THE FUTURE OF RHINOLOGY

"640K RAM memory will be enough for anybody."
Bill Gates, 1981

"There is no reason anyone would want a computer in their home."
Ken Olson, 1977

"Fooling around with alternate current is just a waste of time. Nobody will use it ever."
Thomas Edison, 1889

"The best way to predict the future is to create it."
Peter F. Drucker

EVOLUTION
- Anatomy
- Imaging
- Instruments
- Technology
Brain study using CT. A tumor is clearly observable in the lower transverse slice. Images were presented by David Chesler at the Meeting on Tomographic Imaging in Nuclear Medicine, September 15-16, 1972.
Virtual endoscopy - DICOM files – Imaging Studio Software

Desermeaux 1853


Karl Storz and Harold Hopkins 1953


Endoscrub – Medtronic, Jacksonville, USA, 2008

Assessment of Septal Deviation Effects on Nasal Air Flow: A Computational Fluid Dynamics Model

Tao Bing Chen, BE; Shun Pak Lau, MD, PhD; Steve Fisk; Hong Cheng, MD; De Yun Wong, MD, PhD

Results: In the nose model with septal deviation, major changes in the pattern of inspiratory air flow (e.g., flow partitioning and nasal resistance, velocity and pressure distributions, intensity and location of turbulence, wall shear stress, and increasing of total negative pressure through the nasal cavity) were demonstrated qualitatively and quantitatively. In the healthy nose, the area with the highest intensity of turbulent flow was found in the functional nasal valve region, but it became less apparent or even disappeared in the septal deviation model.

Conclusion:

Recovery of the maxillary sinus mucosa of patients with CRS, observed by electron and light microscopy, was incomplete 1 year after endoscopic surgery.
Minimally invasive sinus we consider it?
Peter J. Catalano

Purpose of review
To understand the theory and application of the surgical model
for endoscopic sinus surgery termed minimally invasive sinus
surgery (MISS). In simple terms: What is MISS? When
should we use it? Does it work?

Recent findings
Several recent publications have addressed the efficacy of
MISS. Using reliable outcome instruments and a 2-month
follow-up period, results following MISS were found to repair or
surpass those following functional endoscopic sinus surgery
(FESS). These results were valid across the spectrum of
disease severity. Other articles address the reduced invasive
rate compared with FESS following initial destruction with
MISS, the potential to markedly reduce the rate of intranasal
complications, and the reduction in immediate postoperative
morbidity.

Summary
The authors believe that MISS should be considered as the
initial surgical intervention offered to patients undergoing
surgery for the treatment of chronic rhinosinusitis.

Keywords:
minimally invasive, sinuses, endoscopic sinus surgery

Balloon sinuplasty – Frontal sinus – Joao Flavio Nogueira

Lanza DC. Postoperative care and avoiding frontal recess stenosis. In:
July 1993.

5F – 7F Fogarty biliary balloon catheters
Temporary ventilation
US$ 85.00

Kieff DA, Busaba NY. Reformation of concha bullosa following treatment by
 crushing surgical technique: Implication for balloon sinuplasty. Laryngoscope; 2009:
in press.

Retrospective 10 year follow-up
Conclusion: CB can reform following crushing
 technique. One may extrapolate that agger nasi and
 frontal recess air cells may reform following balloon
 sinuplasty leading to recurrent obstruction of the
 frontal sinus outflow tract.
OBJECTIVES: Assess the effectiveness of functional endoscopic sinus surgery as a treatment for patients with chronic rhinosinusitis.

DATA COLLECTION AND ANALYSIS: Comparisons between FESS versus medical treatment, FESS versus conventional sinus surgery.

MAIN RESULTS: The three included studies were randomised controlled trials. A middle meatal antrostomy fashioned by FESS was also shown to be superior to an inferior meatal antrostomy formed by traditional sinus surgery techniques.

CONCLUSIONS: FESS as currently practised is a safe surgical procedure. The limited evidence available suggests that FESS as practised in the included trials does not confer additional benefit to that obtained by medical treatment (+/- sinus irrigation) in chronic rhinosinusitis. More randomised controlled trials comparing FESS with medical and other treatments, with long-term follow-up, are required.

NITRIC OXIDE

- Free radical (gas)
- Produced
- Signaling
- Vasodilatation
- Inflammatory
- Host defense
- Macrophage


Available at: www.pfizer.com
When inhaled, NO travels through the trachea and bronchioles into the alveoli.

- Paranasal sinus
- Producer
- NO – mucociliary clearance
- High concentration
- Compared to mouth, nose, trachea and airways

High nitric oxide production in human paranasal sinuses

Effect of Treatment on Maxillary Sinus and Nasal Nitric Oxide Concentrations in Patients With Nosocomial Maxillary Sinusitis

Conclusion: We conclude that GCs do not decrease but even increase nasal NO
Clinical implications?
Clinical treatment?
Surgery?


Methods: Twenty-nine patients who were post-endoscopic sinus surgery were included with 52 who were maxillary sinus ostia cannulated. There were 22 large maxillary sinus ostia and 30 small ostia.

Results: This study shows that enlargement of the maxillary sinus ostium above its normal size (20 mm²) produces a significant decrease in both the maxillary sinus and the nasal cavity NO levels. In addition, the size of the ostium showed a significant correlation to the sinus NO level.

Pre- and Postoperative Sinus Penetration of Nasal Irrigation

Conclusions: Unoperated sinuses or cases with gross sinus ostial obstruction will not be reliably penetrated by sinus irrigant. A 3.95-mm ostial diameter seems to be the minimum size to guarantee penetration in paranasal sinuses to maximize the potential for topical sinus treatment.

Sparklet Nasal

Hydrodebrider – Medtronic – Jacksonville, USA, 2009

Portable Image Guidance System – Karl Storz, Germany, 2009

ARE WE READY?

VeriViewer – Augmented Reality System, USA, 2009
What's new in FESS: maybe office-based ESS
James A. Duncavage

Gustav Killian, University of Berlin, Germany, 1918
Pericranial Flap

Closure of large skull base defects after endoscopic transnasal craniotomy

Clinical article:

NOTES, Karl Storz company, Germany, 2008

N.O.T.E.S. Surgery

N.O.T.E.S. Surgery

TRAINNING / TEACHING

Temporal Bone Simulator, USA & Germany, 2007

Endoscopic Sinus Simulator – Stanford University

Endoscopic Sinus Simulator – Stanford University