RUSH UNIVERSITY MEDICAL CENTER

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In-office Rhinologic Procedures

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Disclosures

- None

In office procedures

- Debridements
- Synechiae management
- Sinonasal mass biopsy
- Epistaxis management
- Balloon sinus dilation
- Eustachian tube dilation
- Septoplasty
- Polypectomy (recurrent polyp disease)
- Placement of steroid eluting implants
- Rhinitis procedures
- Inferior turbinate management
- In office FESS

Overview

- Patient selection
- Local anesthesia
- Chronic rhinitis
  - Posterior nasal nerve ablation
- Chronic Sinusitis
  - FESS

Patient Selection

- Cooperative, relaxed patient
  - Anxiety or limited tolerance to endoscopic manipulation are poor candidates
  - Assess during diagnostic endoscopy
  - Pick easy cases to start
- Favorable anatomy for access
- Co-morbidities
  - Anticoagulation
  - Cardiopulmonary disease

Pearls for Room Set Up

- Analogous to OR (consider having OR staff teach clinic staff how to set up/scrub)
- Patient monitor (BP, Pulse oximetry)
- Crash cart available
- Representative for guidance (if indicated)
- Bovie or bipolar in room (consider grounding patient)
- Two suctions
- Pediatric endoscopes
- Patient can be positioned as in the OR, 45 degrees above horizontal or seated without reclining

Anesthesia Protocol

- Local anesthesia is the key
- Combination of oral, topical and injectable analgesia
  - 5/325 mg Oxycodone/Acetaminophen
  - 0.5 mg lorazepam
  - 6% tetracaine jelly
  - Pledgets soaked in 1:1,000 epinephrine and 4% lidocaine
  - 1% lidocaine with epinephrine 1:100,000

Reinforced anesthesia needle

ENT surgeons select the reinforced anesthesia needle for its innovative design.[1-2]

The unique combination of a 27G tip and larger outer sleeve allows for a positive stop for injection depth precision[3-4]

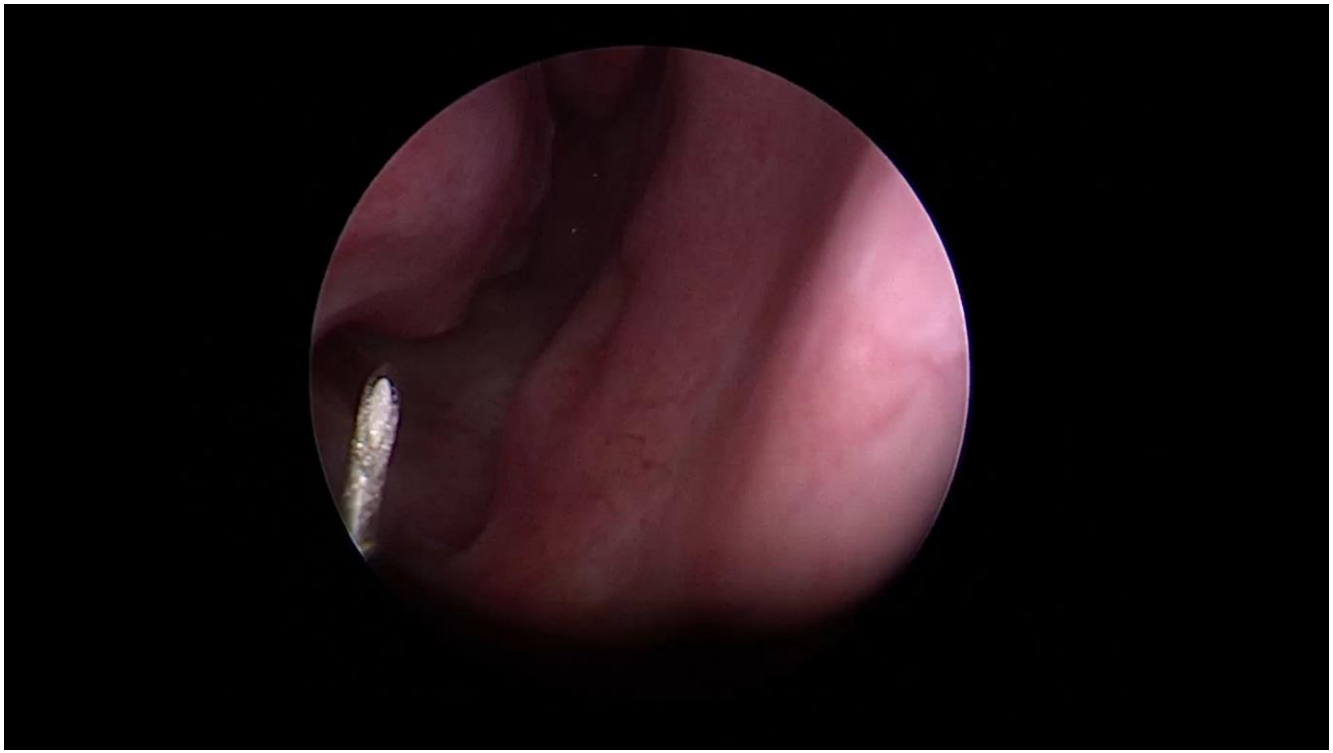
Local Anesthesia

Drug	Onset	Max Dose, mg/kg		Max Dose, mg (70 kg)		Duration	
			With epi		With epi		With epi
Lidocaine	Rapid	4.5	7	315	490	120 min	240 min
Tetracaine	Slow	1.5	2.5	105	175	3 h	10 h

