

Nasopharyngoscopy: Considerations and Techniques for Children under Six



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Cincinnati Children's Hospital Medical Center

Financial Disclosures

I have the following relevant relationships:

Royalties for textbook:

Kummer, AW. (2014). *Cleft Palate and Craniofacial Anomalies: The Effects on Speech and Resonance*, 3rd Edition, Clifton Park, NY: Cengage Learning.

Short Course Outline

1. What's with the name?
2. Purpose of nasopharyngoscopy
3. Findings with nasopharyngoscopy
4. Nasopharyngoscopy vs. videofluoroscopy
5. Equipment
6. Procedures and special techniques for kids
7. NP for surgical or prosthetic tx planning

1. What's with the name?



What's with the name?

The correct term for the fiberoptic endoscopic evaluation of velopharyngeal structure and function.

- A. What is nasendoscopy?
- B. What is video nasendoscopy (VNE)?
- C. What is videofluoroscopy?
- D. What is FEES?
- E. What is nasopharyngoscopy?

What's with the name?

The correct term for the fiberoptic endoscopic evaluation of velopharyngeal structure and function.

E. What is nasopharyngoscopy?

Nasopharyngoscopy

“The difference between nasal endoscopy and nasopharyngoscopy is simple from a clinical standpoint. If you use a scope and look at the nasopharynx, that's nasopharyngoscopy. If you evaluate all of the nasal cavity including where the sinuses drain, that's a nasal endoscopy ”

Lee Eisenberg MD an otolaryngologist in private practice in Englewood N.J. and a member of CPT's Editorial Panel and Executive Committee, Super Coder:

<https://www.supercoder.com/>

Nasopharyngoscopy

“Use CPT code 92511 for a diagnostic nasopharyngoscopy with an endoscope, which views the surface area extending from the posterior edge of the soft palate to the nasopharyngeal wall, including the Eustachian tube openings.”

From: Coding tip: Learn the difference between nasopharyngoscopy and endoscopy procedures, *Ambulatory Surgery Reimbursement Update*, January 22, 2008.

2. Purpose of Nasopharyngoscopy

What is the purpose of nasopharyngoscopy?

- A. To determine if there is VPI?
- B. To determine the size of the VP gap?
- C. To determine the cause of the VP gap?
- D. To determine the location of the VP gap?

2. Purpose of Nasopharyngoscopy

What is the purpose of nasopharyngoscopy?

- A. To determine if there is VPI?- No
- B. To determine the size of the VP gap? Maybe
- C. To determine the cause of the VP gap? Maybe
- D. To determine the location of the VP gap? Yes

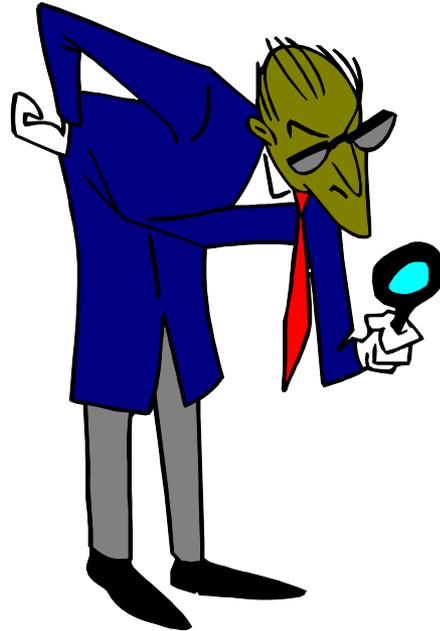
Purpose of Nasopharyngoscopy

- It's location, location, location!



Purpose of Nasopharyngoscopy

- Allows direct observation of VP structures and function during speech



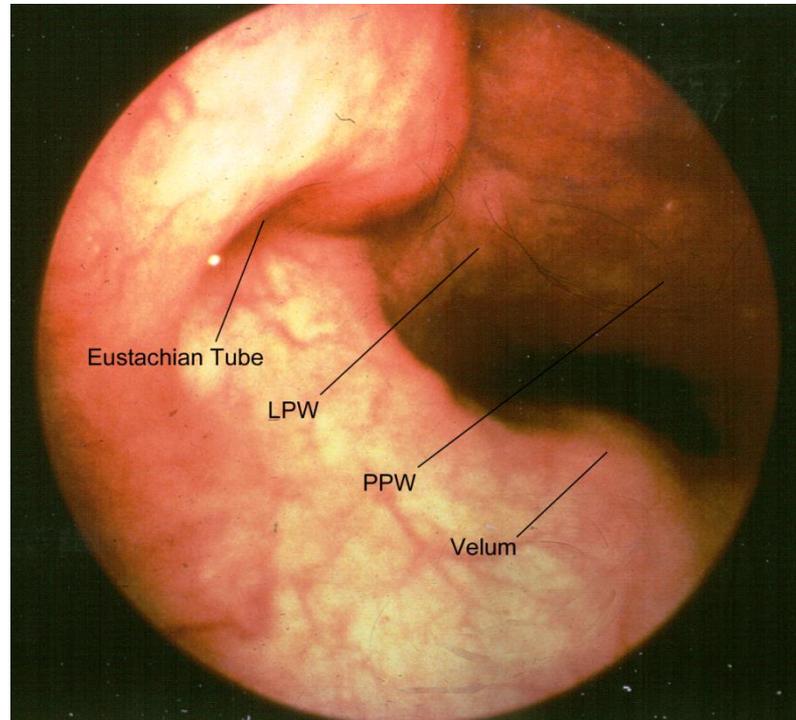
Purpose of Nasopharyngoscopy

- NP can show the location of the VP gap
- Location of the gap...
 - is the single most important finding
 - can be used to determine the best surgical secondary procedure (or surgical revision procedure) for the patient

