Office-Based Laryngology

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Disclosures

• None

Learning Objectives

• Describe the evolution of office-based laryngology
• Recognize disease processes that can be treated in the office.
• Identify methods and tools used to anesthetize the laryngopharynx.
Office-based Laryngology - From Cough to Cancer

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Laryngology

- Originated in the office
Jacob Solis-Cohen, 1870
Kirstein, 1897

Chevalier Jackson, 1915

Laryngology developments

- Operating microscope
- Instrumentation
- Lasers
Office-based procedures

• Vocal fold injection
• Tracheobronchoscopy
• Panendoscopy for cancer
**Technological improvements**

- Distal Chip Endoscopy
- Esophagoscopy
- Fiber-guided lasers

**Combination of these events**

- Moving away from the operating room to the office

**Why?**
Risk of anesthesia increases with age

Direct Laryngoscopy
Cost of Health Care

The Mounting Burden for Health Care

As the economy slows and medical costs continue to rise, millions of people may be unable to afford care.

Improved efficiency

Operating room

- Procedure time: 1 hour
- Turnover time: 30 minutes to 1 hour

Office

- Procedure time: 15 – 30 minutes
- Turnover time: 5-10 minutes
So…

- Improved safety
- Improved morbidity for patient
- Improved cost savings
- Improved efficiency

Office-based Laryngology

- Laryngoscopy and biopsy
- Bronchoscopy
- Esophagoscopy
- Vocal fold injection
- Laser surgery

The ‘other’ operating room
Procedures

- Scheduled as 30-45 minute procedures
- Street clothes
- No IV line
- No sedation
- No monitoring
- Patients drive themselves to and from office
- Return to work the same day
Conflict

• Physician wants access to protected place:
  – Pharynx
  – Larynx
  – Trachea
  – Esophagus

• But...protective reflexes are in place:
  – Gag
  – Laryngospasm
  – Cough

Beware

Pain and anxiety co-influence each other

What do we need to do?

• Advanced preparation
• Communication
• Adequate anesthesia
• Communication
• Patient positioning
• Communication
• Proper tools
Advanced Preparation

• Information sheets given at prior visit
• Same RN or MA if possible
• Consistency of set-up
• Not for everyone — Medical provider and patient

“The Patient Experience”

• Reduce the unknown
  — Introductions
    — Environment
      • Orientation
      • Room lighting

Reduce the unknown

Chronological expectations

Chronological expectations
• First...
  • Then...
— Sensation expectations
  • “This is what’s going to happen and this is how it may make you feel”
Need a balance of anesthesia

NOT ENOUGH

TOO MUCH

“Too much of a good thing”

Topical 4% Lidocaine

• Cheap, safe and effective

• Works almost immediately

• 3 Goals
  – Suppress gag
  – Suppress laryngospasm
  – Suppress cough
Endoscopy case study

- 38 year old female c/o shortness of breath
- Mild hoarseness
- Otherwise healthy
- Wheezes with exercise
- Treated for asthma but still symptomatic
- No medical or surgical history

Physical examination

- Examination is essentially normal
- Inspiratory noisy breathing
- Mirror examination of larynx is normal

- What next?

Flexible Laryngoscopy

- Likely next step
- May, or may not, give us what we need
Bronchoscopy

• Typically performed by pulmonologists

• Can be performed by otolaryngologists

• Tremendous amount of information

Nebulized Lidocaine

Nebulizer
Procedure

• Introduce endoscope
• Suspend above larynx

• Laryngeal gargle
  – Necessary 0-5% of the time

• Pass endoscope through larynx

Bronchoscopy

Office tracheobronchoscopy

• Determine the length of stenosis
• Assess the characteristics of stenosis
  – Severity (Grade)
  – Distance from the vocal folds
  – Quality
    • Web-like vs. thick
    • Localized versus circumferential
    • Scar vs. cartilage
  – Levels
    • Single versus multilevel
    • Relationship to tracheotomy tube
Other ways of imaging: CT

- Need has decreased with office endoscopy
- Best for cartilaginous vs. membranous stenosis