Amounts Used:

- Tetracaine gel 6%: 2cc (120mg)
- Lidocaine 1% w/ epi: 2cc (20mg)

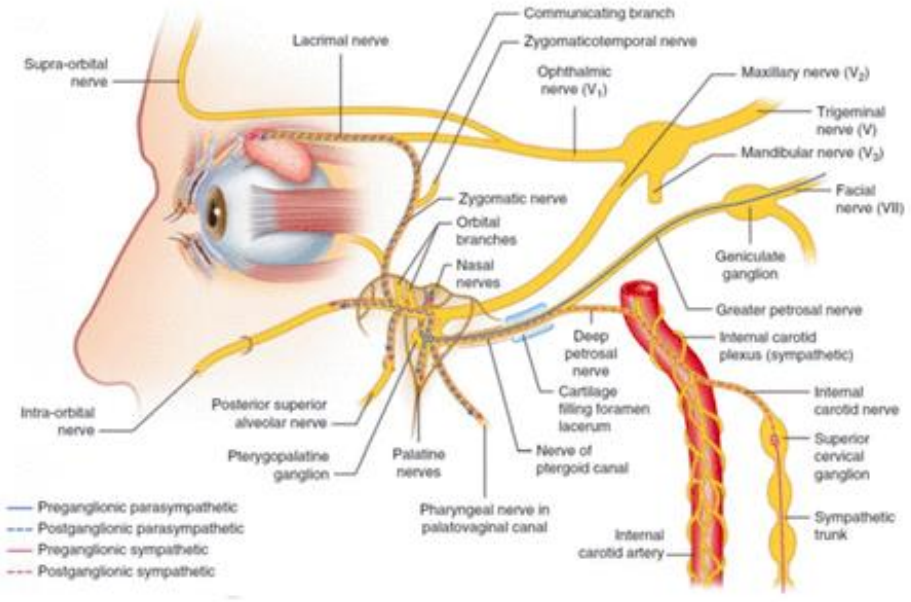
Local Anesthesia



- Inferior turbinate injection
- SPA block

CHRONIC RHINITIS TREATMENTS

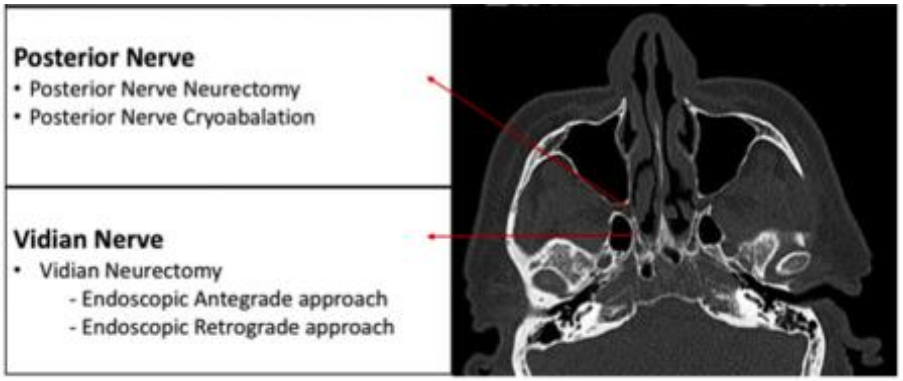
Vidian Nerve branches



- Vidian nerve
  - Pre-ganglionic single bundle
  - Vidian canal
  - Synapses at the sphenopalatine ganglion
  - Post-ganglionic - multiple efferent rami separately innervate the orbit, palate, and nasal mucosa

Chronic Rhinitis Management

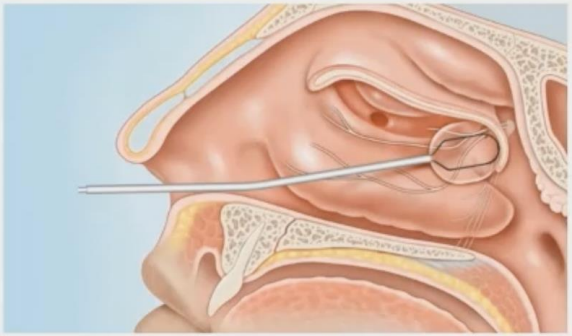
- Medical management is first line
  - Topical steroids, azelastine, ipratropium bromide
- Traditional surgical treatments for persistent symptoms
  - Vidian neurectomy
  - Posterior nasal neurectomy



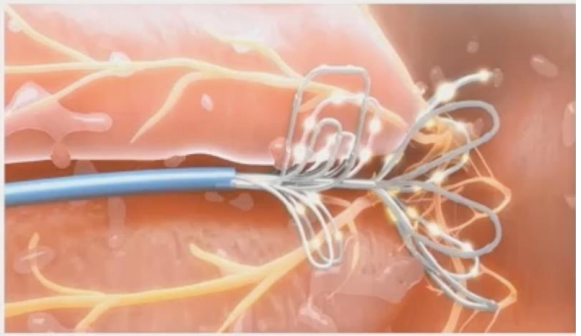
In-Office Therapeutic Options

RhinAer

Clarifix



NeuroMark



Predictor of Success: Response to Ipratropium Bromide

ORIGINAL ARTICLE

Predictors of rhinorrhea response after posterior nasal nerve cryoablation for chronic rhinitis

