UCSF
University of California
San Francisco

Management of Common Problems in Otolaryngology

Jolie Chang, MD
Assistant Professor
Department of Otolaryngology –
Head and Neck Surgery
University of California, San Francisco
Jolie.chang@ucsf.edu

Disclosures

- None

UCSF

Otolaryngology – Head and Neck Surgery

- Specialty formerly known as ENT
  - Early Nights and Tennis
  - Easy, Not Tough
- Case-based review of common and uncommon problems

UCSF

Ear: Hearing Loss

UCSF

Case #1

- 72 y/o woman with hearing loss and tinnitus
- Otologic History
  - No vertigo, otalgia, or otorrhea
  - No history of prior surgery or frequent infections
  - + history of hearing loss in family (father and grandfather)
  - Went to "Rock concerts" in the sixties

UCSF

Case #1

- PMH: none
- Meds: none
- Exam
  - Cranial nerves: V and VII normal
  - Ear: Normal appearance of tympanic membrane

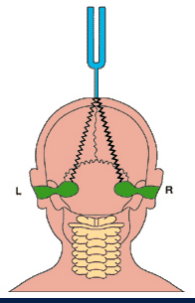
UCSF

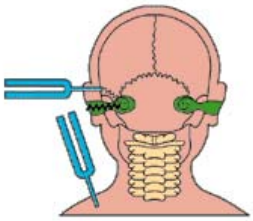
Case #1

- Tuning fork tests (512 Hz)
  - Weber: Midline
  - Rinne: Air conduction > Bone Conduction Bilaterally

UCSF

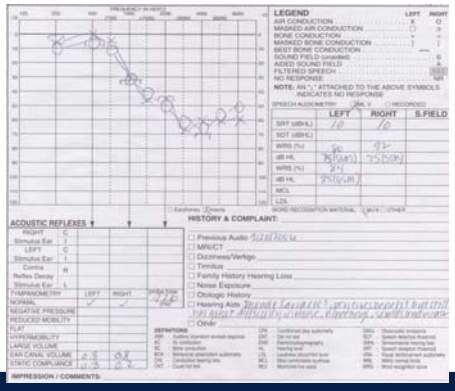
Weber & Rinne Tests





UCSF

Audiogram



UCSF

Diagnosis

- Presbycusis
- Treatment
  - Consideration of Hearing Aids
  - Listening strategies and assistive devices
  - Avoidance of noise exposure
- New Frontiers:
  - Implantable hearing aids
  - Cochlear Implants "partial insertion"

UCSF

Ear: Case # 2

UCSF

Case #2

- 36 y/o woman with hearing loss and tinnitus
  - Symptoms worse on right side
- Otologic History
  - No vertigo, otalgia, or otorrhea
  - No prior ear surgery
  - No history of ear infections
  - + family history of hearing loss (mother in late 20's)
  - No history of noise exposure

UCSF

Case #2

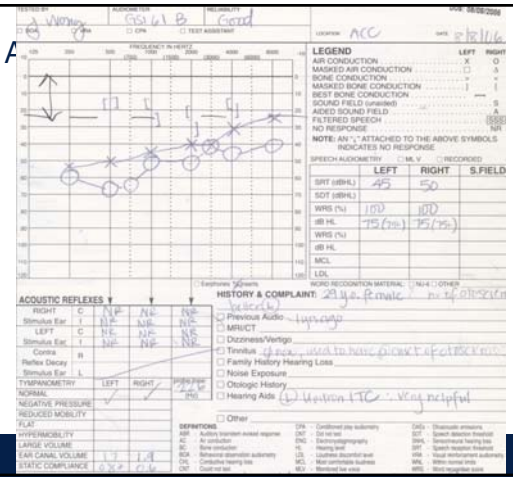
- PMH: recently delivered first child
- Meds: none
- Exam
  - CN: V and VII normal
  - Normal appearance of tympanic membrane

UCSF

Case #2

- Tuning fork tests (512 Hz)
  - Weber: to the right
  - Rinne: Bone conduction > Air Conduction Bilaterally

UCSF



UCSF

Most Likely Diagnosis?