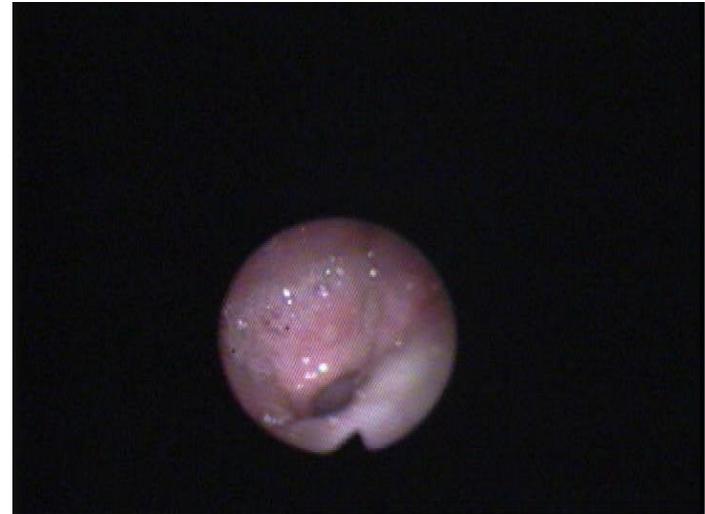
3. Findings with Nasopharyngoscopy



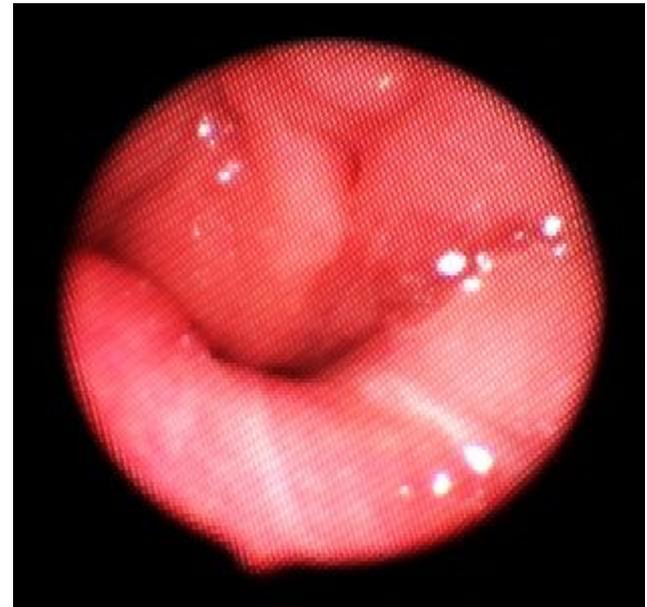
Normal Structures



Passavant's Ridge



Submucous Cleft

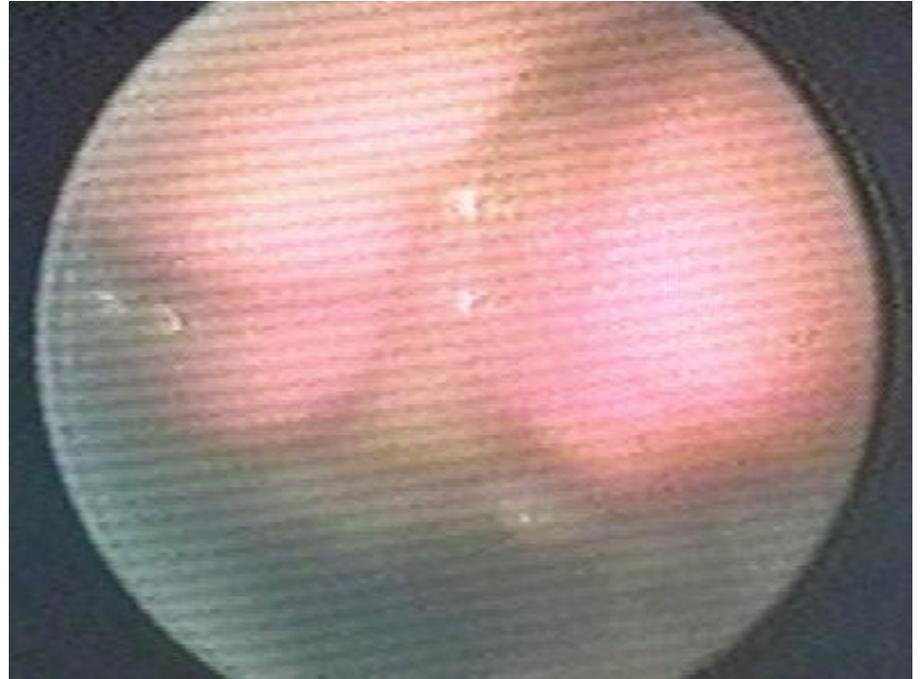


Submucous Cleft



Irregular Adenoids

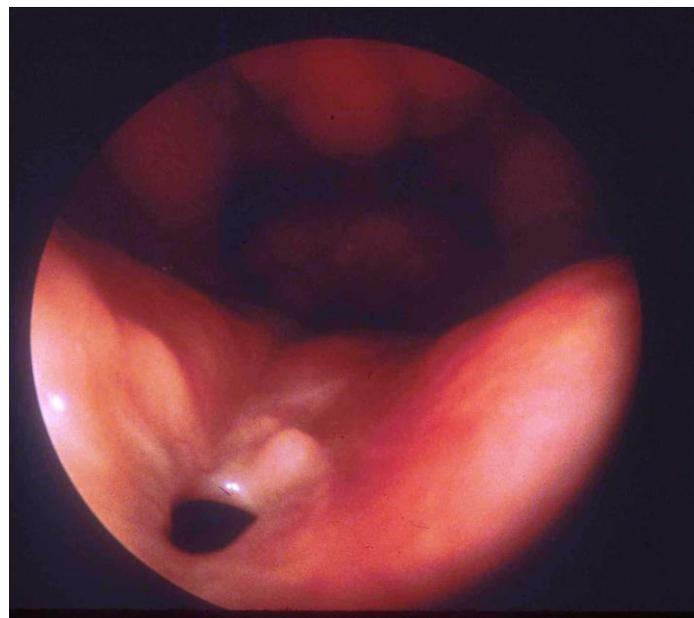
Protrusion and Indentation



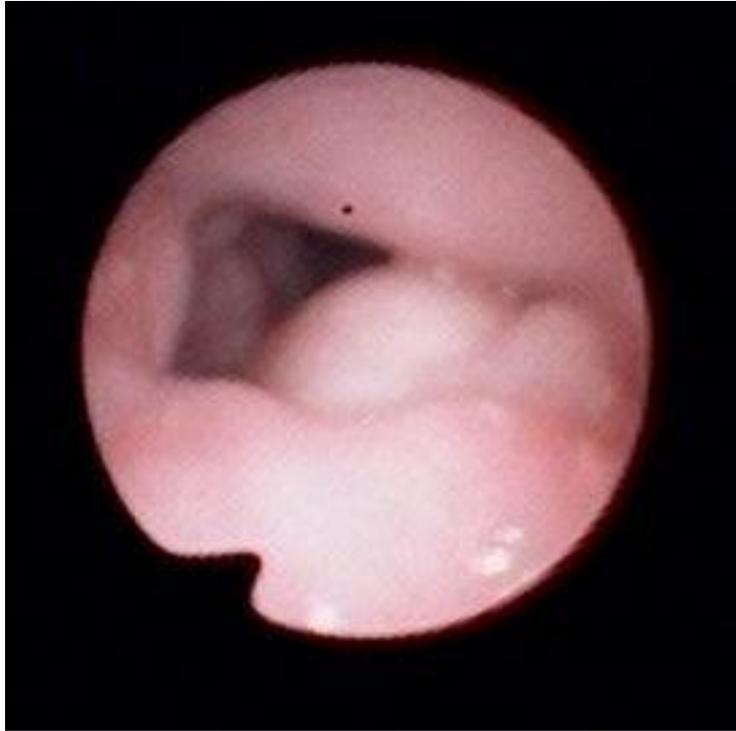
Irregular Adenoids



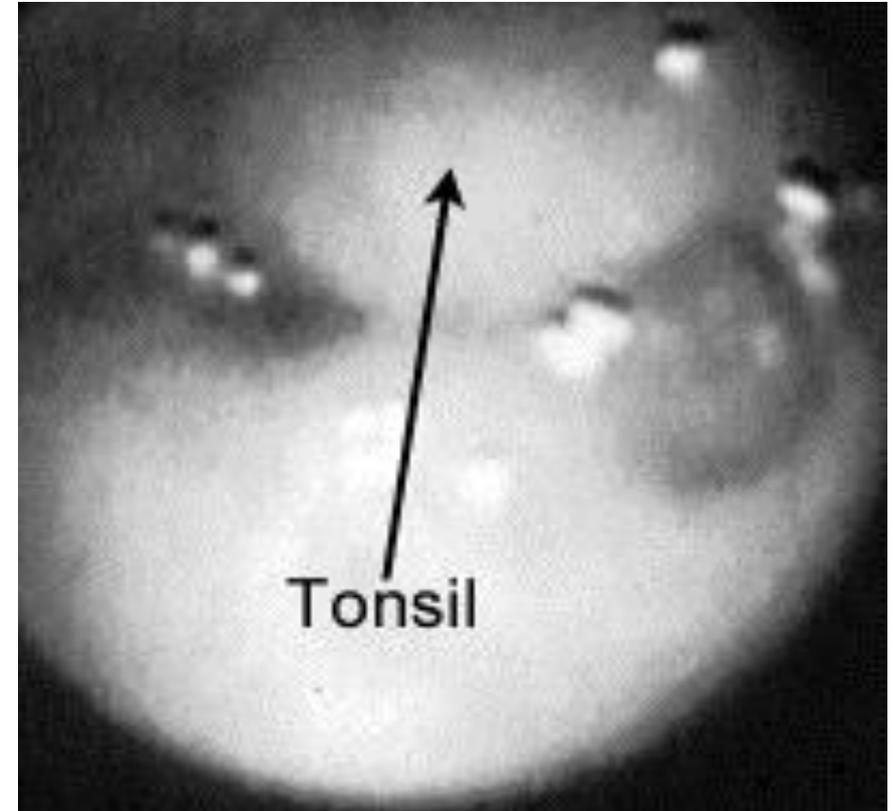
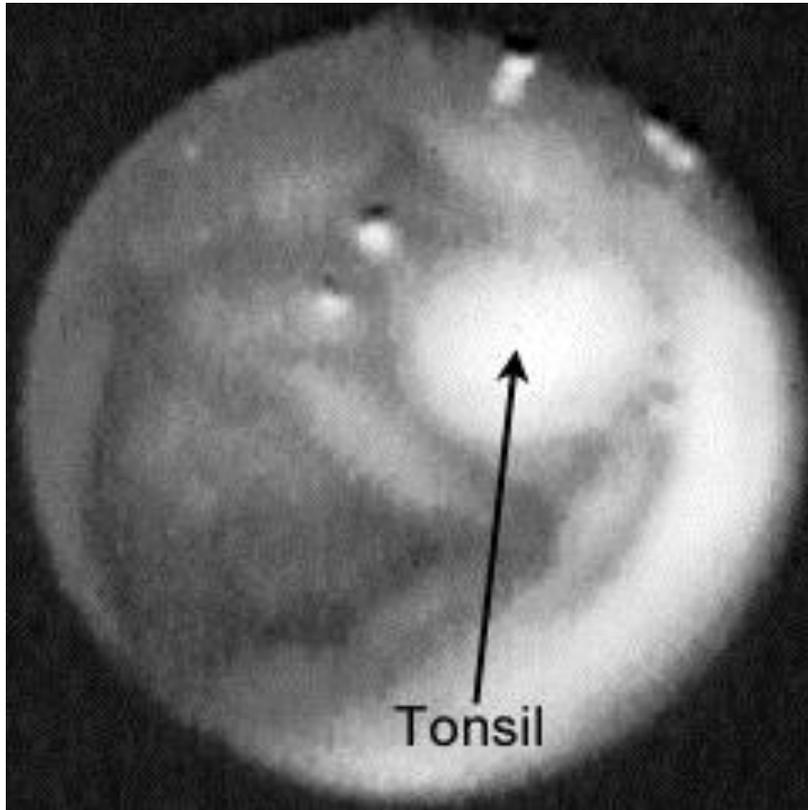
Oronasal Fistula



