**Cerebrospinal Fluid leaks**

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**DISCLAIMER**

- No medications available that have an FDA indication for CRS
- All medications and any medical management described in this lecture are OFF LABEL

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**Presentation-Diagnosis**

- Watery rhinorrhea
- Reproduced by leaning forward or Valsava (Tandy test)
- Distinguish from rhinitis
- Beta (tau)-transferrin: highly specific for human CSF
  - Only need a small amount of fluid: <1cc
  - No special handling (refrigeration)
• Endoscopy in the office
• Intrathecal Iohexol (Omnipaque 300, Withrop Pharmaceuticals, New York, NY)
• Intrathecal Fluorescein
• CT cysternogram
• Return for endoscopy same day
• Use fluorescent ophthalmology light

**GHSU-MCG protocol**

**Fluorescein protocol**

• Lumbar drain
• Fluorescein 10%, dilute down to 1%. Mix 1 cc with 10 cc CSF (Final concentration <=0.1%) and very slowly inject
• Trendelenberg
• Dye should leak from defect in 20-60 min
Fluorescein

Suctioned

Skull base defect covered with scar tissue

3 min after suctioning
**Management**

**Conservative – trauma patients**  
(acute setting)

- Reclined sitting, no straining, avoid constipation, no bending over, avoid coughing, sneezing, nose blowing
- Lumbar CSF decompression
- Steroids, diuretics: controversial (ICP patients)
- Prophylactic antibiotics: controversial

**Management**

**Surgical indications**

- Failure of cons management
- Persistent leak
- Recurrent meningitis
- Pneumocephalus
- Intraoperative CSF leak – repair in same setting
65-year-old man with spontaneous CSF leak

Surgery video
Postoperative management

- Lumbar drain x 2-3 days only in ICP patients
- Bed rest with HOB elevated x 24 hours
- Discharge 1-2 days if no lumbar drain
- Avoid exertion
- Stool softeners
- Antibiotics
- Normal saline
- Endoscopic debridement over one month

Success rates: upper 90s
**Skull base defects with increased ICP**

- Schlosser and Bolger
  - ICP (Lumbar drain) < 25 cm: low salt diet/diuretics
  - ICP > 35 cm or multiple defects: consider shunting
  - Weight loss

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**Thank you!**