were blinded to AFI levels except if the AFI <1 cm was disclosed to the patient was undelivered. Primary outcome was a positive Fetal Vulnerability Index (FVI). The last AFI measured was evaluated as a predictor of +FVI.

Results: 308 patients met criteria for study analysis. Mean gestational age on admission was 39.8 weeks (range 37.2-41.6 weeks). Mean AFI measured closest to delivery was 11.4 (± 3.5 cm). 2% (n=8) had AFI <5 cm before delivery; 16.5% (n=48) had AFI <8 cm before delivery. 7.8% (n=31) of patients delivered a neonate with + FVI. There were no fetal or neonatal deaths. Last AFI level was 10.2 (±3.4 cm) among pregnancies with a positive FVI vs. 11.5 (±3.5 cm) among those with a negative FVI. An AFI < 8 cm increased the risk of a + FVI by almost 3-fold (risk ratio 2.70 [95% CI 1.2, 6.0]; p=0.01). Using an AFI cutoff of < 8 cm, the area under the receiver operating characteristics (ROC) curve was 0.59, with a sensitivity of 33.3% and a specificity of 85.8%. Delivery mode, intrapartum complications and neonatal resuscitation were similar by AFI levels. Any AFI less than 1 cm was disclosed to the patient was undelivered. Receiver operating characteristics (ROC) curve was similar for AFI levels at either cutoff of 5 or 8 cm (Table 3). The use of intranatal complications and neonatal resuscitation were also similar by AFI level, 30.6% with AFI ≤ 8 cm, 34.8% with AFI < 5 cm, and AFI less than 8 cm (p=0.58).

Conclusions: In our prospective cohort study, an AFI cutoff ≤8 cm was associated with an increased + FVI outcomes yet was not a strong predictor of a + FVI. Our data suggest that the incidental finding of low amniotic fluid, in otherwise uncomplicated low risk pregnancies may not be an indication for immediate intervention particularly in the setting of a low Bishop score. Larger prospective studies are needed to further evaluate this question.

Materials and Methods: A prospective cohort study was performed by recruiting patients attending prenatal clinic between 37 and 40 weeks’ gestation.

Inclusion criteria: patients with a singleton intrauterine pregnancy; nulliparous and multiparous patients, may not to an index AFI level; any AFI less than 1 cm was disclosed to the patient was undelivered. Mean gestational age on admission was 39.8 weeks (range 37.2-41.6 weeks). Mean AFI measured closest to delivery was 11.4 (± 3.5 cm). 2% (n=8) had AFI <5 cm before delivery; 16.5% (n=48) had AFI <8 cm before delivery. 7.8% (n=31) of patients delivered a neonate with + FVI. There were no fetal or neonatal deaths. Last AFI level was 10.2 (±3.4 cm) among pregnancies with a positive FVI vs. 11.5 (±3.5 cm) among those with a negative FVI. An AFI < 8 cm increased the risk of a + FVI by almost 3-fold (risk ratio 2.70 [95% CI 1.2, 6.0]; p=0.01). Using an AFI cutoff of < 8 cm, the area under the receiver operating characteristics (ROC) curve was 0.59, with a sensitivity of 33.3% and a specificity of 85.8%. Delivery mode, intrapartum complications and neonatal resuscitation were similar by AFI levels. Any AFI less than 1 cm was disclosed to the patient was undelivered. Receiver operating characteristics (ROC) curve was similar for AFI levels at either cutoff of 5 or 8 cm (Table 3). The use of intranatal complications and neonatal resuscitation were also similar by AFI level, 30.6% with AFI ≤ 8 cm, 34.8% with AFI < 5 cm, and AFI less than 8 cm (p=0.58).

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Table 3. Secondary outcomes by AFI level

Delivery mode
Intrapartum complications
Postpartum complications

<table>
<thead>
<tr>
<th>AFI level ≤8 cm</th>
<th>AFI level &gt;8 cm</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>95 (26.5%)</td>
<td>10 (16.1%)</td>
<td>0.59</td>
</tr>
<tr>
<td>14 (16.6%)</td>
<td>13 (21.1%)</td>
<td>0.10</td>
</tr>
<tr>
<td>21 (8.4%)</td>
<td>16 (5.6%)</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Postpartum complications included intrapartum complications and any complications related to delivery. The number of positive FVI outcomes was similar by AFI level, 30.6% with AFI ≤ 8 cm, 34.8% with AFI < 5 cm, and AFI less than 8 cm (p=0.58).

Conclusions: In our prospective cohort study, an AFI cutoff ≤8 cm was associated with an increased + FVI outcomes yet was not a strong predictor of a + FVI. Our data suggest that the incidental finding of low amniotic fluid, in otherwise uncomplicated low risk pregnancies may not be an indication for immediate intervention particularly in the setting of a low Bishop score. Larger prospective studies are needed to further evaluate this question.

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