Prevalence of High-Risk Bladder Categorization with Prenatal and Postnatal Myelomeningocele Repair Types

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BACKGROUND AND PRIOR STUDIES

- SB: MC permanently disabling birth defect (34/100k prevalence)
- MC worldwide repair type remains postnatal open
- Increasing use of prenatal intervention
- Growing number institutions performing fetoscopic
BACKGROUND AND PRIOR STUDIES

- Landmark MOMS trial* evaluated prenatal vs. postnatal repair
  - Significantly reduced need for VP shunt
  - Reduced rate hindbrain herniation
  - Improved motor function

- No significant urologic benefit noted on multiple MOMS substudies**
  - Studies focused on CIC and/or continence rates

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BACKGROUND AND PRIOR STUDIES

• Main goals of SB urologic care
  – Obtain + maintain SAFE bladder
    • Protect kidneys / upper tracts
  – Eventual social continence

• Most require intervention for safe bladder and/or continence
  – Prenatal and postnatal
AIM + HYPOTHESIS

• We sought to evaluate differences in bladder safety between 3 MMC repair types

• We hypothesize that prenatal, especially fetoscopic, repair will lead to improved bladder safety compared to postnatal repair in the near term
METHODS

- Retrospective
- All prenatal MMC repairs
  - Prenatal open (PRO)
  - Fetoscopy (FMR)
- Postnatal repair (PST) with MOMS inclusion/exclusion criteria to match
- **Initial studies** within 1st year
- **Follow up studies** within 18mos of initial

<table>
<thead>
<tr>
<th></th>
<th>Initial Studies</th>
<th>Follow up Studies</th>
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<tbody>
<tr>
<td>PRO</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td>FMR</td>
<td>22</td>
<td>13</td>
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<tr>
<td>PST</td>
<td>51</td>
<td>39</td>
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METHODS

- **US**: evaluated for HN
- **VCUG**: evaluated for VUR
- **CMG**: evaluated for bladder risk categorization

<table>
<thead>
<tr>
<th>Safe</th>
<th>Intermediate</th>
<th>High</th>
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<tbody>
<tr>
<td>• Normal Capacity</td>
<td>• MDSP/DLPP 25-40cmH20</td>
<td>• MDSP/DLPP &gt;40cmH20</td>
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<tr>
<td>• MDSP/DLPP &lt;25cmH20</td>
<td>• Presence of NDO</td>
<td>• Presence of NDO + DSD</td>
</tr>
<tr>
<td>• No NDO</td>
<td>• No DSD</td>
<td></td>
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<tr>
<td>• No DSD</td>
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MDSP = Maximum Detrusor Storage Pressure; DLPP = Detrusor Leak Point Pressure; NDO = Neurogenic Detrusor Overactivity; DSD = Detrusor Sphincter Dyssynergia
FINDINGS: HIGH-RISK BLADDER DISTRIBUTION

Initial High
Final High
FINDINGS

- **PST**: 51% Improved from High, 13% Remained High, 25% Worsened to High, 10% Improved or Remained Less than High
- **PRO**: 35% Improved from High, 35% Remained High, 25% Worsened to High, 0% Improved or Remained Less than High
- **FMR**: 46.0% Improved from High, 46.0% Remained High, 7.7% Worsened to High, 0.0% Improved or Remained Less than High
FINDINGS

FMR improved from high risk in 46%

PRO and FMR never worsened to high risk

PST worsened to high risk in 10%
FINDINGS

p = 0.0256

VUR

Initial VUR
Follow up VUR

HN

Initial HN
Follow up HN
CONCLUSIONS

- PRO/FMR associated with improved bladder health in near term

- FMR shows promising results compared to PRO and postnatal in regards to bladder safety
  - Larger studies with longer follow up are warranted to determine statistical significance, cost, and public health benefit