- Meniere's disease
- Otosclerosis
- Otitis Media with Effusion
- Cholesteatoma
- Acoustic Neuroma

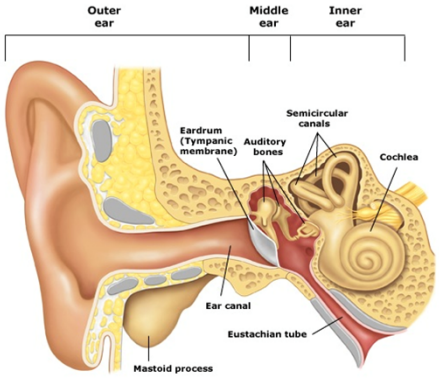
UCSF

Diagnosis

- Otosclerosis
  - Disease of abnormal bone remodeling within the middle/inner ear
  - Most patients present with unilateral conductive hearing loss and normal TM examination
    - More severe cases may be bilateral with associated sensorineural hearing loss
  - Conductive loss due to fixation of the Stapes footplate within the Oval Window

UCSF

Th



UCSF

Otosclerosis

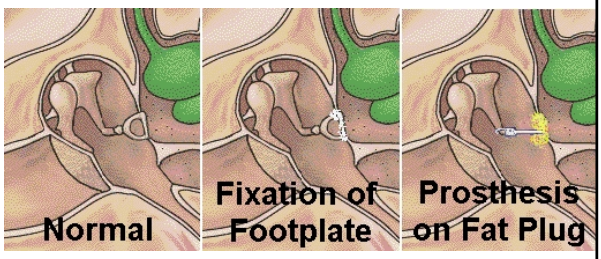
- Patients can have a family history of hearing loss
- In women, symptoms may worsen during pregnancy

UCSF

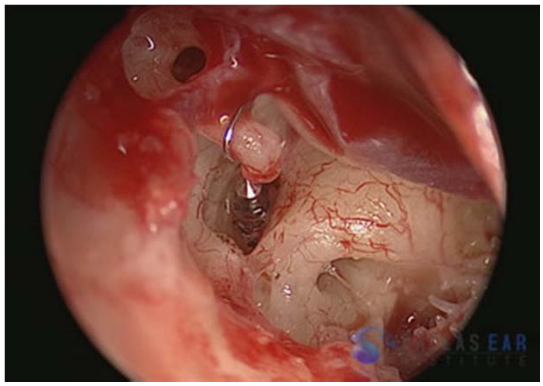
Otosclerosis

- Treatment:
  - Observation
  - Hearing Aid
  - Surgery (Stapedectomy):
    - Popularized by Dr. John Shea in 1952
    - Revolutionized treatment of otosclerosis
    - Stapes bone partially removed
    - Prosthesis inserted and linked to incus

UCSF



UCSF



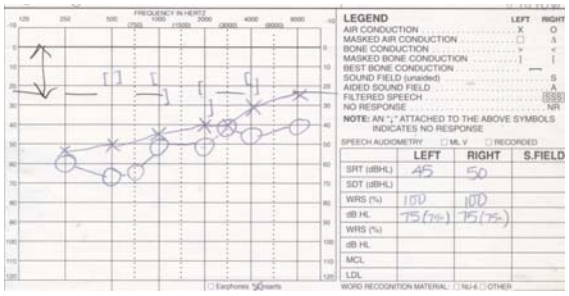
UCSF

Stapes Surgery

- Results
  - 90% with complete or near complete correction of conductive component of hearing loss
  - 9% with no change in hearing
  - 1% with complete sensorineural loss

