Current status of balloon sinuplasty

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Considerations for any sinus surgery

• Pathology
  – Inflammatory, neoplasm, CSF leak
• Anatomy
  – Functional vs academic
• Surgical approaches
  – Extent of surgery
Goals of surgery & pathophysiology of CRS

- Remove polyps & inflammatory mucin
- Topical steroids

Harvey RJ, Schlosser RJ. OHRNS (submitted).

Any sinus surgery
Basic principles

- It is the surgeon, *not the instrument*, that controls the outcome

The errors of sinus instrumentation (or the sinus surgeon)?

Any sinus surgery
Basic principles

- It is the surgeon, *not the instrument*, that controls the outcome
- Bleeding control
  - Has mucosa been treated with topical vasoconstrictor?
  - *Less of an issue with balloon sinuplasty*
- Mucosal preservation is paramount
  - *Does balloon sinuplasty improve this?*
- Primary surgery is best
  - Osteoneogenesis, scarring/contracture, mucosal dysfunction
Any sinus surgery
Basic principles

• Surgical goals tailored to individual patient
  – Improve ventilation: Balloon sinuplasty probably does this
  – Remove tissue (polyps, scar tissue, biofilm, fungus, mucin)
  – Deliver topical medication post op
• Degree of anatomic knowledge is based upon extent of surgery
  – Balloon sinuplasty requires less knowledge than more extended procedures, such as Lothrop
• Standard ESS: Maximal removal of partitions
  – Single endoscopic view of all boundaries

Clinical use of balloon sinuplasty

Into left frontal through right nostril

M.P.
Pre-op FESS (s/p Sinuplasty)

45 year old male, recurrent maxillary sinus pain, treated by sinuplasty 2 months prior to presentation.
Bilateral frontals via right nostril

2 months post-op CT

POD 5

How big does the opening need to be?
Simple ventilation vs access for topical treatment

Risk/benefit of uncinectomy & ethmoidectomy

- Traditional teaching: Ethmoidectomy improves dependent (frontal) sinuses
- Balloon teaching: Dilation of dependent ostia improves ethmoid disease?
- Nitric oxide
  - Useful in respiratory defense
  - Produced primarily in sinuses>nasal cavity>lower airway
  - Unclear if uncinectomy results in pathologic “imbalance” of nitric oxide
- Uncinectomy beneficial for topical therapies
- Harmful for mucociliary clearance??

Impact of surgery and device on topicals

- 3 delivery techniques
- 3 surgical states
- CT evaluation of distribution
- Video confirmation

All post-ESS cavities the same?

Harvey RJ, Goddard J, Wise SK, Schlosser RJ. J OTO 2008

Harvey RJ, Schlosser RJ. J OTO 2009

Harvey RJ, Schlosser RJ. J OTO 2009
Overall distribution of topical medication

Effects by sinus

Endoscopy via canine fossa

What’s the evidence for various surgical tools?

- Image guidance
  - Case series with extent of surgery, time
- Shaver/microdebrider
  - Case series
- Through cutting hand instruments
  - None
- Endoscope
  - Case series
FESS outcomes

- Most important outcome is patient symptoms
- QoL generally doesn’t correlate with objective measures of disease, such as CT scores or endoscopic grading

CLEAR study strengths

- N=65 pts followed for 2 years
- Balloon only=34, hybrid=31
- SNOT-20 improved from 2.17 to 0.87
- 85% patients report improved symptoms
- CT scores improved from 9.66 to 2.69

CLEAR study weaknesses

- 9.2% patients required revision
- 1 yr CLEAR (Kuhn et al) with 85% endoscopic patency rates
  - Is it possible to visualize?

“Endoscopic view” of patent frontal
CLEAR study weaknesses

- Significant potential for financial bias
- Bias toward single surgeon?


Balloon sinuplasty evidence

- As with most surgical outcomes for CRS, we only have level 4 evidence
- This is probably the best we’ll get

Unanswered questions

- Are big holes better (or worse) than small ones?
- Will new technology (stents, etc) improve outcomes or impact utilization?
- Is the cost of balloons justified?
- Will balloon sinuplasty impact FESS reimbursements?
- Is balloon sinuplasty being held to higher standard than other technology?