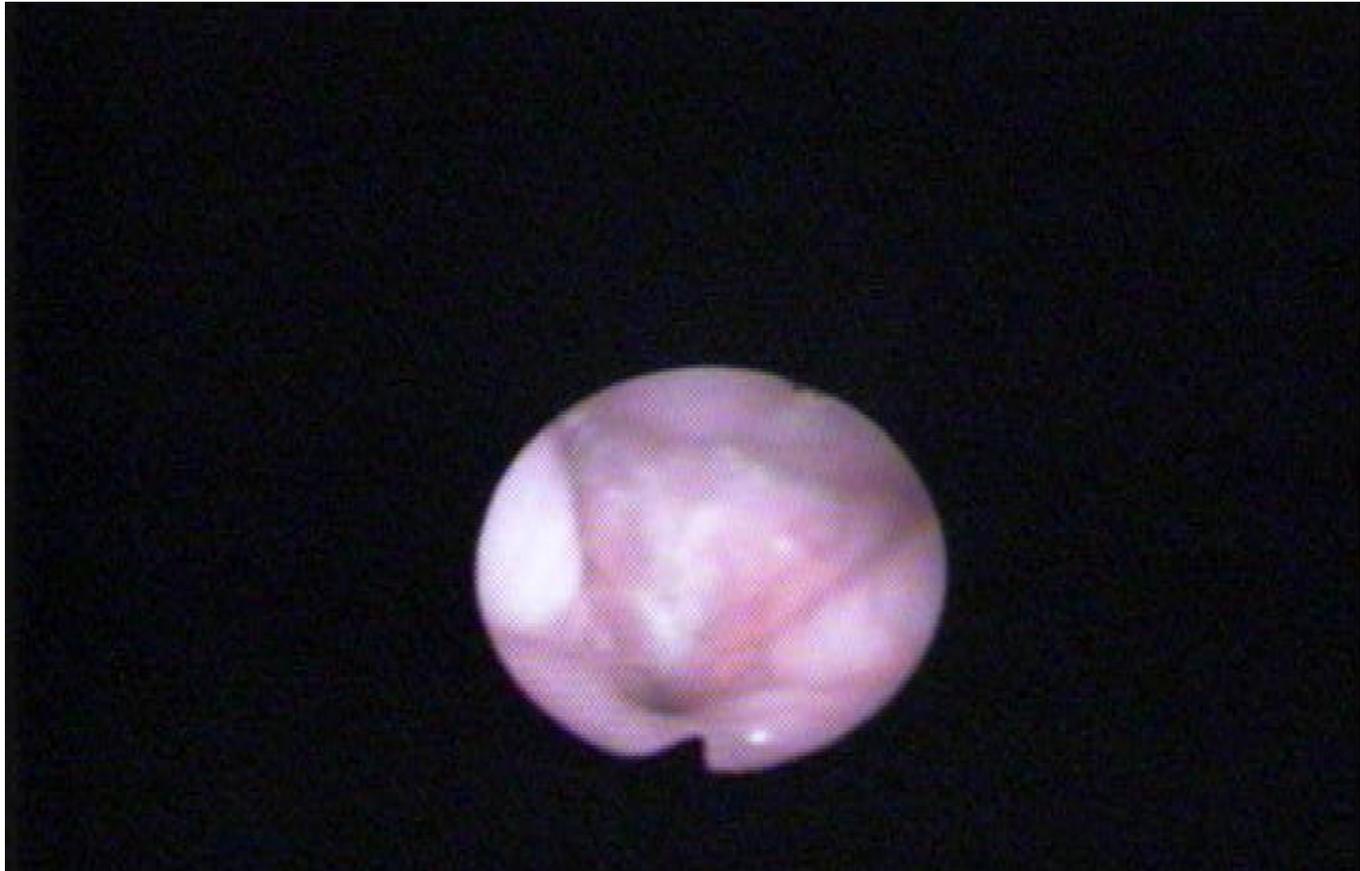
Tonsils in the Airway



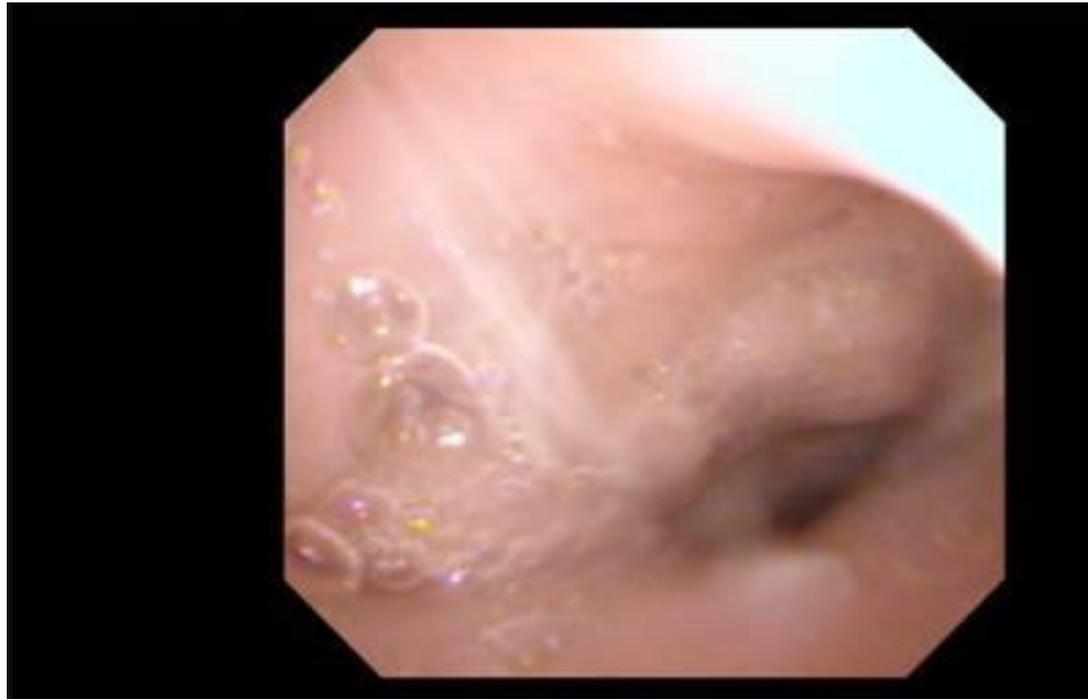
Tonsil in the Airway



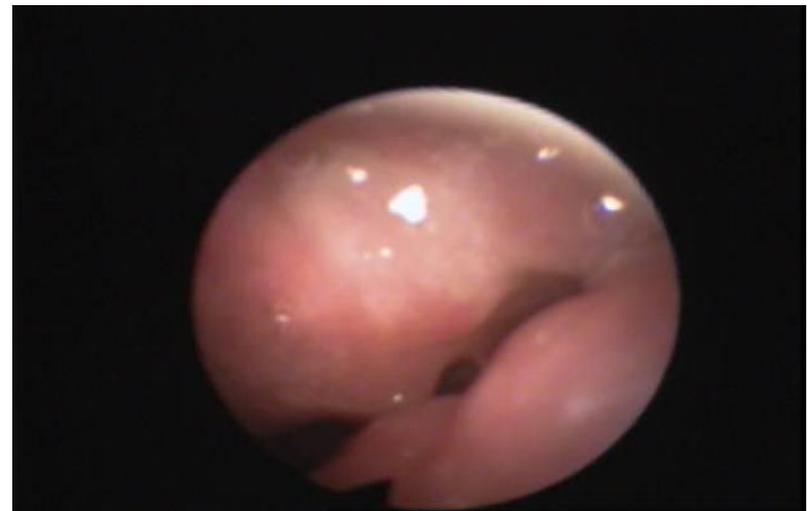
Small Midline Gap



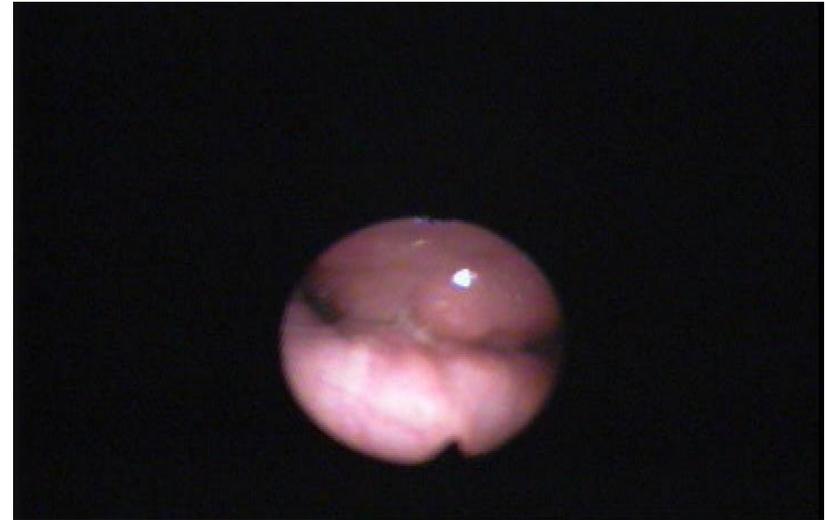
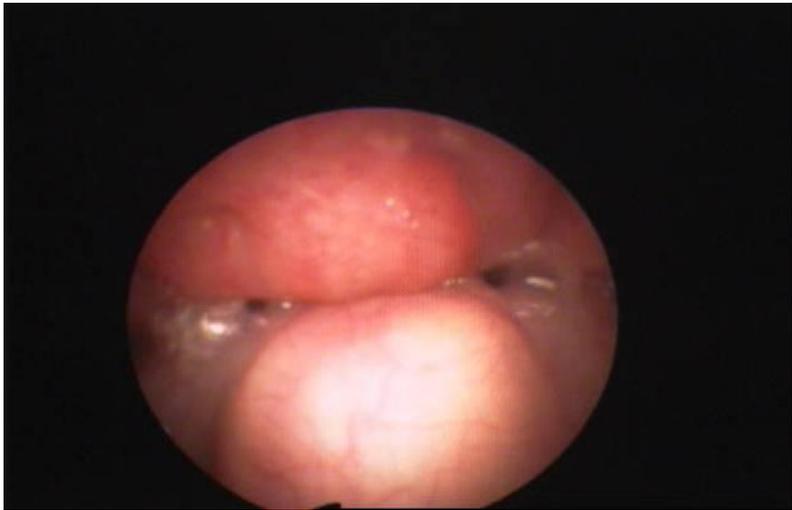
Small Lateral Gap