Frederick Yoo MD, Edward C. Kuan MD, MBA, Pete S. Batra MD, Carmen K. Chan MD, Bobby A. Tajudeen MD, John R. Craig MD

First published: 22 May 2020 | https://doi.org/10.1002/alr.22574 | Citations: 7

Potential conflict of interest: E.C.K.: Stryker, consultant. The remaining authors have no disclosures. Accepted as a podium presentation at the American Rhinological Society (ARS) meeting at the Combined Spring Otolaryngology Meeting, in Atlanta, GA, but rescheduled for presentation at the ARS annual meeting in Boston, MA, September 11-12, 2020.

Clarifix

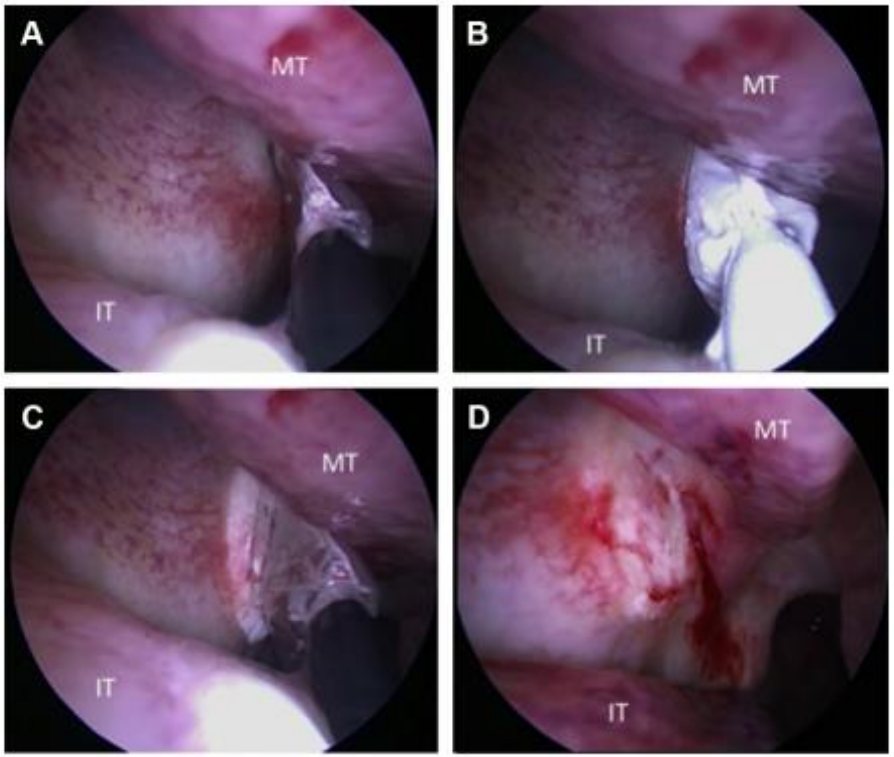
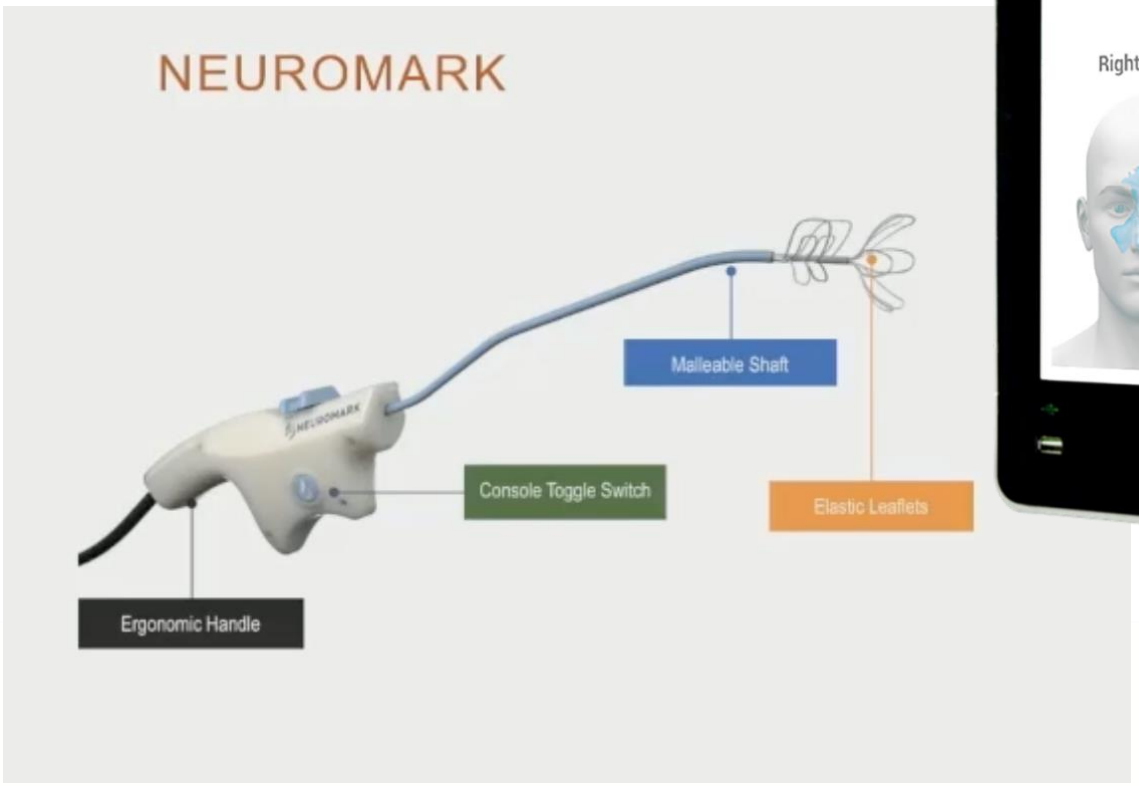
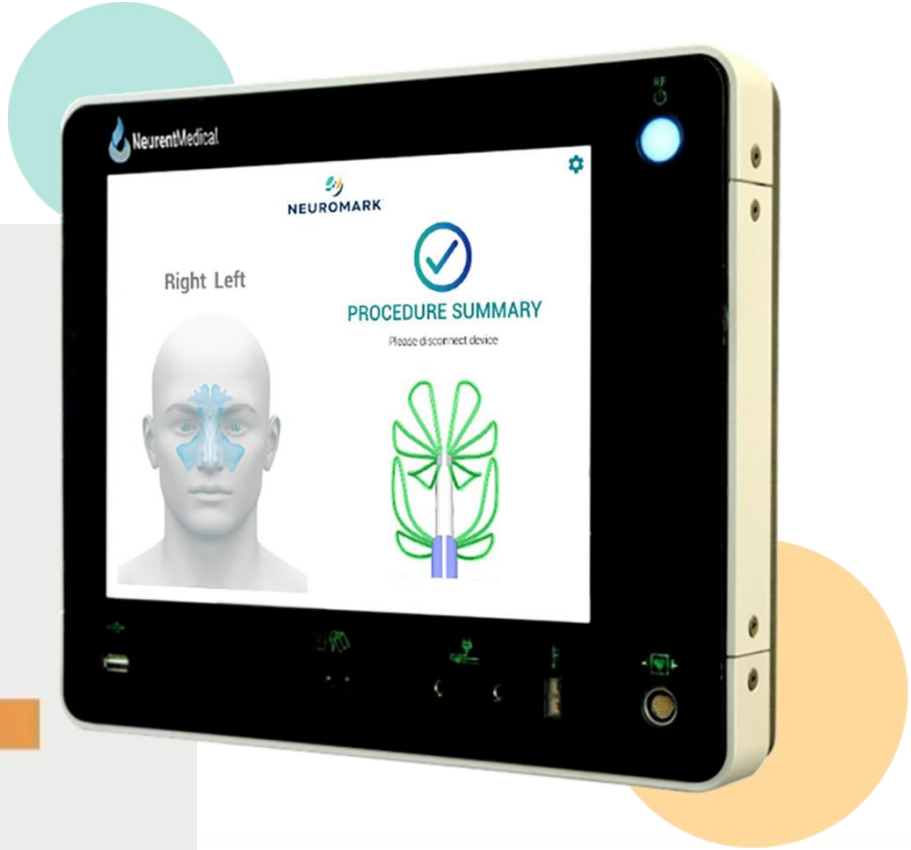


