COMPARISION OF ENDOSCOPIC THIRD VENTRICULOSTOMY ALONE AND COMBINED WITH CHOROID PLEXUS CAUTERIZATION

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Abbreviations

- CPC = choroid plexus cauterization;
- ETV = endoscopic third ventriculostomy;
- PIH = postinfectious hydrocephalus;
- NPIH = nonpostinfectious hydrocephalus;
- PHH = posthemorrhagic hydrocephalus;
Introduction

• Sir Walter Dandy (1918): cauterizing of the choroid plexus in 4 children

• 1950s - 1980s: neuroendoscopy was restricted because of high morbidity and mortality

• 1995: Pople reported 116 children who had CPC between 1973 and 1992
HYDROCEPHALUS

- CPC
- Shunt
- Obstruction
- ETV/CPC
- All hydrocephalus

Obstruction age < 1
Obstruction age > 1
ETV/CPC

- CURE Children’s Hospital of Uganda
- 550 children treated with ETV or ETV/CPC
- Classified by age and status of aqueduct
- ETV alone: 284
  - Mean follow up: 19 months
- ETV/CPC: 266
  - Mean follow up: 9.2 months

Comparison of endoscopic third ventriculostomy alone and combined with choroid plexus cauterization in infants younger than 1 year of age: a prospective study in 550 African children
B. C. Warf
J. Neurosurg., 2005 vol. 103 (6 Suppl),
TABLE 2

Differences in outcome based on procedure and age

<table>
<thead>
<tr>
<th>Procedure &amp; Significance</th>
<th>&lt; 1 Yr</th>
<th>≥ 1 Yr</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETV only</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no. of successes (%)</td>
<td>98 (47)</td>
<td>47 (80)</td>
<td>145 (54)</td>
</tr>
<tr>
<td>total procedures</td>
<td>209</td>
<td>59</td>
<td>268</td>
</tr>
<tr>
<td>ETV–CPC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no. of successes (%)</td>
<td>141 (66)</td>
<td>33 (80)</td>
<td>174 (68)</td>
</tr>
<tr>
<td>total procedures</td>
<td>214</td>
<td>41</td>
<td>255</td>
</tr>
<tr>
<td>p value</td>
<td>&lt;0.0001</td>
<td>1.000</td>
<td>0.0012</td>
</tr>
</tbody>
</table>
TABLE 3

Differences in outcome based on origin of hydrocephalus in patients younger than 1 year of age*

<table>
<thead>
<tr>
<th>Procedure &amp; Significance</th>
<th>PIH</th>
<th>NPIH</th>
<th>MM</th>
<th>PHH</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETV only</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no. of successes (%)</td>
<td>70 (52)</td>
<td>21 (38)</td>
<td>7 (35)</td>
<td>—</td>
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<tr>
<td>total procedures</td>
<td>134</td>
<td>55</td>
<td>20</td>
<td>—</td>
</tr>
<tr>
<td>ETV–CPC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>no. of successes (%)</td>
<td>72 (62)</td>
<td>32 (70)</td>
<td>34 (76)</td>
<td>2 (40)</td>
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<tr>
<td>total procedures</td>
<td>117</td>
<td>46</td>
<td>45</td>
<td>5</td>
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<tr>
<td>p value</td>
<td>0.1607</td>
<td>0.0025</td>
<td>0.0045</td>
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</tr>
</tbody>
</table>

* MM = myelomeningocele; — = not applicable.
ETV/CPC for Aqueductal Stenosis

- 35 patients less than 1 year of age
- 19 male, 16 female
- ETV alone
  - 12 infants
  - Mean age 4.7 months
  - Mean follow up 51.6 months
- ETV/CPC
  - 25 infants
  - Mean age 3.5 months
  - Mean follow up 31.2 months

Long-term outcome for endoscopic third ventriculostomy alone or in combination with choroid plexus cauterization for congenital aqueductal stenosis in African infants: Clinical article Benjamin C Warf, Sarah Tracy, and John Mugamba J Neurosurg Pediatr, 2012 vol. 10 (2) pp. 108-111
- Successful treatment of hydrocephalus
  - ETV alone 48.6%
  - ETV/CPC 81.9%
- All failures occurred by 6 months

Fig. 1. Graph showing the time to treatment failure for the 2 patient groups. The upper and lower survival curves are for ETV-CPC and ETV alone, respectively. Confidence intervals are denoted by dotted lines.
ETV Complications

- Systematic review 2672 ETV
- Overall complication rate 8.8%
- Permanent morbidity 2.1%
  - 1.2% neurologic
    - Hemiparesis 0.4%
    - Gaze palsy 0.3%
    - Memory disorder 0.1%
    - Consciousness disorder 0.4%
  - 0.9% Hormonal/Hypothalamic
    - Diabetes insipidus 0.5%
    - Weight gain 0.4%
    - Precocious puberty 0.04%
- Intraoperative Hemorrhage 0.66%
  - Basilar Artery Injury 0.14% (4 cases)

Complications of endoscopic third ventriculostomy: a systematic review.
Triantafyllos Bouras and Spyros Sgouros
Acta Neurochir Suppl, 2012 vol. 113 pp. 149-153
Case Study

The 7-month-old boy, the large enlargement circumference head (51cm), bulging fontanelle, splitting of the cranial sutures.
CONCLUSIONS

• The ETV–CPC is more successful than ETV alone in infants younger than 1 year of age.

• ETV–CPC may be the best option for treating hydrocephalus in infants.
THANKS FOR ATTENTION