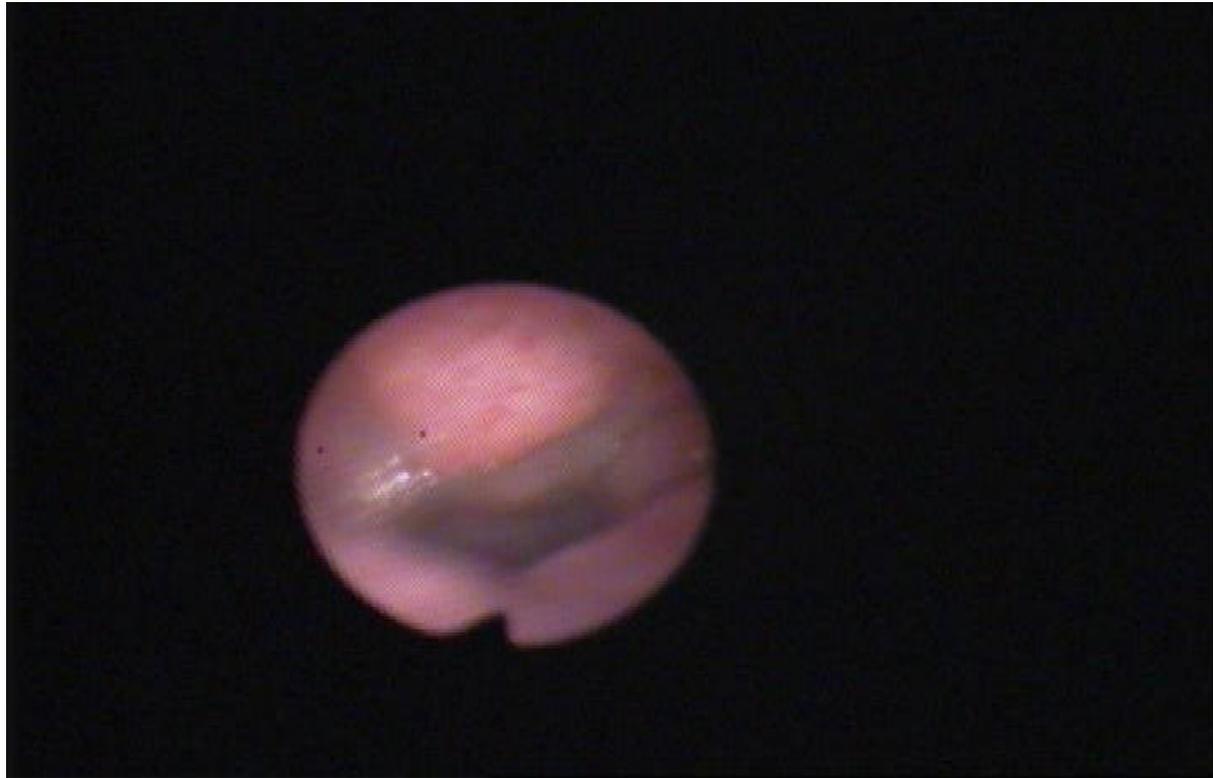
Narrow Coronal Gaps



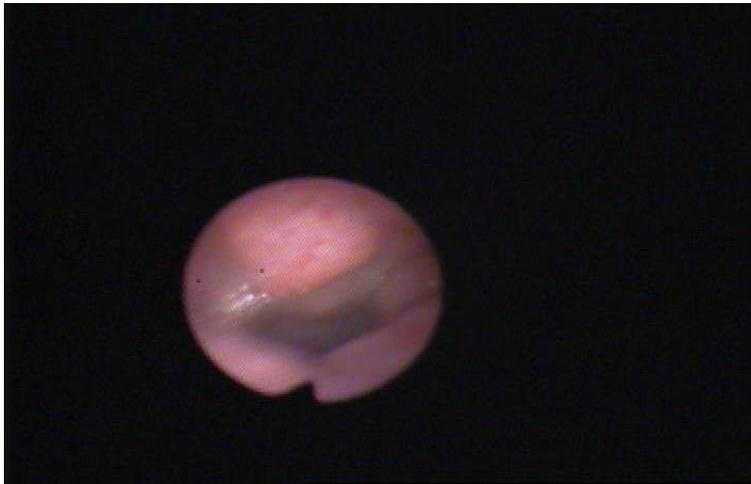
Bowtie Closure with Lateral Gaps



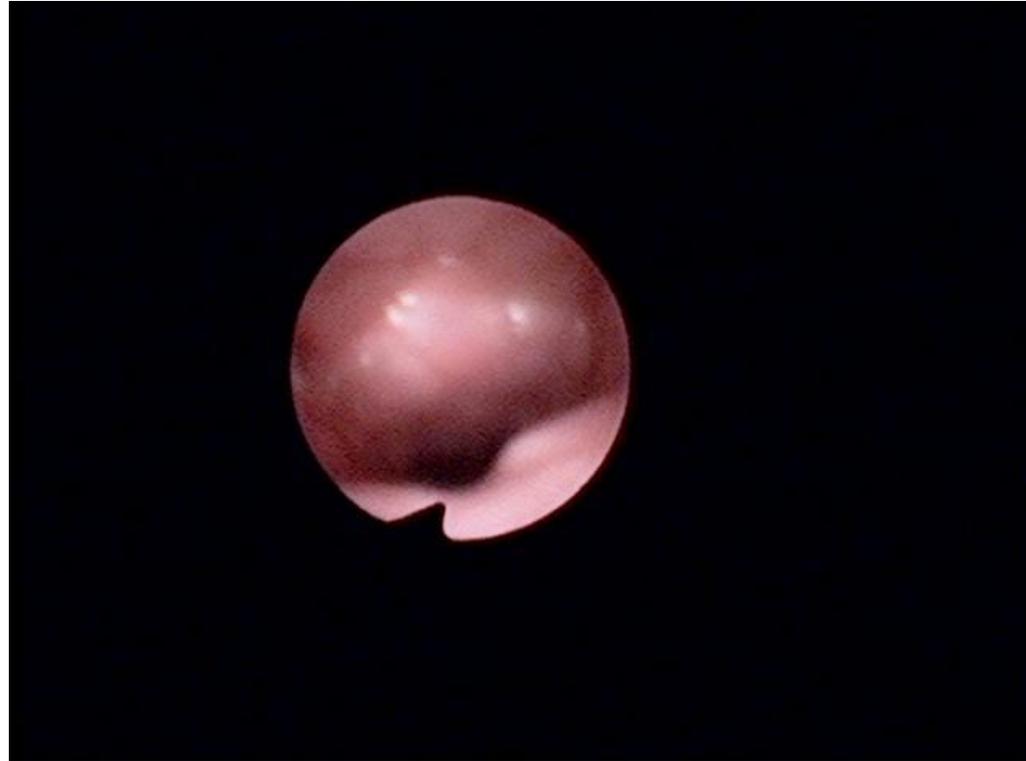
Medium Size Opening



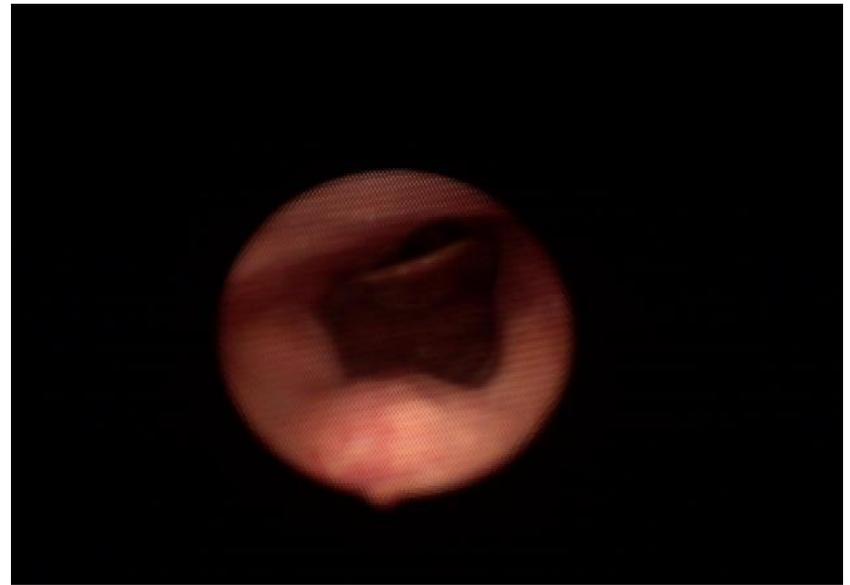
Large Gaps



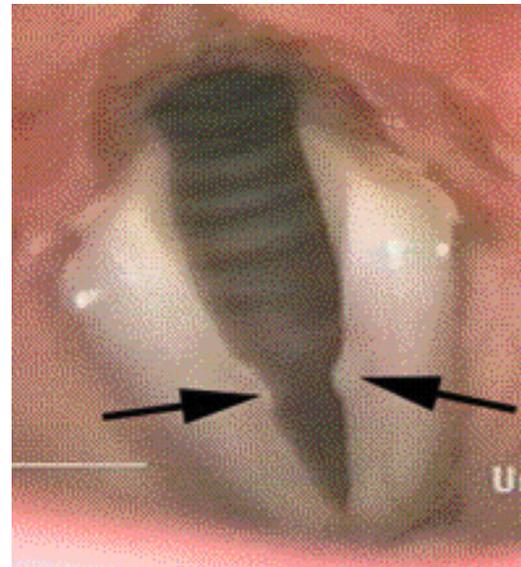
Large Gap



Very Large Gaps



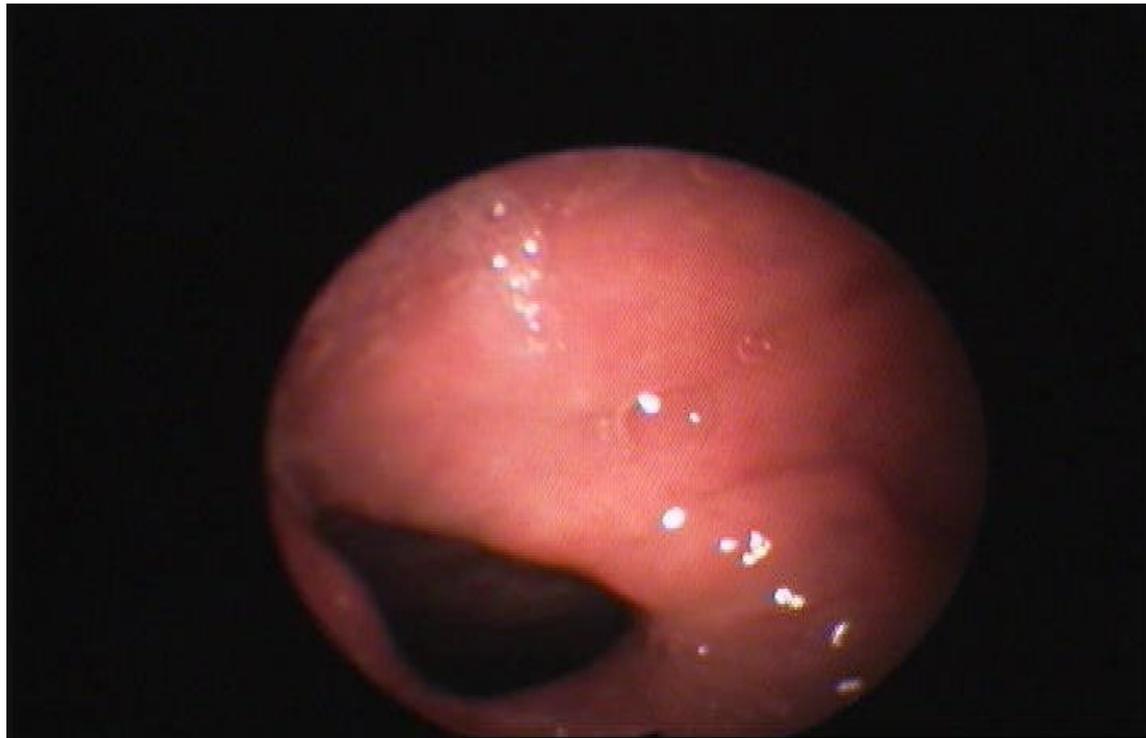
Vocal Folds



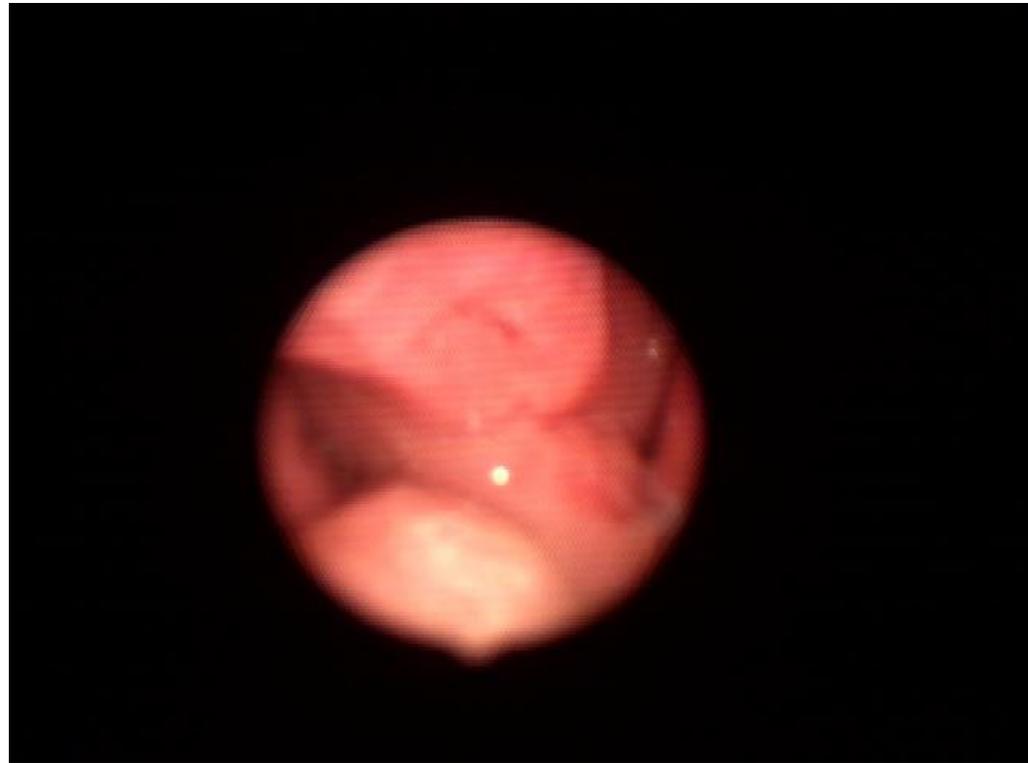
Pharyngeal Flap



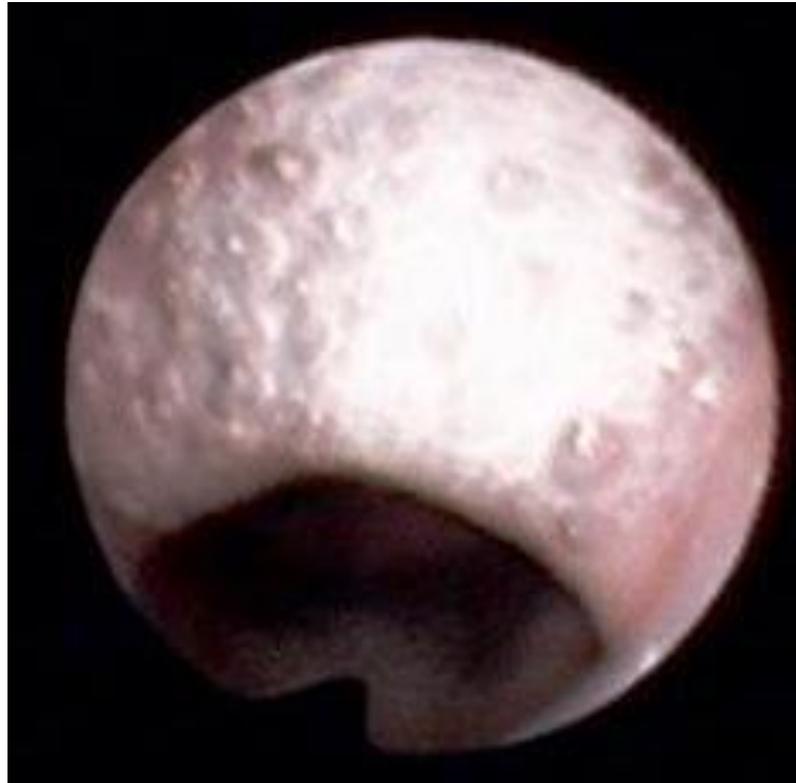
Pharyngeal Flap and Right Port



Obstructing Pharyngeal Flap



