EXTERNAL SINUS PROCEDURES: What is their Role in 2009?

Role of External Sinus Surgery: 2009

- There is no role!
- Never do external surgery.
- Thanks, everyone!
- Good Bye.

Advantages of Endoscopic Surgery

- Visualization
- No incision or Scar
- Faster healing
- Less missed days from work or school
- Better patient acceptance

Disadvantages of Endoscopic Surgery

- Greater “occult” risk
- Much greater degree of complex equipment
- Steep learning curve
- Bleeding can negate visualization advantage
- More difficult in inflamed circumstances such as acute infection
- More dependent on nursing assistance for equipment after hours
Think about this equipment…

Facial Scar 4 Years after External Ethmoidectomy…

Facial Scar 5 Years After Mid-Forehead Frontal Sinus Approach

Repertoire of External Procedures: 2009

- Caldwell-Luc
  - and relatives
- External ethmoidectomy
- External frontoethmoidectomy
- Frontal sinus trephine
- Frontal sinus osteoplastic approach
Caldwell-Luc: Description

- Classic Procedure (circa 1893-1897)
  - Gingival-buccal sulcus incision
  - Anterior maxillary wall entry
  - Curettage of sinus lining
  - Inferior meatus antrostomy

Caldwell-Luc: Problems

- Problems
  - Non physiologic antrostomy
    - Dacryocystitis ~ 2.5%
  - Curettage
    - Ignores current notions of cilia function and recovery of tissue
    - Incidence of cheek numbness
      - (V2) ~ 9%
    - Incidence of tooth injury
    - Wound dehiscence ~2%

Caldwell-Luc: Indications

- Exceedingly few
  - Primary ciliary dyskinesia
  - ?Cystic fibrosis?

Caldwell-Luc Approach: Description

- Gingival buccal sulcus incision
- Maxillary wall exposure
- Removal of disease without curettage
- Middle meatus antrostomy
- Unparalleled quick sinus exposure
Caldwell-Luc Approach: Problems

- Gingival-buccal sulcus incision
  - Dehiscence
  - Edema/healing prolonged
- Potential V2 numbness
- Potential tooth injury

Caldwell-Luc Approach: Indications

INDICATIONS:
- Chronic sinusitis
  - Especially in failed FESS
- Tumor or disease anterior/inferior
  - Need for drilling
- Foreign Body
  - Dental material
- Mycetoma
- IMA ligation

Canine Fossa Puncture (CFP): Description

- Discovered and popularized by PJ Wormald
  - 2005 also Canine Fossa Trephination (CFT)
- Anatomic study of V2 branching
- Adjunct to endoscopic ethmoidectomy 2 hands
- CFP and placement of microdebrider
  - 4 mm trocar and microdebrider
  - Angled scope through middle meatus antrostomy
  - Avoids “mega antrostomy”
  - Avoids need to bend instruments around corner
  - Greater coverage of anterior maxillary sinus

CFP: Problems

- If nerve injury avoided, relatively few
  - V2 injury
  - ? Tooth injury
- Need microdebrider and angled scopes
  - 45 or 70 degree
**CFP: Indications**
Sathananthar, Nagaonkar, Paleri et al, Laryngoscope, 2005, 115(6), 1026

- “Really bad sinusitis”
  - Fungal mycetoma
  - AFS
  - Severe or recurrent sinusitis
    - Cystic fibrosis, etc
  - Tumor
    - Antral choanal polyp
    - Inverted papilloma, etc
  - Data show improved symptom scores at 18 months
  - Data show improved sinus aeration (64% v. 11%)

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**Maxillary Antral Puncture**

- **Description**
  - Same as CFP
  - Can be done as outpatient or in ICU
    - Straight local anesthesia
- **Problems**
  - Same as CFP

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**CFP with Balloon Technique**

- Retrograde approach to maxillary ostium
- More direct trajectory
- Avoids ethmoid anatomy and access issues

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**Maxillary Antral Puncture**
Maxillary Antral Puncture: Indications

- Acute Sinusitis
  - Odontogenic sinusitis
- Culture technique
  - ICU Sinusitis
  - Immunocompromised
- Chronic sinusitis
  - Patient "too sick" for O.R.
  - Patient does not accept FESS
    - Sinus balloon placement?