Fig. 5. Cryoablation of the right posterior nasal nerve (*A*). ClariFix cryodevice (Arrinex, Inc) placed endoscopically in posterior middle meatus (*B*). Activation of cryogen (*C*, *D*). Evidence of cryoablation with tissue blanching on withdrawal of the cryodevice. IT, inferior turbinate; MT, middle turbinate. (*Courtesy of* Arrinex, Inc, Redwood City, CA.)

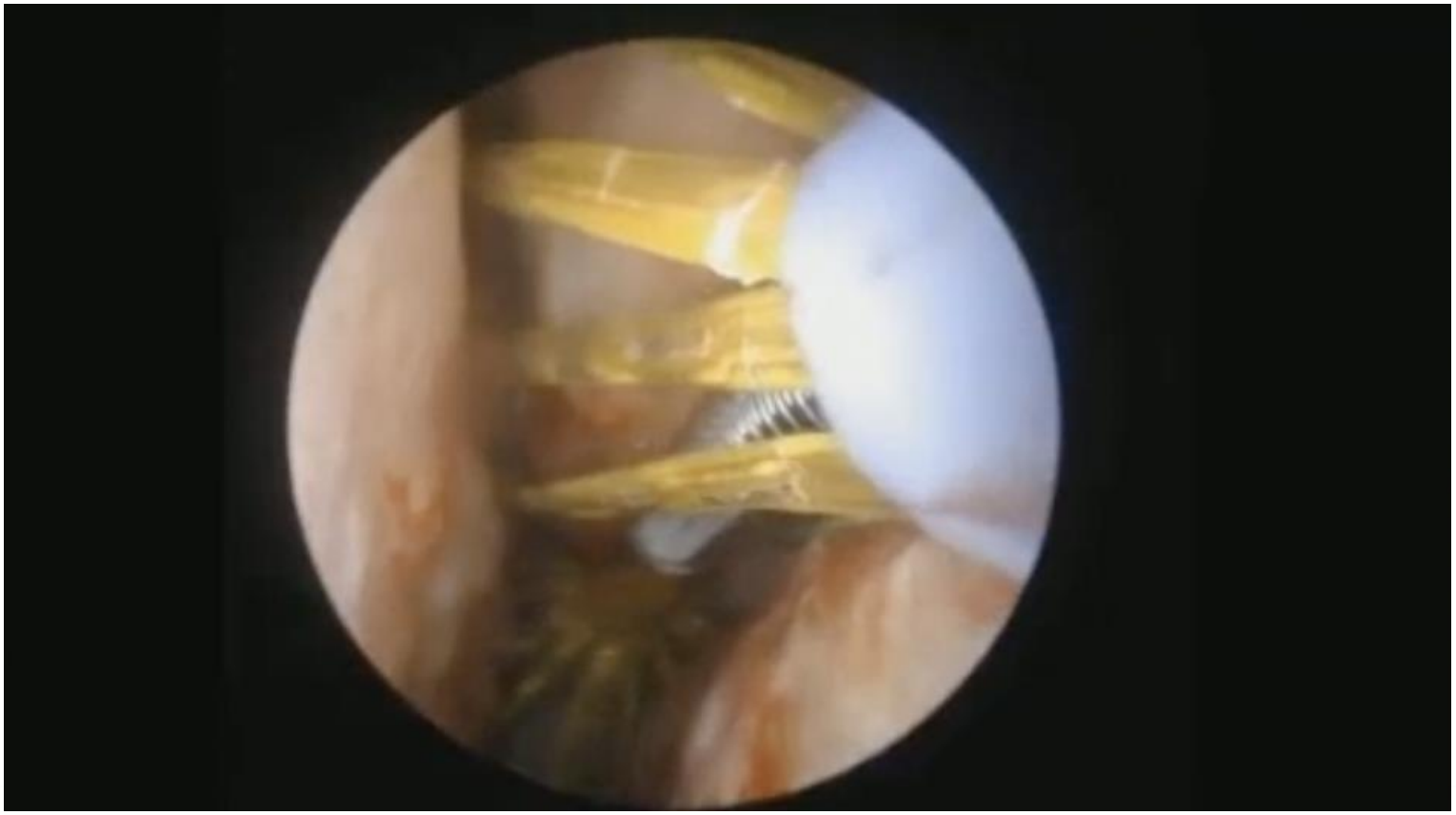
Yan CH, Hwang PH. Surgical Management of Nonallergic Rhinitis. Otolaryngol Clin North Am. 2018 Oct;51(5):945-955. doi: 10.1016/j.otc.2018.05.010. Epub 2018 Jun 22. PMID: 29937065.

NeuroMark


NEUROMARK
Malleable Shaft
Console Toggle Switch
Elastic Leaflets
Ergonomic Handle