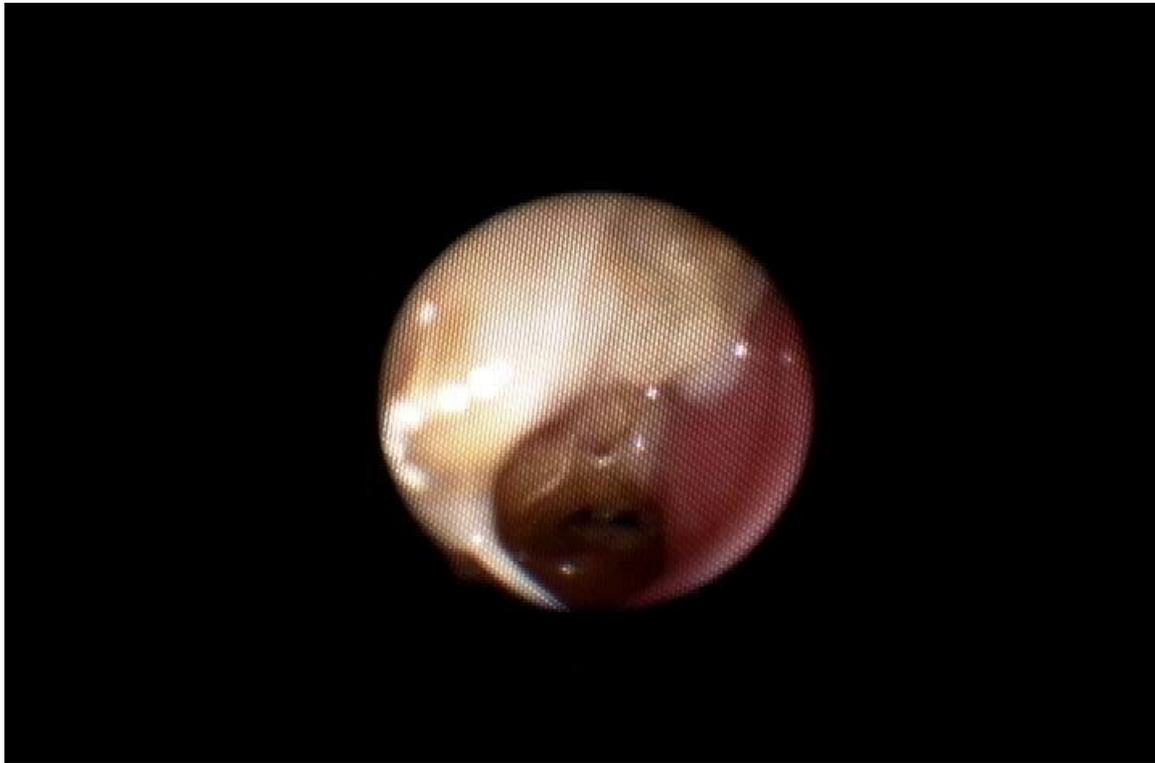
Sphincter Pharyngoplasty



Snot



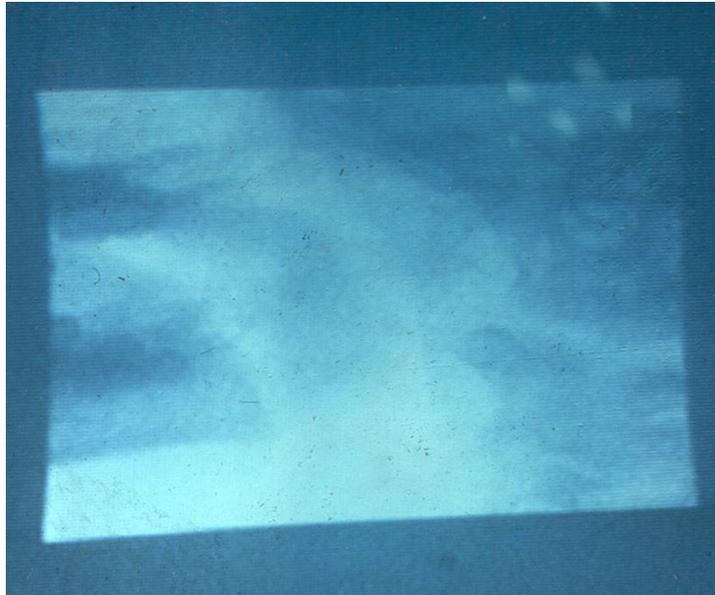
Boogers



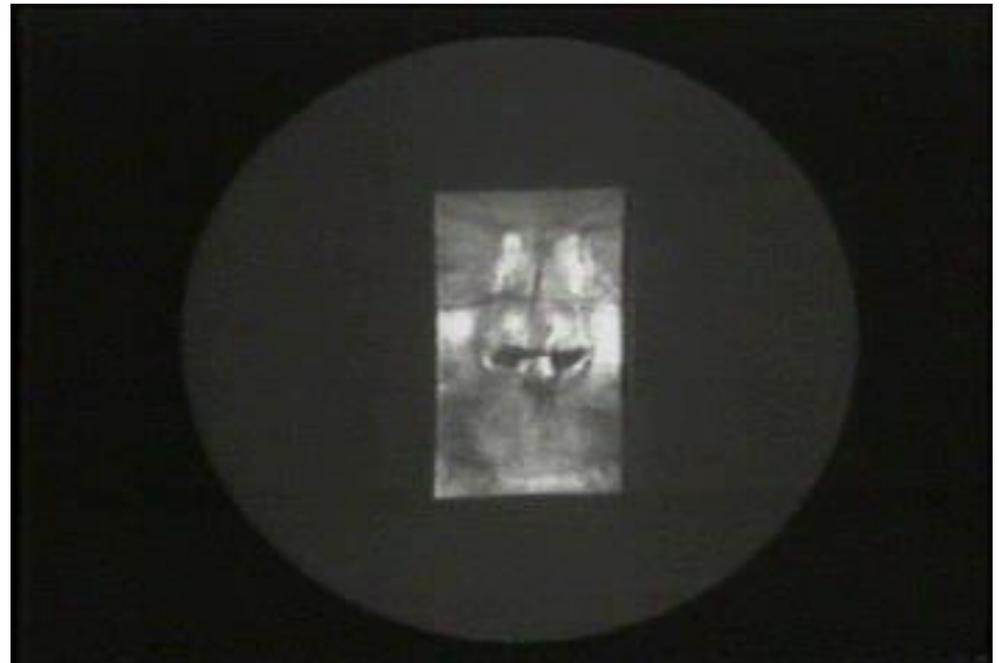
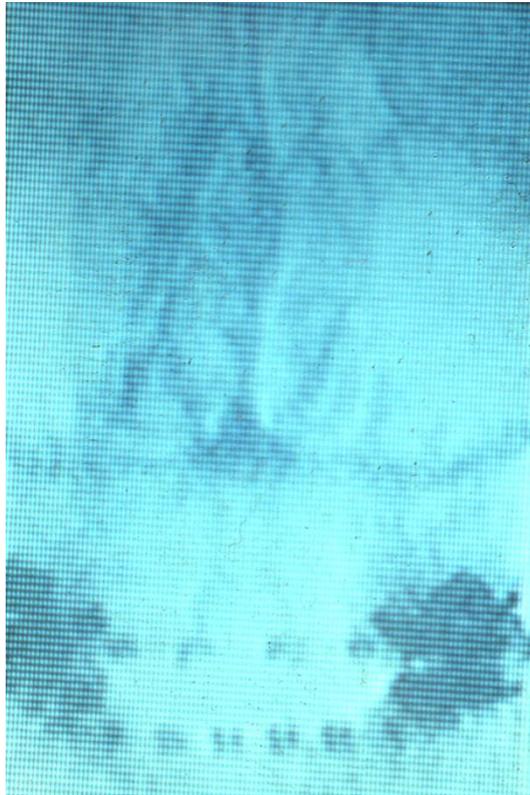
4. Nasopharyngoscopy vs. Videofluoroscopy



Videofluoroscopy: Lateral View



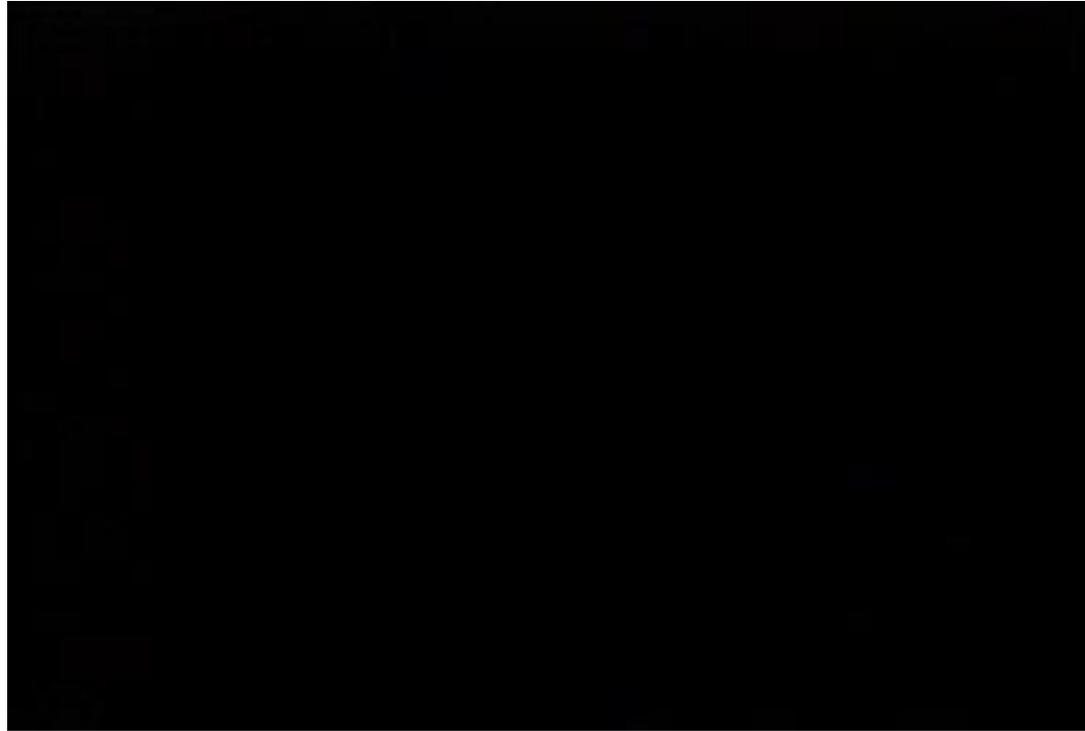
Videofluoroscopy: AP View



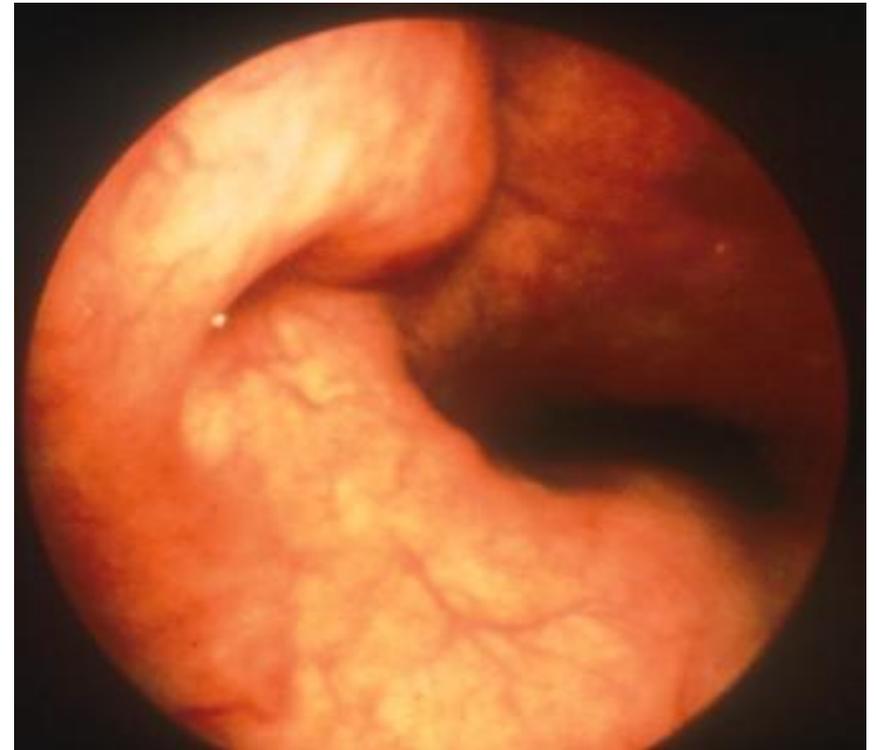
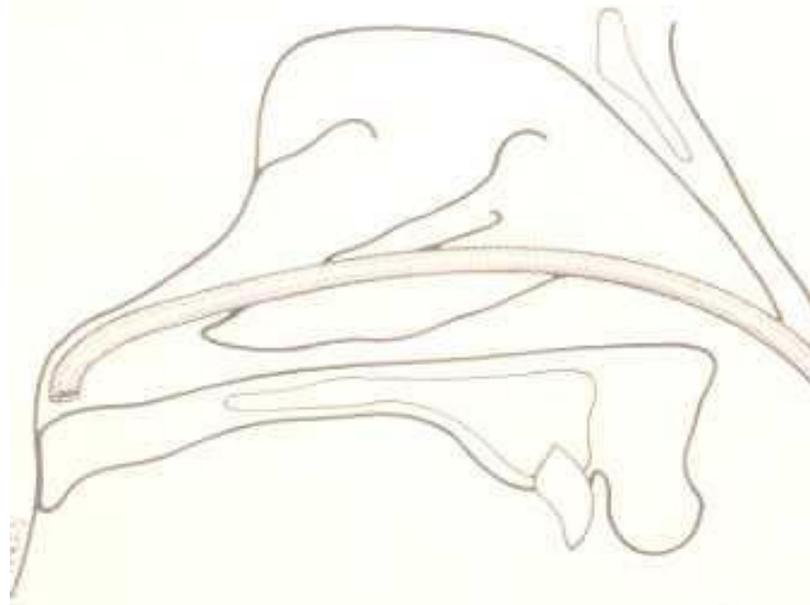
Videofluoroscopy: Base View



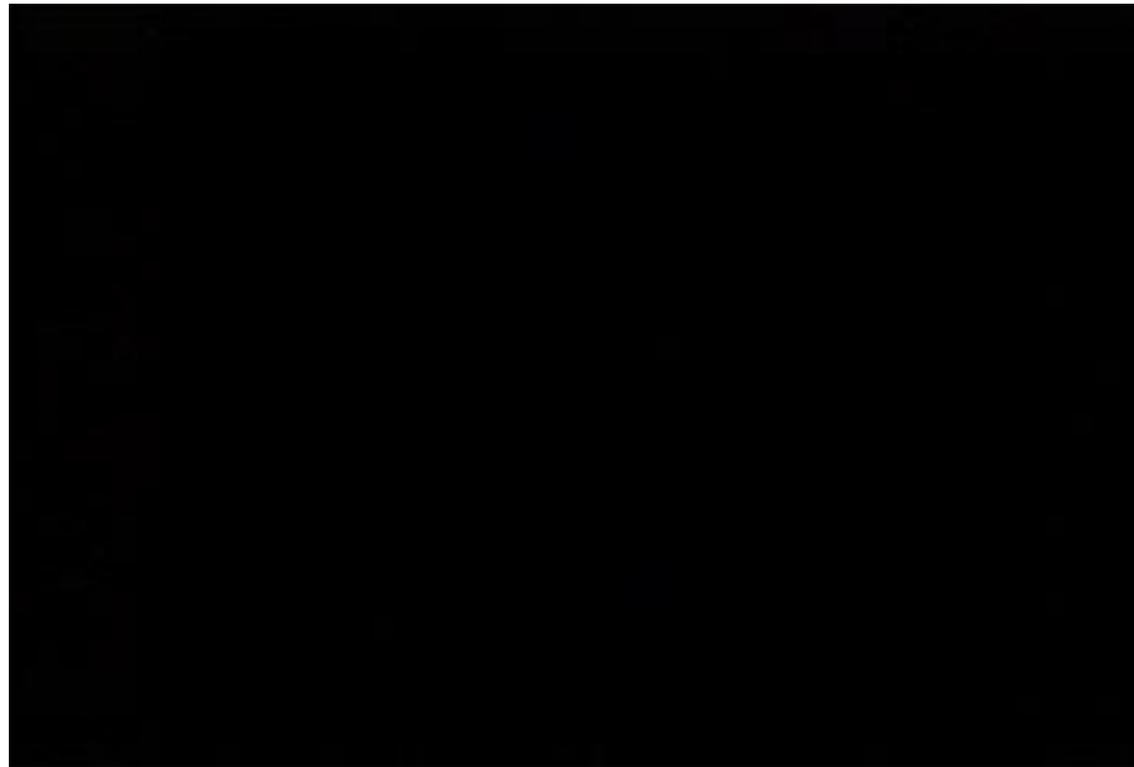
Video: Normal VP Closure- Videofluoroscopy