External Ethmoidectomy: Description

- Medial canthal incision
  - Z-plasty
- Periostial elevation
- Frontoethmoid suture line
  - Anterior ethmoid artery/ anterior lacrimal crest
    - 21 mm
  - 14 mm AEA to PEA
  - 7 mm PEA to optic nerve
- Ethmoid entry through lacrimal bone
- Direct visualization with known skull base height

External Ethmoidectomy: Problems

- Scar (?)
- Diplopia
  - Medial canthal tendon
- Orbital retraction (?)
- CSF leak
- Patient acceptance
  - Google
  - Ostentatious claims

External Ethmoidectomy: Indications

- Harris P. Mosher
  - Sphenoethmoidectomy
    - Devastating complications
  - External Ethmoidectomy
    - Recommended as replacement (30's)
- 2009
  - Acute complications
    - Sub-periosteal orbital abscess
    - Obviates FESS in infected setting
  - Orbital surgery/tumor surgery
  - Anterior ethmoid artery ligation
  - Trauma ORIF
Frontoethmoidectomy (Lynch): Description

- External Ethmoidectomy plus
  - Removal of bone anterior to AEA
  - Allows entry into frontal sinus
  - Remove frontal sinus floor
  - Remove frontal sinus septum
  - Lateral nasal wall excision
    - Medial Maxillectomy
- Sewall-Boyden modification
  - Forerunner of the “frontal sinus rescue”

External Frontoethmoidectomy (Lynch)

Frontoethmoidectomy (Lynch)

Medial Maxillectomy
Frontoethmoidectomy: Problems

- Stenosis, stenosis, stenosis
  - H. Bryan Neel: 33%
- Scar
- Patient acceptance
- Orbital retraction/injury
- Diplopia
  - Orbital prolapse
  - Orbital position
- CSF leak

Frontoethmoidectomy: Indications

- Few
- Draf III or “Modified Lothrop”
  - Replaced the Lynch almost entirely
- Potential use
  - Osteoneogenesis where extensive drilling is required
    - Revision
  - Infectious complications?
    - CNS complications - speed or equipment
Frontal Sinus Trephination: Description

• 1 cm incision next to medial eyebrow
• Otologic drill used to trephine floor of supraorbital ethmoid or frontal sinus, or possibly anterior wall of frontal sinus

Frontal Sinus Trephination: Problems

• None… almost
  – Supratrochlear nerve injury
  – CSF leak?
• Quick and direct
• Cosmetic
• Simple instrumentation
• Obviates need for image guidance
• Obviates need for knowledgeable assistance

Frontal Sinus Trephination: Indications

• Acute complications of frontal sinusitis
  – No meticulous hemostasis in inflamed field
  – Quick if patient has CNS complications
• Highly adjunctive to difficult frontal sinus procedures in chronic sinusitis
  – Instrument placement or catheter placement
  – Direct identification of frontal ostia

Frontal Sinus Osteoplastic Flap: Description

• Bicoronal incision
  – Brow
  – Midforehead
• Pericranial flap
• 6 foot perfect Caldwell plain film 1:1 mag
Frontal Sinus Osteoplastic Flap: Description

- Outline anterior table of frontal sinus
- Sagittal Saw- Bevel!!
- Drill mucosa and septations
- Pack with fat (obliterate) or remove posterior wall (cranialize)
- Replace anterior table with titanium plates

Frontal Sinus Osteoplastic Flap: Problems

- Big procedure and big incisions
  - Cosmetic deformity
- CSF leak
- Long term complications can be silent and late
  - Mucocoele
  - Brain abscess
  - Recurrent sinusitis/osteomyelitis
- Can’t provide tumor surveillance in office
  - Without imaging
  - MRI actually necessary for surveillance

Frontal Sinus Osteoplastic Flap: Indications

- Trauma
- Failed endoscopic procedures
  - Polyposis
  - Osteoneogenesis
- Cranialization
- Tumor surgery ??

Frontal Sinus Osteoplastic Flap for Trauma: Bottom Line

- If the anterior wall is displaced and will cause a noticeable defect, fix it
- If the recess is crushed, either open it or obliterate the sinus
- If the posterior wall is crushed or a CSF leak persists, cranialize
Conclusion

- “Those who fail to learn from history are doomed to repeat it.”
  - Edmund Burke

SFGH - It’s as Real as it Gets!