NeurentMedical
NEUROMARK
Right Left
PROCEDURE SUMMARY
Please disconnect device

NeuroMark



RhinAer

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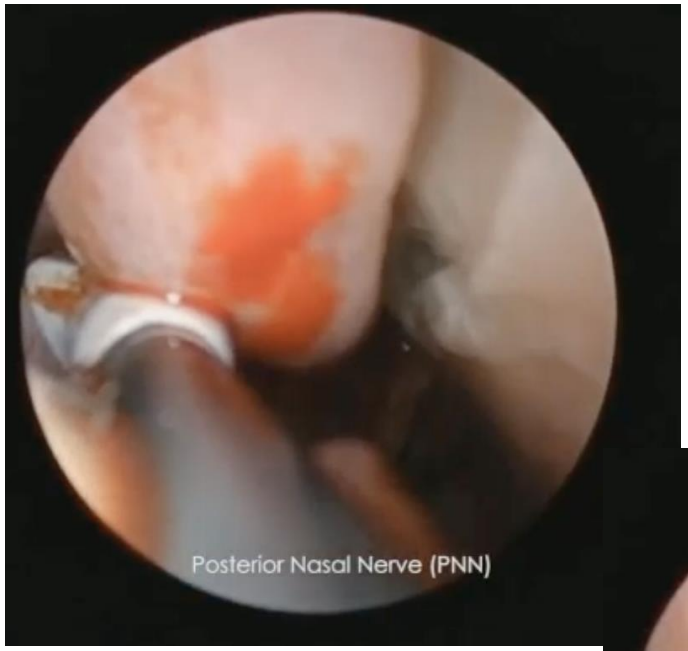
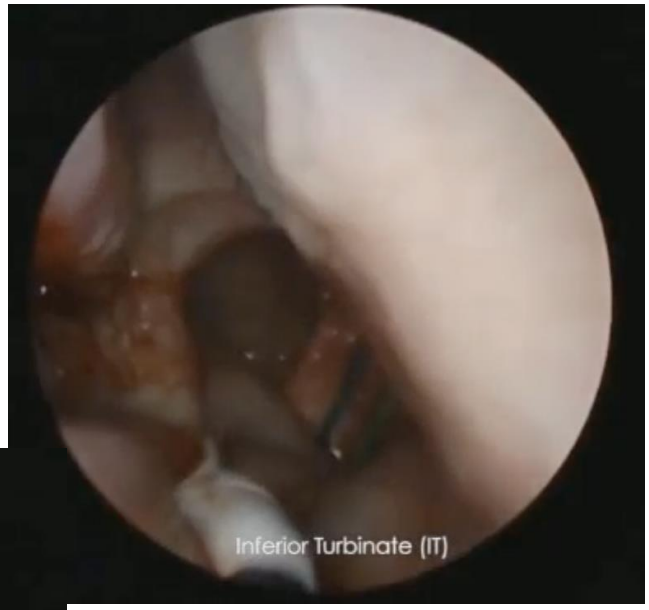
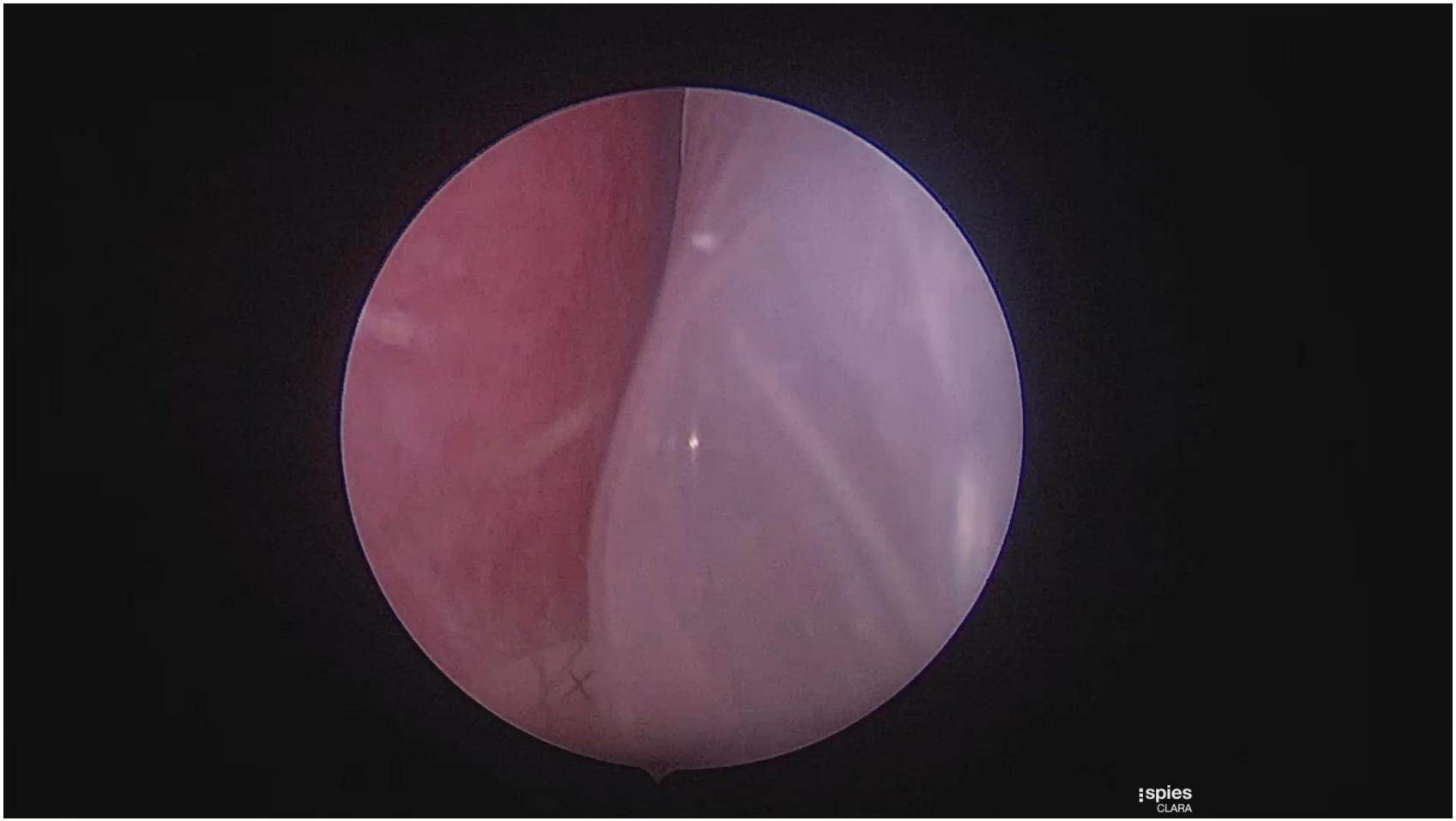

Posterior Nasal Nerve (PNN)


Inferior Turbinate (IT)


Posterior Nasal Nerve (PNN)

Cryotherapy Example



Comparisons (Data)

	RhinAer	Clarifix	NeuroMark
Technique	Radiofrequency	Cryoablation	Radiofrequency
Efficacy (12wks)	88%	73%	89%
Evidence	No placebo	**RCT**	No placebo
Symptom improvement	Rhinorrhea and Congestion	Rhinorrea and Congestion	Rhinorrhea and Congestion
Notes		Avoid in patients with Raynaud's, Cold urticaria or Cryoglobulinemia	

Comparisons (Logistics)

Procedure	Advantages
NeuroMark	- Direct patient and physician feedback - No headache - Stay in one position for treatment - Wide area of treatment with one placement
Clarifix	- Short procedure time - Easy technique - Can see clearly the area of treatment - Local Bupivacaine block addresses "ice cream" headache
RhinAer	- Minimal to no discomfort - Can see clearly the area of treatment - Can address the inferior turbinate & septal body - Wand can be used to outfracture turbinate

CHRONIC SINUSITIS TREATMENTS

Chronic Sinusitis Management

- Medical management is first line
  - Topical steroids, azelastine, Saline irrigations, oral steroids, oral antibiotics
- Traditional surgical treatments for persistent symptoms
  - FESS
  - BSD

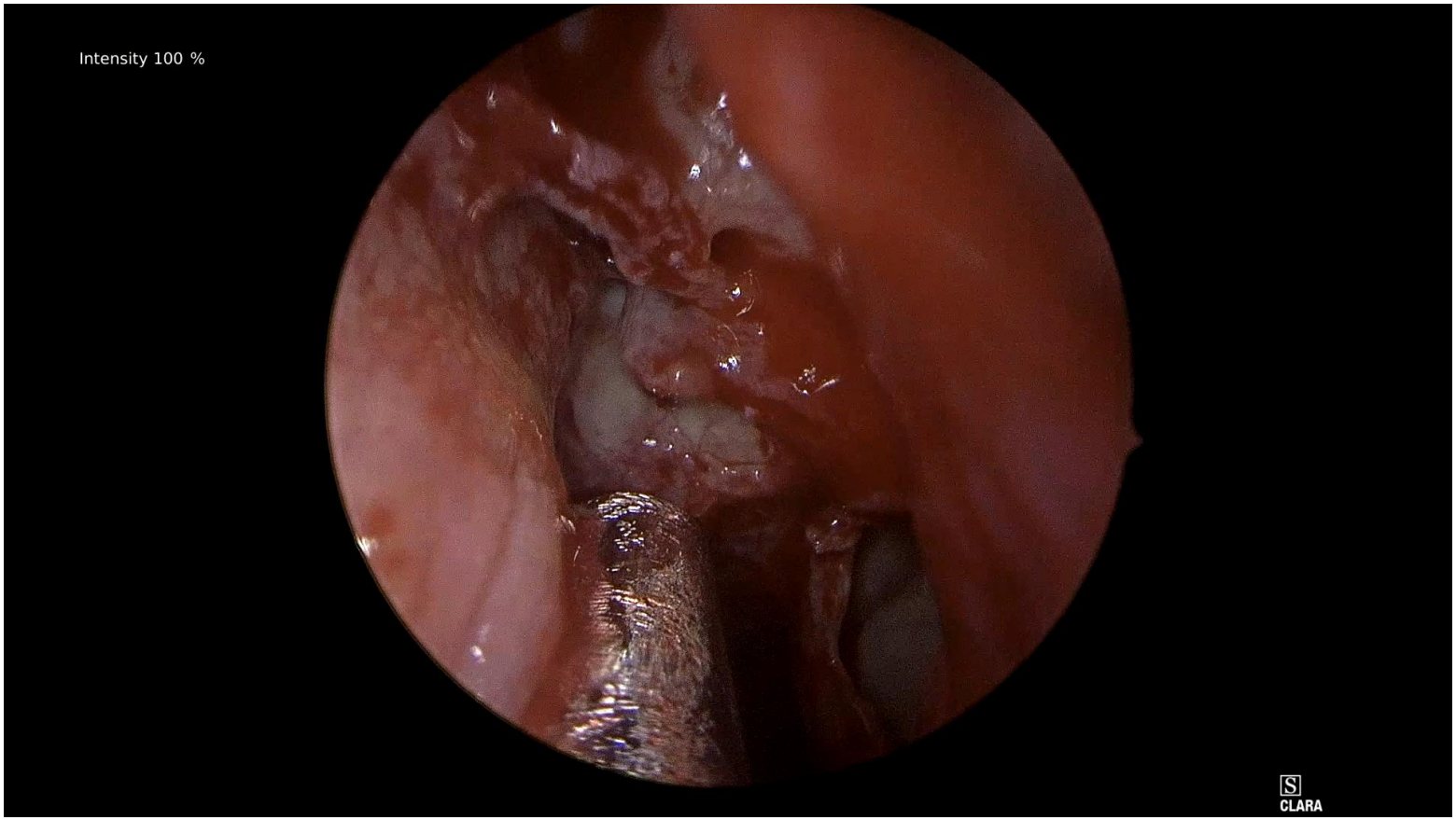
In-Office Sinusitis Management

- Pitfalls to avoid for the office
  - Poor patient candidacy (as mentioned before)
  - Extensive polyp disease
  - Aggressive posterior dissection (bleeding)
  - Dehiscences (orbit, skull base, anterior ethmoid artery)
  - Complex frontal anatomy

In-Office Sinusitis Management

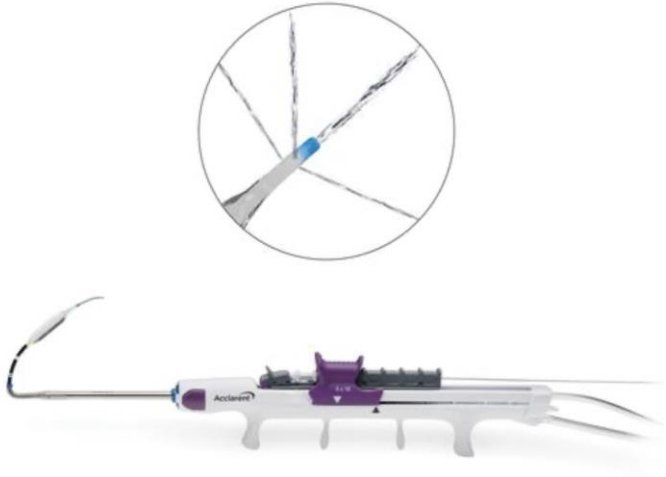
- Principles of FESS are analogous in the office
  - Safe surgical technique
  - Knowledge of anatomy
  - Readiness for complications (epistaxis)
- Pearls for the office
  - Microdebrider and Blakesley are workhorse instruments (less bone chips, less cough)
  - Two suctions, frequent suction of nasopharynx (less cough)
  - Suction bovie or bipolar
  - Balloons (BSD) to minimize dissection, atraumatic openings and irrigate/suction (avoids purulence in nasopharynx)
  - More conservative openings to avoid bleeding

Balloon Assisted Frontal Sinusotomy



Commentary on BSD

- May be an excellent tool in the right setting
  - Difficulty: Sphenoid > frontal > maxillary
- Use is limited to aid in dissection and minimal disease
  - Controversy exists where to draw the line
  - Controversy with RARS
- Various contraindications and common misuse



Commentary on BSD

Clinical Consensus Statement: Balloon Dilation of the Sinuses

Jay F. Piccirillo, MD[1], Spencer C. Payne, MD[2], Richard M. Rosenfeld, MD, MPH[3], Fuad M. Baroody, MD[4], Pete S. Batra, MD[5], John M. DelGaudio, MD[6], David R. Edelstein, MD[7], Andrew P. Lane, MD[8], Amber U. Luong, MD, PhD[9], R. Peter Manes, MD[10], Edward D. McCoul, MD, MPH[11], Michael P. Platt, MD[12], Douglas D. Reh, MD[13], and Maureen D. Corrigan[14]

- BSD is not appropriate without both symptoms and positive CT findings
- BSD is not appropriate for patients with symptoms and a CT that does NOT show sinus disease
- CT sinus is required before BSD
- BSD is not appropriate for the management of headache or sleep apnea in patients who do not otherwise meet criteria for CRS or RARS
- BSD has a role for RARS as defined per AAO guidelines
- BSD can have a role for patients with persistent disease after prior FESS
- BSD can be appropriate as an adjunct procedure to FESS in CRSsNP

Post Procedure

- Fibrillar surgical on port sites
- Saline irrigations post procedure day 1
- Follow up 1 week for debridement
- Anticoagulation to start after first debridement

Complications of In-office FESS

- 72% ESS for CRS with polyps
- 11% were revision

- Predominantly OMC disease
- Non balloon ESS

- 6% of cases stopped
- Strings on all pledgets

Table 1 **Overview of the office-based sinonasal surgeries**

Surgical Procedure	No. Patients
Turbinoplasty (n = 166)	
Turbinoplasty alone	132
As part of another procedure	34
ESS (n = 118)	
ESS alone	106
ESS + septoplasty	8
ESS + turbinoplasty	4
Septoplasty (n = 35)	
Septoplasty alone	13
Septoplasty + turbinoplasty	14
Septoplasty + ESS	8
Rhinoplasty (n = 34)	
Rhinoplasty alone	19
Rhinoplasty + turbinoplasty	15
Septorhinoplasty (n = 4)	
Septorhinoplasty alone	3
Septorhinoplasty + turbinoplasty	1

ESS = Endoscopic sinus surgery.

Table 2 **The total number of paranasal sinuses surgically opened during the ESS procedures**

Paranasal Sinus	No. Surgical Procedures
Maxillary	118
Anterior ethmoids	173
Posterior ethmoids	52
Frontal	26
Sphenoid	20

ESS = Endoscopic sinus surgery.

Table 3 Summary of intra- and postoperative complication occurrences

Table 3 **Summary of intra- and postoperative complication occurrences**

Type of Complication	Intraoperative	Postoperative
Pain	5	0
Vasovagal episode	2	0
Bleeding	1	3
Infection	0	4
Swallowed nasal pledget	0	1

Take Home Points

- Anesthesia
  - Critical to success
  - Know safe dosing
  - Monitor patients
- Case selection
  - Slow increase in complexity
  - Do what works best in your hands
  - Patient trust and compliance
- Set up
  - Full set of instruments
  - Reps for devices
  - Train your staff
  - Epistaxis plan and 2 suctions
- Getting started
  - Block out excess dedicated time
  - Start with easy cases
  - Judicious patient selection

Thank You!

Questions?