Normal VP Closure- Nasopharyngoscopy

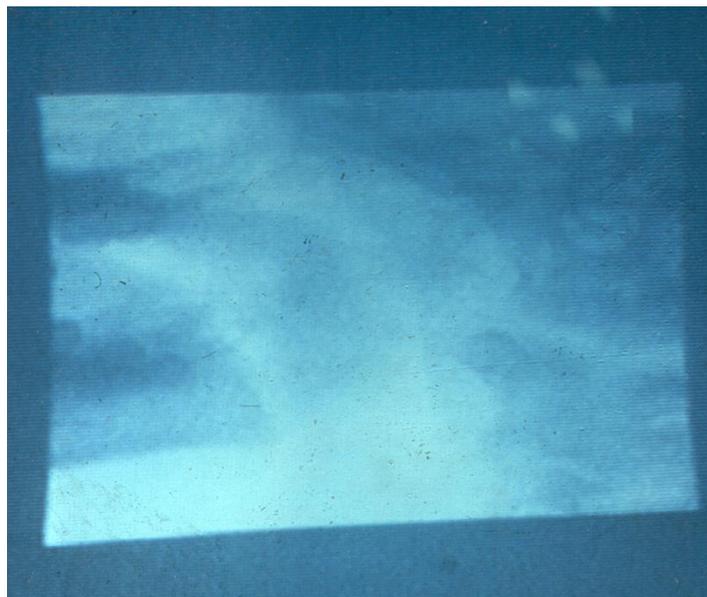


Video: Normal VP Closure- Nasopharyngoscopy



Advantage of Videofluoroscopy

- Shows the entire vertical dimension of the pharynx



Advantages of Nasopharyngoscopy over Videofluoroscopy

Provider Perspective:

NP is best for surgical planning and surgical evaluation because it shows:

- much better resolution
- the entire port and all structures in one view
- the basic pattern of closure
- small gaps
- the cause of the gap
- the location of the gap

Advantages of Nasopharyngoscopy over Videofluoroscopy

Patient Perspective:

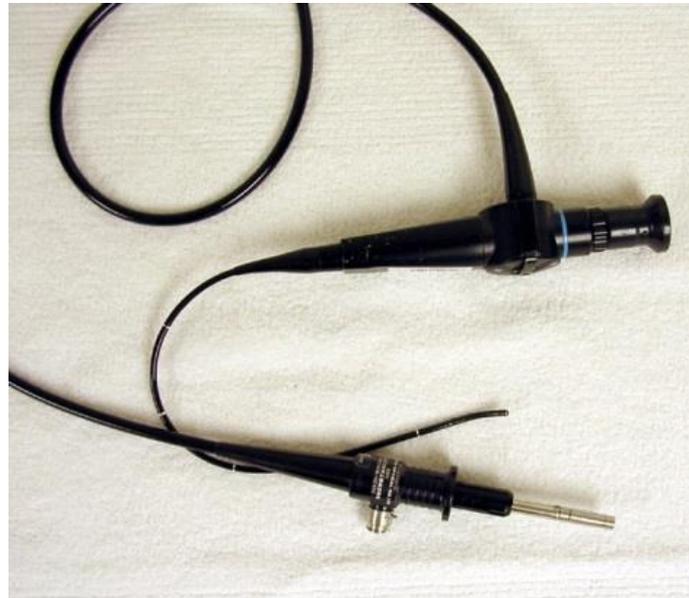
NP is the best for patients because it is:

- done without radiation
- better tolerated by young patients
 - Barium is noxious!
 - Parent can hold the child for an NP scope

5. Nasopharyngoscopy Equipment

Nasopharyngoscopy Equipment

- Flexible fiberoptic nasopharyngoscope
- Manufacturers include: PENTAX, Machida, Olympus, and Storz



Nasopharyngoscopy Equipment

- Scope sizes range from 2.2mm to 5mm diameter; 3.5 is commonly used



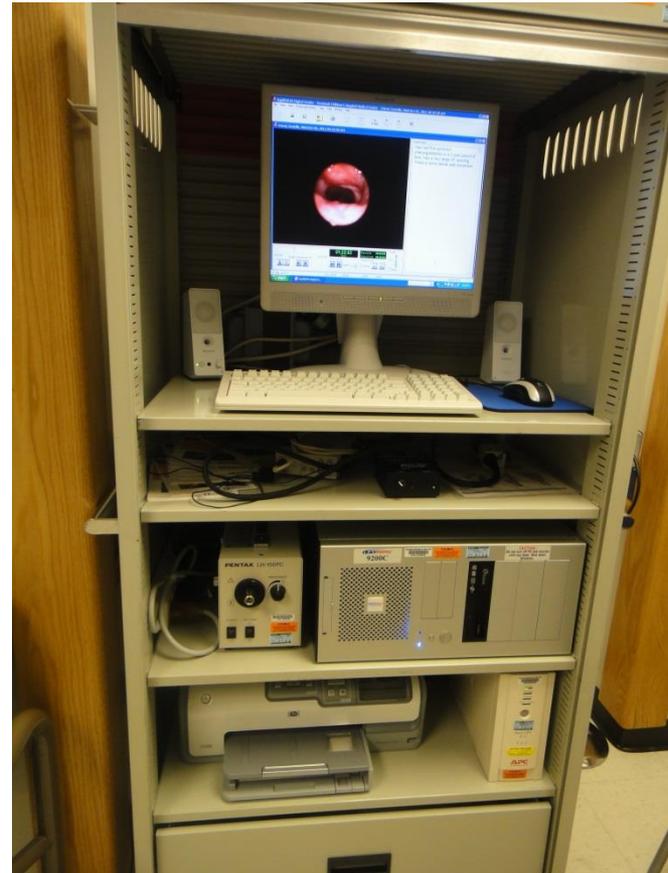
Nasopharyngoscopy Equipment

- Camera and mics



NP Complete System

- Computer
- Monitor and speakers
- Database software
- Digital storage
- Light source



Storage



6. Procedures and Special Techniques for Kids

When can we do nasopharyngoscopy?

- For best speech outcomes, VP function needs to be corrected as soon as possible (just like the initial palate repair)

When can we do nasopharyngoscopy?

- Need connected speech
- Need level of cooperation
- Need a big enough airway
- Usually around the age of 3

How do we do it?

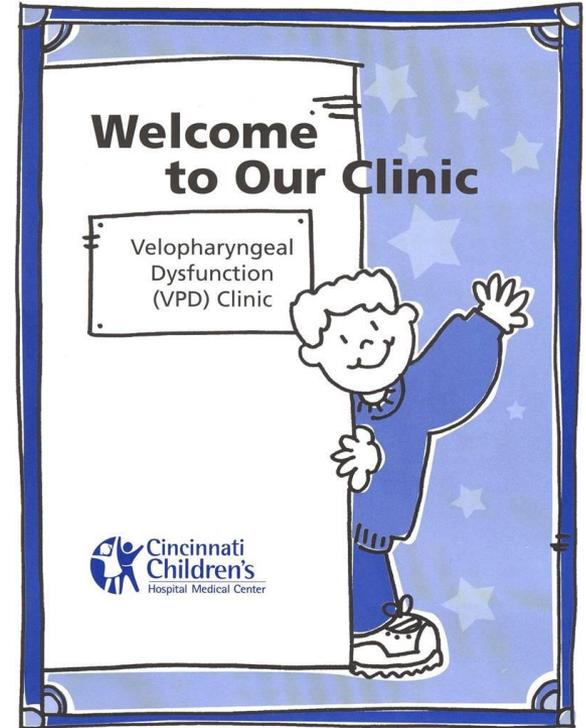
Speech-Language Pathology



change the outcome

Preparation before Appointment

- Patient receives coloring book
- Explains what to expect
- Has practice sentences and sounds
- Parents receive brochures of information



Coloring Book

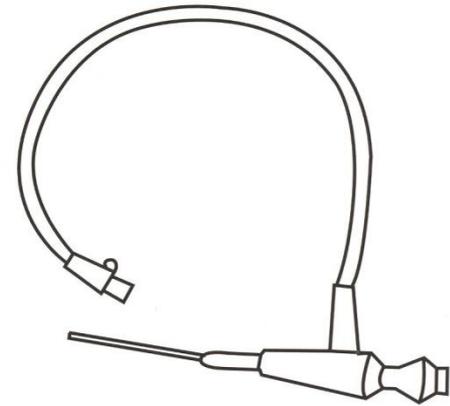
When you come to see us, the nurse will talk to you and tell you everything that will happen during your visit.



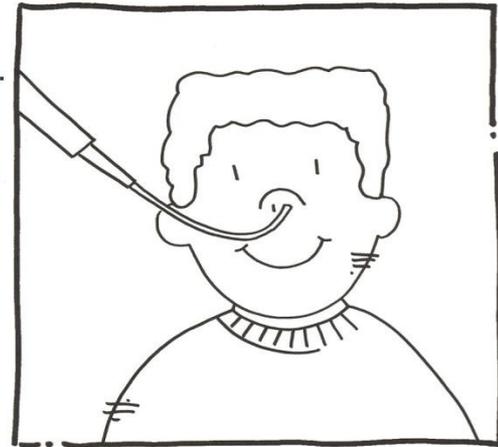
Then she will give you some nose spray. Have you ever used nose spray for a stuffy nose? It only takes two squirts on each side, and then your nose will feel tingly and numb.

Coloring Book

Next it will be time to see your nose on TV. The doctor will put a long, skinny tube inside your nose. This is called a scope and here is what it looks like.



The scope only goes in a little bit. It doesn't hurt because your nose will be numb from the nose drops. Sometimes it seems a little scary though... so be brave!



Coloring Book

Once the scope is in your nose, the speech pathologist will ask you to repeat some sentences again.

When you are talking, you can watch the inside of your nose on TV. There are parts in there that move... almost like magic.

It is very important to hold still so the tube doesn't bump around inside. If you want, you can sit on someone's lap to help you hold still.



Promise of a Big Prize



Exam Day

- Do a speech examination and determine what you expect to see

Speech Samples

- Determine speech sample based on
 - findings in speech evaluation
 - language abilities
 - age of the child
- Practice expected speech sample

For non-compliant children...



Speech-Language Pathology



change the outcome™

Ask Either/Or Questions

What do you like best?

- Puppy dogs or kitty cats?
- Baby dolls or teddy bears?
- Cup cakes or cookies?
- Baseball or basketball?
- Dancing or singing?

Positioning the Patient

Initial position:

- Put child on parent's lap
- Have the parent “hug” the child around his arms while holding the child's hands

If necessary:

- Have parent put his/her leg over child's legs
- Have nurse hold the head, if necessary

Infection Control

- Wear gloves for the entire examination
- The disinfected endoscope should be hung or placed on a clean surface when not in use

Preparation of the Nasal Cavity

- Child blows his nose
- This eliminates secretions for better viewing
- Avoids need for nasal suction in many cases

Nasal Anesthesia and Decongestion

- Nasal cavity is numbed with topical anesthetic
- Our pharmacy mixes a 50/50 solution -^r
 - Afrin to open the passages
 - Tetrocaine to numb the nose
- Put in single dose spray bottles



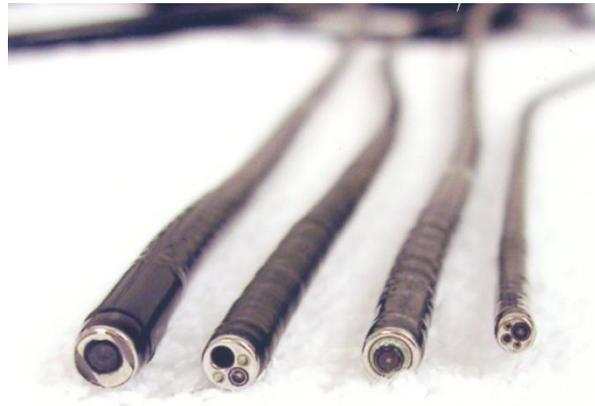
Nasal Spray

- Solution is sprayed into nostrils
- Two puffs per nostril
- Child or parent can help
- Patient sniffs while you occlude the contralateral nostril



Selection of the Scope

- Consider using a small one for young children (2mm rather than 3.5 mm)



Demystify the Scope

- Ask the child if he ever picks his nose
- Compare the width of the scope with the child's nose-picking finger



Demystify the Scope

- Show the child the “magic” scope
- Show the child the inside of his ear
- Allow the child to touch the scope
- Touch the scope to the child’s nose

Slime the Scope

- “Slime” the sides with viscous lidocaine (2%) gel
- We call it “donated snot”
- Be careful not to get slime on the end

Explain What to Expect

- Explain the “tight spot” (where the scope goes through the choana)
- Demonstrate this with his/her hand
- May make him/her sneeze

Steady the Head

- Tell the child that moving the head makes the scope bump around
- If necessary, have an assistant steady the head

Preparation of the Patient

Tell the child that you will be looking for hairs and boogers.....



Preparation of the Parent

- Tell the parent (and others in the room) not to talk to the child once the exam begins.
- The speech pathologist should be the only person talking to the child

Who does what?

- Passing the scope can be done by a surgeon (ENT or Plastic Surgeon) or a speech-language pathologist
- Speech pathologist should elicit an appropriate speech sample
- Both SLP and surgeon should review results, determine the plan, and counsel the family

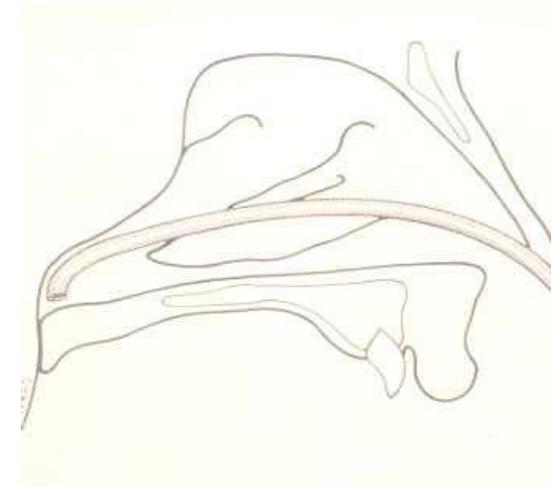
Nasopharyngoscopy Procedure: Holding the Scope

- For best control, put the controls in your dominant hand with lever up
- Hold the scope tip with your non-dominant hand



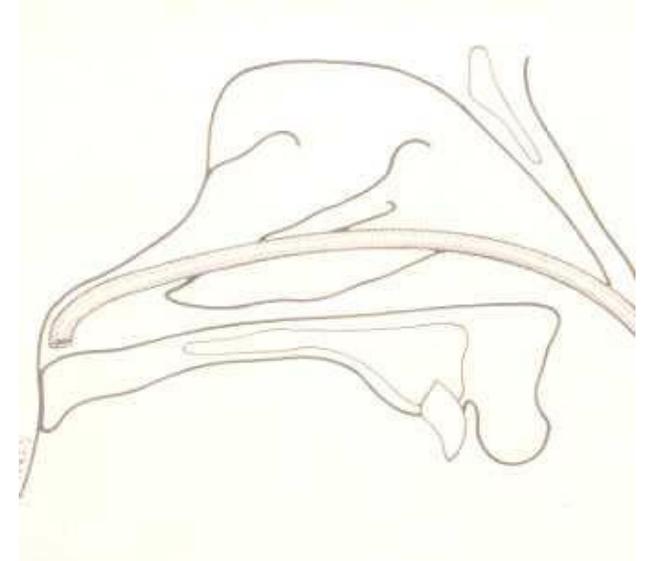
Nasopharyngoscopy Procedure

- Put the scope in the largest nostril
- Go through the middle meatus
- The scope should go up and over turbinate and then down



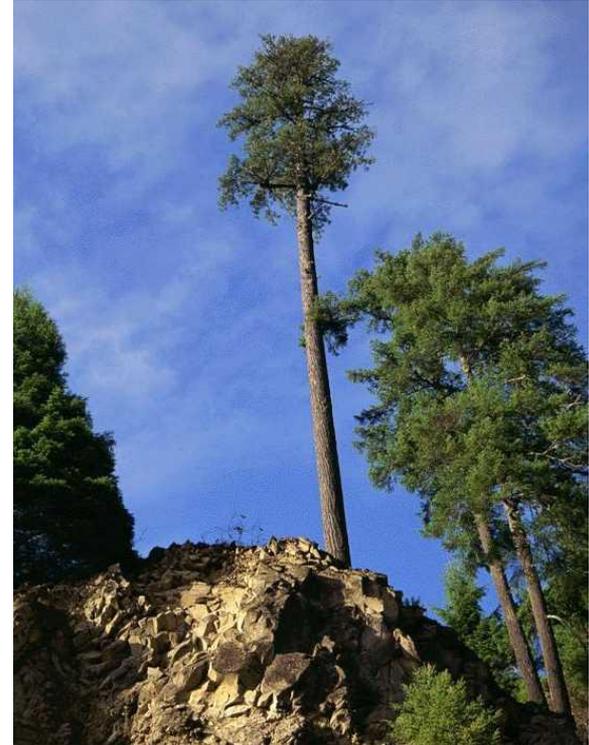
Nasopharyngoscopy Procedure

- Avoid hitting bone spurs or septum, which is very sensitive
- If one side is too tight or uncomfortable, try the other side
- If there are a lot of secretions, suction for a clear view



Nasopharyngoscopy Procedure

- Make sure scope goes over the velum and down to a vertical position, above port



Nasopharyngoscopy Procedure

- Make sure you can easily see the monitor



Nasopharyngoscopy Procedure

- Move the camera if necessary so that the PPW is at the top of the screen and the velum is at the bottom
- Move the scope to the right and left to see the entire port and each lateral port if the child has a pharyngeal flap



Example of Speech Samples for VPI

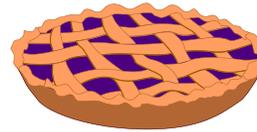
- Repetitive phonemes (pa, pa, pa, pa; sa, sa, sa, sa, sa; si, si, si, si, si, etc. etc.)
- Sentences loaded with pressure phonemes
 - I see the sun in the sky.
 - She went shopping.
 - I eat cherries and cheese.
 - John told a joke to Jim.
- Counting from 60 to 70 or 60, 60, 60
- Prolongation of /s/

Example of Speech Samples for Hyponasality

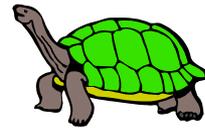
- Repetitive phonemes (ma, ma, ma, ma; na, na, na, na; etc. etc.)
- Sentences loaded with nasal phonemes
 - My mom made lemonade.
 - My mom has money.
 - Mary has many monkeys.
- Counting from 90-99
- Prolongation of /m/

SNAP – Oral Phonemes

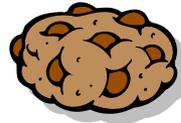
- Pick up the



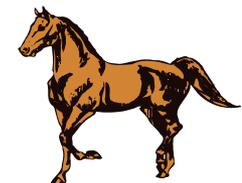
- Take a



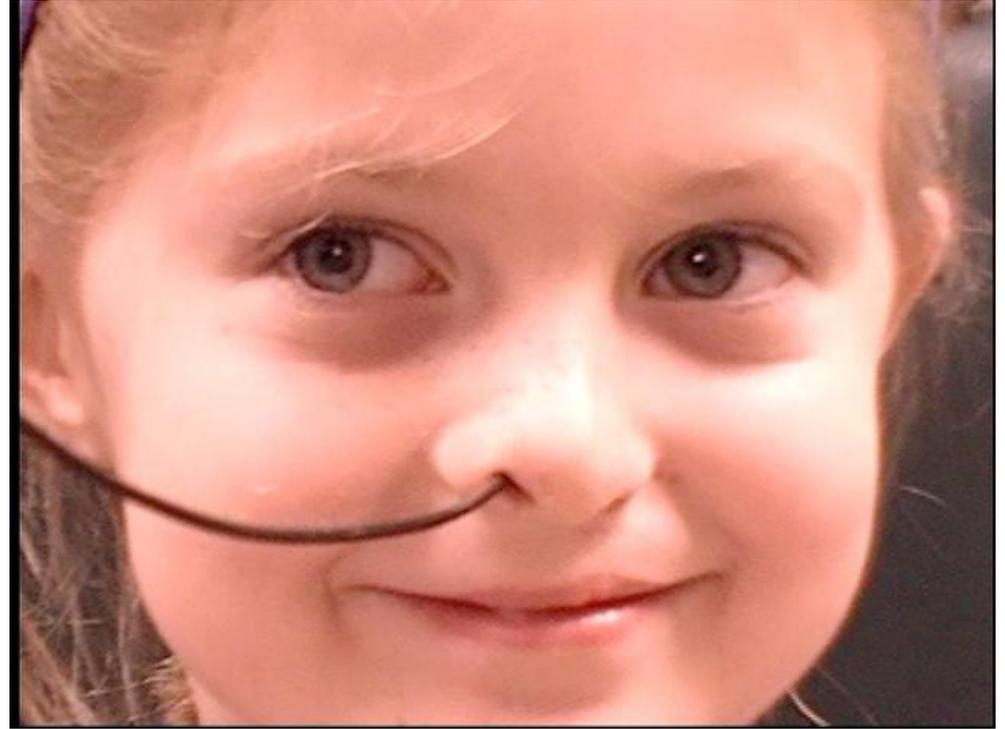
- Go get a



- Suzy sees the



Some Kids are Easy

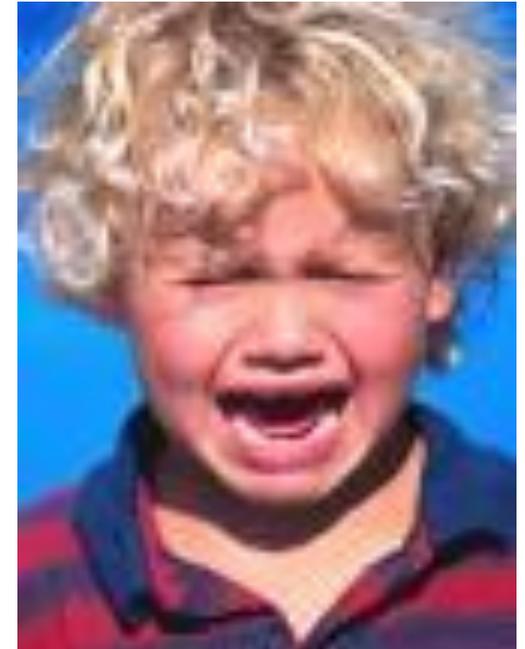


Some Kids are Hard



If the child cries...

- Talk softly and calmly to the child
- Turn out the lights
- Remind others in the room to be quiet!



If the child cries...

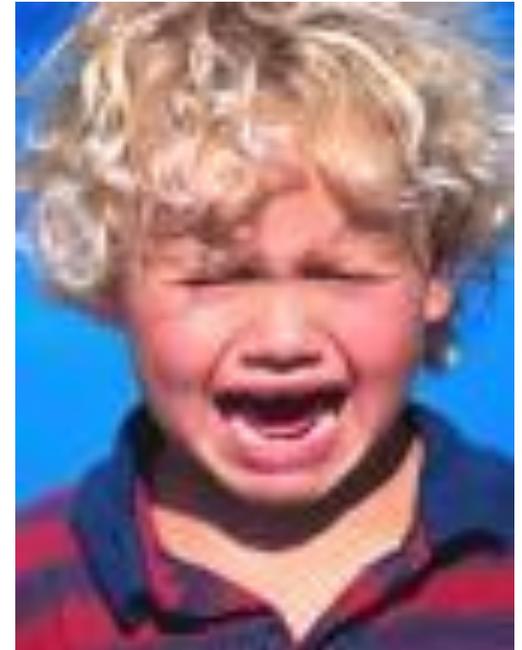
- Ask the child to open his eyes and look at you
- Have an interesting toy for the child to see
- Have pictures to cue the speech
- Bargain on what the child has to say to take the scope out



If the child cries...

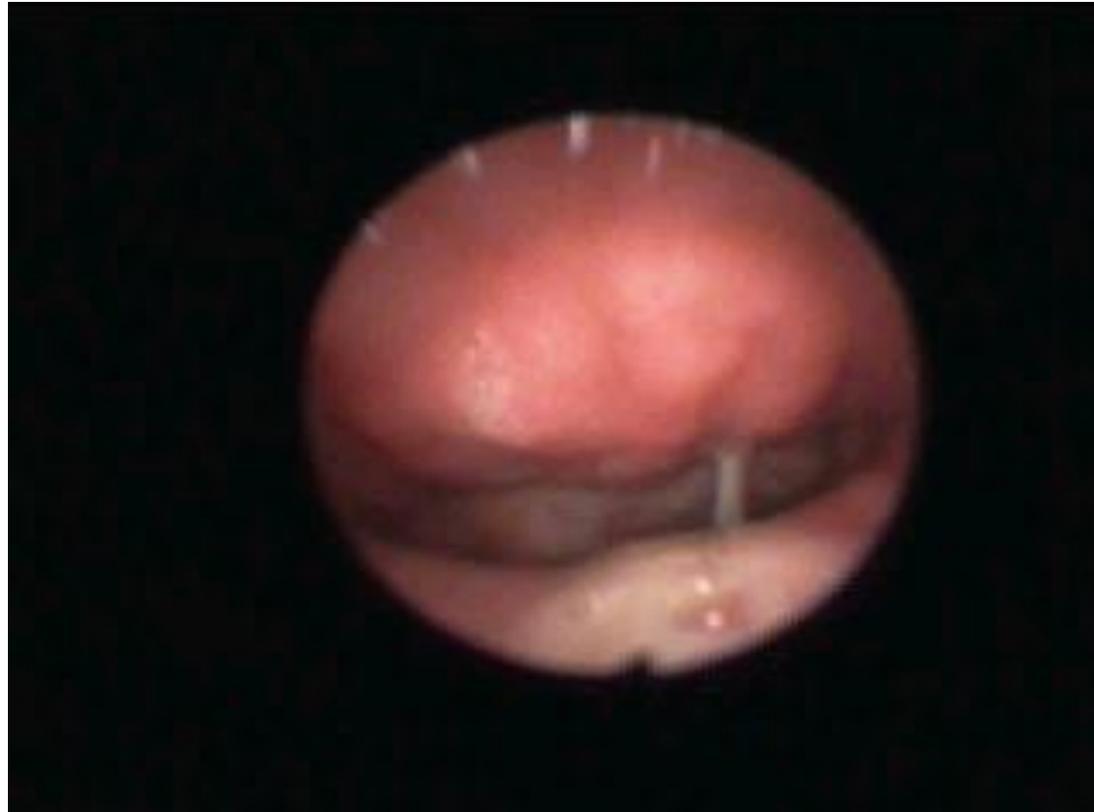
Worst case scenario...

- Wait it out
- Have the child say something like...
 - “Stop it, stop it, stop it.”
 - “Get this stinking scope out of my nose!”



7. NP for Surgical or Prosthetic Treatment Planning

Video



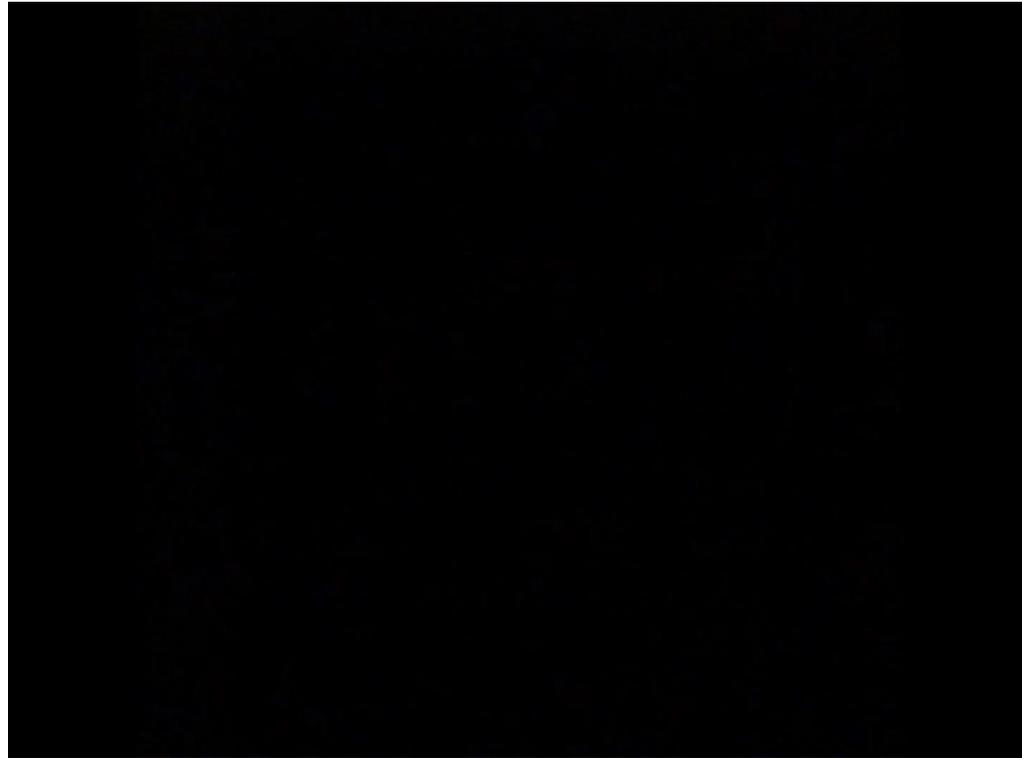
Video



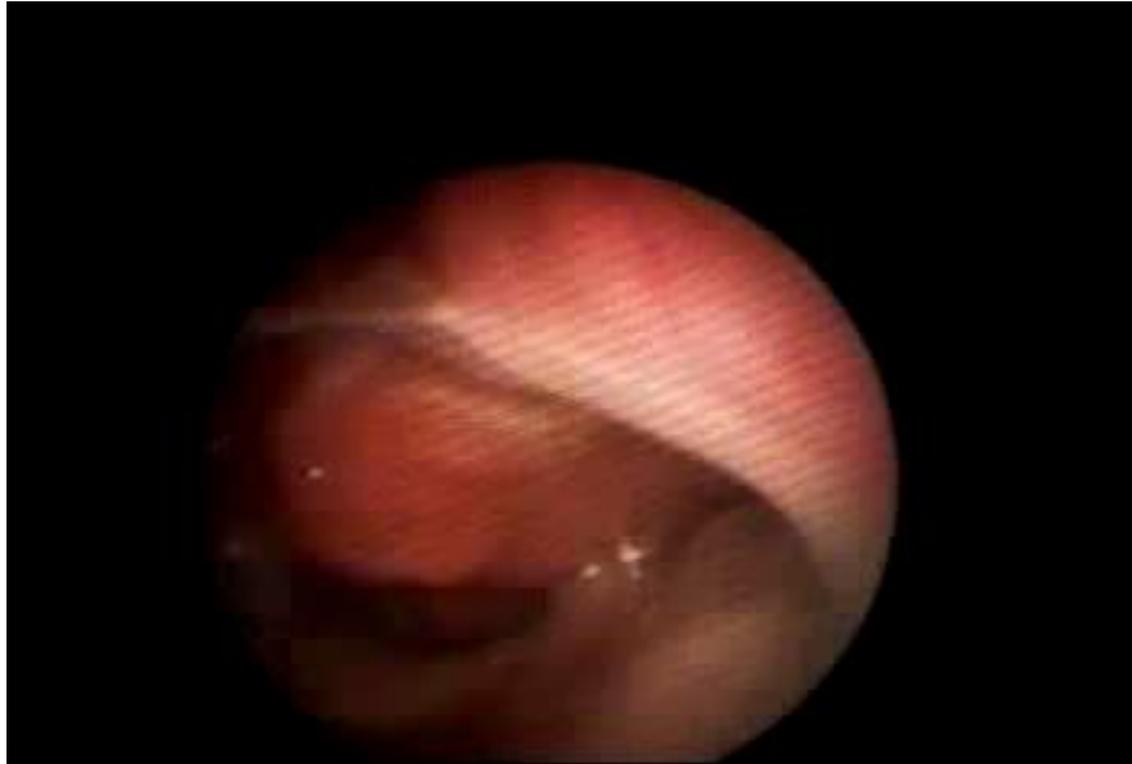
Video



Video



Video



Video



Video



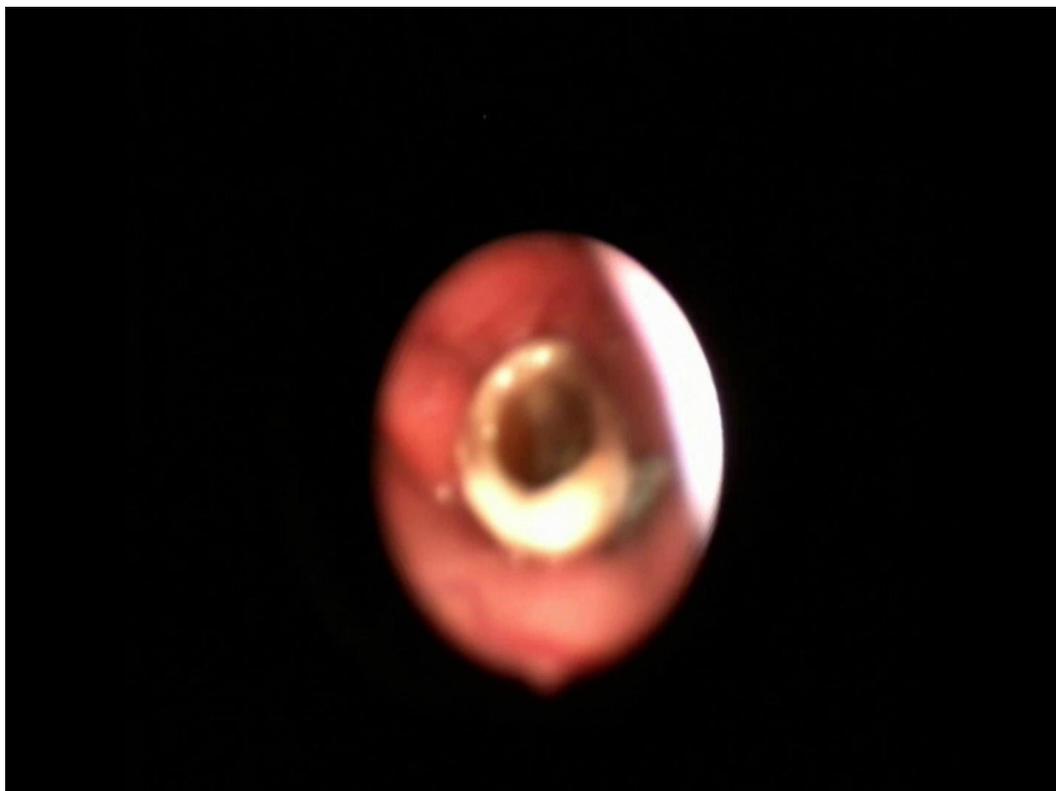
Video



Video



Video



Video



Video



Videos Post Speech Surgeries

Video



Video



Video



Video



Summary: Nasopharyngoscopy

- It's not hard for the examiner
- It's really not very hard for the patient...

Some people are just dying to do it!



Reference and Videos

Chapter 17. Nasopharyngoscopy

Kummer, AW. (2014). *Cleft Palate and Craniofacial Anomalies: The Effects on Speech and Resonance*, 3rd Edition, Clifton Park, NY: Cengage Learning.

For Slides

- Go to: www.cincinnatichildrens.org/speech/
- For Healthcare Professionals
- Lecture Handouts

Last Thing...

- Please fill out course evaluation online for continuing education credit

Thanks for your attention!