Nasal Endoscopy: Findings and Role in the Management of Rhinosinusitis

David W. Kennedy, M.D., FACS, FRCSI, Professor, Perelman School of Medicine, University of Pennsylvania
Disclosures

Conflicts of interest
- Ententcare (Rhinactive) – Medical Director
- AcceptEnt (Partner, Shareholder)

• Medical Advisory Board
  - Merck
  - IntersectEnt
  - Sinuwave

• Royalties
  - Medtronic-Xomed
Chronic Rhinosinusitis

• Most common health care complaint
• $2 billion annually in OTC medications
• $6 billion annually in total direct and indirect costs
• 24 million outpatient visits annually, 90% result in prescription
• Has very significant but very poorly recognized effects on quality of life
Medical Outcomes Study Short Form – 36 (SF-36)

- Questionnaire covers a 4 week period
- Scores for each domain 0 - 100 (perfect health)
- 36 items measuring function in 8 different health domains

Domains:

- Physical functioning
- Bodily pain
- Vitality
- Role emotional
- Role physical
- General health
- Social functioning
- Mental health
- 200 randomly selected patients: Initial visit SF-36 survey completed. Follow-up surveys mailed with 150 responses (75%)

- 21 (19%) primary surgeries vs. 121 (81%) revision cases
- 46.9 ± 13.6 years mean patient age
- 36 ± 6 months of follow-up data
- Mean score ± SD calculated for each SF-36 domain
- T Test utilized for statistical analysis (SISA)
Pre-operative QOL scores significantly reduced in 6 of 8 domains
Sinusitis Outcome (Glicklick)

General Health

• SF-36 N=36
• P<0.05 compared to normal population
  - bodily pain
  - general health
  - vitality
  - social functioning
3 year postoperative QOL has returned normal in all domains.
Rhinosinusitis Impact (Glicklick Study)

General Health

• P <0.05 for
  – bodily pain
  – social functioning

• Compared to:
  - congestive heart failure
  - angina
  - COPD
  - back pain
Impact of Chronic Rhinosinusitis on Quality of Life

Conclusions

• Now several studies demonstrating a very major effect on overall quality of life
• Overall effects of sinusitis on quality of life have been previously underestimated
• In some domains, decrement greater than disorders previously known to have a major impact
• Makes understanding sinusitis critical
• Quality of life returns to normal following surgery and medical therapy
CRS more correctly considered a syndrome than a disease

- Genetic predisposing cause (eg. Cystic fibrosis, T2R38)
- Polypoid vs. Non-polypoid disease
- Eosinophilic vs. non-eosinophilic disease
- Varying cytokine profiles
Acute and Chronic Rhinosinusitis

Predisposing Factors

- Environmental
- General host
- Local host
Pathogenesis of Chronic Rhinosinusitis

Environmental Factors

- Viral infection
- Pollution
- Smoking and 2\textsuperscript{nd} hand smoke exposure
- Allergen exposure
Gwaltney et al., NEJM

- Experimentally induced colds
- 90% developed changes in the sinuses
- Resolved at 2 weeks
Acute Bacterial Rhinosinusitis

General Host Predisposing Factors

- Genetic
- Cystic fibrosis
- Atopy
- Granulomatous disorders
- Autoimmune diseases
- Ciliary dyskinesia
- Immune deficiency
- ? stress
Pathogenesis of Chronic Rhinosinusitis

Local Host Factors

- Anatomic issues
- Chronic mucosal inflammation
- Bone inflammation
- Additionally:
  - Tumors
  - Meningoceles
  - Granulomatous disorders
Concha bullosa
Endoscopic Diagnosis

Advantages

• Provides objective evaluation of medical management and post surgery
• Has improved understanding of pathogenesis
• Enables treatment of sinus disease based on endoscopic findings
• Essential part of FESS
Nasal Endoscopes

- Otolaryngologists usually use rigid telescopes ($0^0$, $30^0$, $70^0$)
  - Allow endoscopically directed cultures
  - Enable biopsy
  - Can displace middle turbinate
  - Improved resolution

- Allergists typically use flexible fiberoptic endoscopes
Massive polyposis/Woake’s syndrome
Nasal Endoscopy

- Unilateral disease
- Suspect tumor
Nasal Endoscopy

ACUTE SINUSITIS
Nasal Endoscopy

Three Pass Technique

- First pass
  - Along floor of nose
- Second Pass
  - Between middle and inferior turbinate
- Third Pass
  - Into middle meatus
Nasal Endoscopy

First Pass

- Along floor of nose
  - Overall anatomy
  - Inferior meatus
  - Nasolacrimal duct
  - Nasopharynx
  - Eustachian tubes
Nasal Endoscopy

1st Pass

• Antral-Choanal polyp
Nasal Endoscopy

Second Pass

- Below middle turbinate to sphenoid recess
  - Uncinate process
  - Fontanelles/accessory ostia
  - Sphenoid recess
  - Superior meatus
Medially displaced uncinate process resulting from infundibular disease
Nasal Endoscopy

Third Pass

- Hiatus Semilunaris
- Openings superiorly
- Bulla ethmoidalis
- Infundibulum (with pressure on uncinate)
Nasal Endoscopy

Entering the Middle Meatus

- Supplemental anesthesia
  - Point of entry
  - Middle turbinate attachment
The Bone is Involved in Chronic Rhinosinusitis
Accessory Ostia and Mucus Recirculation

• May allow the mucus to recirculate and lead to recurrent infection
Nasal Endoscopy

- Intrathecal Fluorescein
Recurrent intranasal polyposis
With intrathecal fluorescein and blue light and filter
Identification and Office Biopsy of Neoplasms

Left frontal Recess

- Prior surgery elsewhere
- Persistent disease
- Vascular irregular polypoid tissue

Diagnosis: Inverted papilloma
Right side
Post op revision surgery for massive polyposis
Frontal recess after opening additional frontal cell
Nasal Endoscopy for the Placement of Drug Eluting Implants

- Drug eluting implants currently available for postoperative placement
  - Elute mometasone over 30 days
  - Level 1a evidence of efficacy
- 90 Day implants currently in clinical trials for the treatment of recurrent polyposis
  - Initial studies very encouraging

Investigational device. Limited by federal law to investigational use only. Not approved for sale in U.S.
Nasal Endoscopy

Summary

• Superior to CT for accessible disease
  - Diagnosis of mucosal atrophy
  - Inflammation and granulomatous disorders
  - Mild infundibular disease
  - Recirculation of mucus
  - Sphenoid occlusion
• Avoids radiation and CT costs
Endoscopic Diagnosis

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