Vocal fold injection

Indications for vocal fold injection

- Augmentation
- Paralysis
- Paresis
- Presbylarynx
- Medication delivery
- Steroid
- Botulinum toxin
- Cidofovir
Case study

• 54 year old male with 3 months voice change
• Voice sounds “different”
• Runs out of breath and feels “winded”
• Coughs on liquids
• No PMHx
• No Tob/EtOH/PSHx/Intubations
• CN II-XII intact

Laryngoscopy and stroboscopy

• INSERT VIDEO HERE

Work-up

• Repeat cranial nerve examination
  • Cranial nerve X, XI, and XII
• Image path of recurrent laryngeal nerve
• CT or MRI from skull base to aortic arch
• Modified barium swallow study if suspicious
How do you manage this?

- Observation
- Voice therapy and swallowing therapy
- Vocal fold injection laryngoplasty
- Thyroplasty
- Recurrent laryngeal nerve reinnervation

Vocal fold injection laryngoplasty

- Augmentation material
- First described in 1911
- Multiple materials have been tried
  - Paraffin
  - Collagen
  - Teflon
  - Gelfoam

Injection laryngoplasty

- Medialize the vocal fold
- Lateral vocal fold injection
- Add bulk to the vocal fold
Injection location


Teflon injection


Size matters

Timing of injection

- As early as possible
- Studies are showing that early injection may lead to better outcomes
- Exception – immediately after extubation

Office or O.R.?

- Initial reports of injections in the office
- Then more commonly performed in the OR
- Now many surgeons perform in the office

Office

- Patient awake
- No risk of general anesthesia
- Quick
- Titrate volume
- No ETT in the way

Operating room

- Better control
- No gag reflex to suppress
- Supplies bought by OR
- Can inject fat

Vocal Fold Injection
- Many different techniques
- Slight overcorrection
- 0.6 – 1 cc volume of injectate

Which agent?
- No good answer
- Calcium hydroxyapatite
- Carboxymethylcellulose
- Micronized dermis

Transoral injection
- Rigid transoral endoscope
- Halogen (not strobe) light
- One person technique
Atomizer sprays

- Three sprays
- Each spray 1-2 seconds each
- Spray # 1: Oral Cavity
- Spray # 2: Tonsillar Pillars
- Spray # 3: Posterior Pharyngeal Wall
  Base of tongue

Oral cavity sprays

- Hand patient tissue before you start
- Warn patient of foul taste
- Give time to swallow between sprays

Reassure patient beforehand

- “Coughing, tearing, and gagging is normal”
- Lidocaine may make you feel as if:
  - You can’t breathe
  - You can’t swallow
Oral anesthesia

- 4% lidocaine via atomizer to oral cavity

Patient positioning

- Sniffing position
- Holding tongue with 4x4 gauze
- Staring at object
- Eye level of surgeon to patient’s mouth
Abraham cannula

“Batman”

Laryngeal Gargle
- Three separate 1 cc aliquots of lidocaine
- Abraham cannula
- Sustained /e/
- “Inhale when you run out of breath”
Final aliquot

- INSERT LARYNGEAL GARGLE VIDEO

Injection laryngoplasty

- VOCAL FOLD INJECTION VIDEO

Paralysis: Where to inject?

A

B

C

D
Depth for augmentation

Two-person technique
- Flexible laryngoscope - transnasal
- Injection performed transcutaneously
From above

Thyrohyoid injection

From below
Pointers (learned from pitfalls)

- Adequately anesthetize nose
- Use 1% lidocaine for skin anesthesia
- Insert needle into airway and spray lidocaine
- Channeled endoscope – perform laryngeal gargle

Tips for assistant

- Holding the endoscope is tiring!
- Conserve your energy
- Stabilize elbows against body
- Get out of the way

Another approach

- http://www.youtube.com/watch?v=SG2DIyGh8II
Hoarseness case study

- 21 year old male recently intubated for 5 days
- Bilateral throat discomfort three months later
- Hurts to speak
- Speaks “softly”
- No breathing or swallowing problems
- Refractory to voice rest

Delivery of steroids

After steroids
Summary

- Office based laryngology has many applications
- Keys
  - Adequate Anesthesia
  - Proper equipment
  - Communication
  - Patient Selection