Is caudal blockade associated with an increased incidence of urethrocuteaneous fistula formation following hypospadias repair?

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Introduction:
Caudal blockade is the most commonly performed regional anesthetic in children and has been shown to have a high degree of safety. There are conflicting data in several recent retrospective studies that examine the possible relationship between caudal blockade and development of postoperative urethrocuteaneous fistula (UCF) formation in infants and children undergoing hypospadias repair. Primary study objective: To assess whether the administration of caudal blockade was associated with an increased incidence of UCF following single stage hypospadias repair at our hospital.

Methods:
- Retrospective chart review
- Males < 4 years of age at presentation with single stage distal or midshaft hypospadias repairs between 1/2008 and 2/2015 at CHCO by a faculty urologist and had at ≥2 months follow-up
- Evaluated at postoperative visit for UCF
- Baseline characteristics, caudal blockade or other regional anesthetic, e.g. penile nerve block, meatal position (distal vs. midshaft), repair type (tubular incised plate vs. other repair), use of artificial erection, placement of urethral stent, and use of subcutaneous epinephrine were assessed for association by logistic regression

Results:
Of 249 patients who underwent hypospadias repair during the 7-year period:
- 14 patients (5.6%) subsequently diagnosed with UCF
- No correlation between diagnosis of UCF and caudal blockade (Odds Ratio 0.3, 95% Confidence Interval 0-2.0, p = 0.22)
- No correlation between UCF formation and age, location of hypospadias, repair type, artificial erection, or placement of stent. None of the patients received subcutaneous epinephrine
- A multivariate logistic regression model also failed to show any association between UCF formation and any of the patient or surgical variables (Table 1)

Discussion:
- No association with UCF formation and caudal blockade was found in our patient population
- No association with age, meatal position, repair type, artificial erection, or placement of a urethral stent was found
- These results support previous retrospective studies that demonstrate no association between caudal block and UCF
- Unknown and unmeasured confounders that are unique to an institution may influence reports that demonstrate such an association
- A prospective, randomized multicenter study is currently being organized to more definitively examine this possible association

Table 1: Potential risk factors for development of urethrocuteaneous fistula after hypospadias repair

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Odds Ratio</th>
<th>Standard Error</th>
<th>Confidence Interval</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caudal block</td>
<td>0.3</td>
<td>0.3</td>
<td>0.2-2.1</td>
<td>0.23</td>
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<tr>
<td>Meatal position</td>
<td>2.7</td>
<td>1.7</td>
<td>0.7-9.4</td>
<td>0.13</td>
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<tr>
<td>Urethral stent position</td>
<td>2.3</td>
<td>2.0</td>
<td>0.4-12.5</td>
<td>0.32</td>
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<tr>
<td>Artificial erection</td>
<td>2.5</td>
<td>2.2</td>
<td>0.5-13.9</td>
<td>0.29</td>
</tr>
</tbody>
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References: