Introduction to Sialendoscopy and Salivary Duct Surgery

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Obstructive Salivary Disorders

- Stones
- Stenoses
- Systemic disease
  - Mumps
  - Sjogren's
  - HIV
  - Radiation
  - JRP
  - Sarcoid

Salivary Stone Composition

Traditional Management

- Diagnosis: Imaging (Ryan)
  - X-ray, U/S, CT, MRI, Sialography
- Conservative treatment
- Duct dilation
- Transoral excision
- Duct ligation
- Sialadenectomy

Disclosures

- None
Minimally Invasive Approach

- Endoscopic visualization of the salivary duct
  - Gundlach; Konigsberger et al. HNO. 1990
  - Marchal et al. NEMJ. 1999.
  - FDA approved 2005

Sialendoscopy Benefits

- Diagnostic
  - Stone location
  - Swelling of unknown etiology
  - Recurrent sialadenitis

- Therapeutic
  - Stone removal: access to posterior stones
  - Stenosis dilation
  - Spares salivary glands
  - Reduced risk

The salivary gland recovers

- Submandibular glands removed for sialolithiasis have normal histology. (Marchal et al 2001)
- After stone removal, salivary function improves. (Makdissi et al. 2004)
- Animal studies: gland tissue recovers

Xerostomia

- SMG saliva
  - 70% of resting salivary flow
  - Xerostomia: Risk for dental caries

- After SMG removal
  - 22% report xerostomia in long-term follow up (Springbog and Moller. Eur Arch Otorhinolaryngol. 2013.)
  - Reduced unstimulated salivary flow (Cunning et al. Laryngoscope. 1998.)
Contraindication

- Active infection

Clinical History

- History
  - PMH: prior XRT, RAI, autoimmune disease
- Exam:
  - Salivary expression
  - Papilla location
  - Bimanual palpation
  - Mandibular tori
  - TMJ, trismus
  - Imaging

Sialendoscopy Setup

- General anesthesia
  - Avoid anticholinergic agents
- Intubation
  - Oral
  - Nasal: posterior stones in SMG
- Preoperative Medications
  - Antibiotics
  - Decadron
- Positioning

Equipment

- Sialendoscope
  - Diagnostic sheath
    - Single channel
  - Therapeutic sheath
    - Working channel
Equipment (Walvekar)

Technique – the Papilla

- Identify the papilla
  - Gland massage
  - Symmetry
  - Magnification
  - Inject papilla
  - Methylene blue
- Papilla dilation
  - Start with smallest dilator 0000 up to size 3-4
  - Avoid making pseudo openings with needle/forceps

Technique - Sialendoscopy

- Setup
  - Orient camera
  - Brightness
- Introduce sialendoscope
  - Saline irrigation – no air
  - Small movements
  - Backing out helps to find lumen
  - Advance under visualization
  - Be careful of teeth, mandibular tori

Examination

- Ducts and branches
- Stones
  - Location
  - Mobility
  - Number
- Stenoses
  - Location
  - Extent
- Other
  - Foreign body
  - Lesions
Lithotripsy

- Impacted large stones
- Fragmentation:
  - Forceps; Hand Drill
  - Laser Ho:YAG
  - ESWL
  - Endoscopic Intracorporeal SL
- Lithotripsy
  - Slow
  - Can damage duct and scope
  - Multiple sessions required

Combined approach

- Due to size & location, stone may not be amenable to endoscopic management
- Sialendoscopy to localize and characterize the stone
- Submandibular
  - Posterior sialodochotomy over palpable stone
- Parotid
  - Transoral sialodochotomy to release distal stones
  - Transfacial approach for impacted proximal stones

Stones – Tools for Management

- Basket/ Douchotomy
- Lithotripsy: Laser
  - Forceps
  - Endoscopic drill
- Combined approach
Salivary Duct Stenosis

- **Koch M et al. Oto HNS 2005**
  - Sialendoscopy in 103 cases with negative imaging (U/S)
  - 33% with stones
  - 56% with stenoses

- **Causes of stenosis**
  - Iatrogenic: prior surgery
  - Inflammatory: autoimmune, XRT, RAI

Stenosis Management

- **Diagnosis**
  - Sialography
  - Sialendoscopy: determine location, extent, length

- **Treatment: Dilation**
  - Dilation: Hydraulic, balloon, stents, steroids
  - Sialodochotomy
  - Combined Approach: Excision, Vein graft
  - Sialadenectomy

Conclusions - Sialendoscopy

- Minimally invasive, gland sparing approach
- Diagnostic and therapeutic
- Treatment of sialolithiasis and stenosis
- Reduced need for sialadenectomy