An Overview of Neurosurgery and Spina Bifida

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Section of Neurosurgery
Spina Bifida and Neurosurgery

- better CSF shunts
- better CSF shunt surgery
- removal of CSF shunts
- avoidance of CSF shunts
- Chiari malformation type 2
- spinal cord complications
CSF shunts

- 85 – 90% prevalence among MM pts
- shunt failure: acute or insidious
- ≥ 1 / 3 fail in first year
- 5 – 10% infection rate per operation
- 1 – 2% mortality (!) per failure
- exacerbation of CM2 / syringomyelia
Overall Risk of Shunt Failure  N=671
Better CSF Shunts

- the Shunt Design Trial
- Bioglide
- programmable valves
Better CSF Shunt Surgery

- the Endoscopic Shunt Insertion Trial
- ultrasound
- image guidance
- shaveless CSF shunt surgery
Shaveless CSF Shunt Surgery


Removal of CSF Shunts: Endoscopic 3rd Ventriculostomy

- If it ain’t broke, don’t fix it.
- E3V for CSF shunt failure
  - urgent
  - “elective” for slit ventricle
- E3V for CSF shunt infection
Management of Shunt Failure with E3V

Management of Shunt Infection with E3V


Management of “Slit Ventricle Syndrome” with E3V

Avoidance of CSF Shunts: Antenatal MM Repair

- Rationale
- Expected benefit – lower extremities
- Observations – Chiari
- Putative benefit – hydrocephalus
- Risks and ethical issues
Avoidance of CSF Shunts: the MRCT

- Vanderbilt, CHoP, UCSF
- NO repairs outside trial!
- Endpoint – CSF shunt insertion
  - adjudication
- Secondary endpoints
- “Freezing” of technology
Chiari malformation type 2

- posterior fossa too small
- hindbrain developmentally abnormal
- medullary dysfunction – infancy
  - Compression?
- medullary dysfunction – later
  - CSF shunt failure?
- syringomyelia
Spinal Complications

- syringomyelia / syringobulbia
- spinal arachnoid cyst
- diastematomyelia
- dermoid cyst
- tethering
Spinal Cord Tethering

- progressive neurological deficits
- pain
- bladder dysfunction
- a diagnosis of exclusion
- surgical risks and benefits