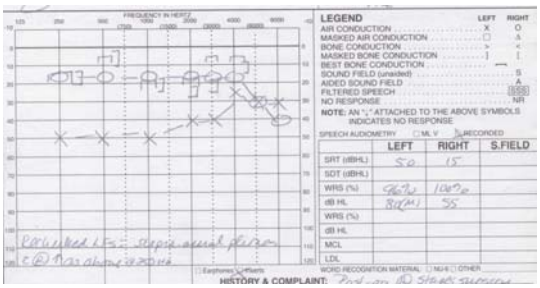
UCSF

Audiogram: Preop



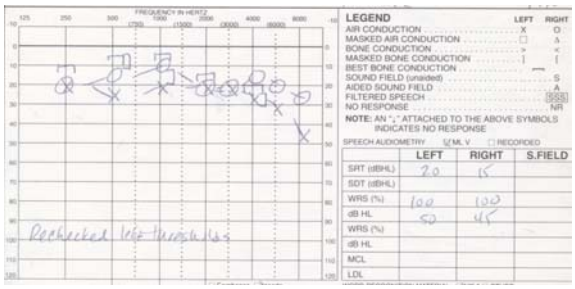
UCSF

Post-op Audiogram



UCSF

Post-op Audiogram



UCSF

Ear: Case # 3

UCSF

Case #3

- 66 year-old male with sudden left ear fullness and tinnitus
- HPI
  - Sudden onset of left hearing change
  - Left ear feels full
  - Loud left buzzing sounds
  - Cannot hear or understand telephone on the left
  - Denies vertigo, ear infections, ear drainage
- PMH
  - Hyperlipidemia
  - Longstanding Atrial Fibrillation

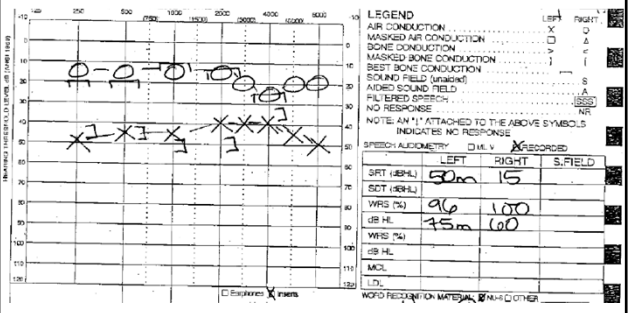
UCSF

Case #3

- Exam
  - Intact tympanic membranes without effusion
  - Cranial nerves VII, X, XI, XII intact
  - Weber lateralized to the RIGHT
  - Rinne: Air conduction > Bone conduction Bilaterally

UCSF

Audiogram



UCSF

Case #3: Sudden Hearing Loss

- Rapid onset over 3 days, affecting >3 frequencies by >30dB HL
- Sudden Sensorineural Hearing Loss
  - Symptom: aural fullness
  - Rule out conductive hearing loss
  - Cause identified in only 10-15%

UCSF

Sudden SNHL Workup

- Routine audiogram
  - Rule out CHL (tuning fork, ear exam)
  - Confirm hearing loss
- No role for routine lab testing
- Consider for fluctuating or bilateral SNHL:
  - ANA, RPR, Lyme titers, ESR, HIV, TSH
- Evaluate for Retrocochlear Pathology
  - Sudden HL: 3-10% with CPA tumor on MRI
  - MRI with GAD IAC, brain, brainstem
  - ABR or serial audiometry

UCSF

Natural History of Sudden SNHL

- Untreated patients with sudden SNHL
  - Recovery rates 31-65%
- Treated patients
  - Recovery 35-89%
- Why the wide range/discrepancies?
  - Inconsistent definition of sudden HL
  - Range of time frames for treatment
  - Range of hearing loss severities
  - Inconsistent definition of recovery

Wilson WR et al. Archives Otol 1980. Chen CY et al. Oto & Neuro 2003.
Mattox DE, Simmons FB. Annals of ORL 1977. Slattery et al. OtoHNS 2005.

UCSF

Prognosis

- Best prognosis with:
  - Milder hearing loss
  - Absence of vertigo
  - Improvement within 2 weeks of onset
  - Upsloping audiogram
  - Younger age

UCSF

Treatment

- Reversible hearing loss
- Time sensitive
- Unknown etiology
- Evidence unclear
- Patient distress
- = Shotgun therapy!

UCSF

Treatment: Steroids

- AAOHNS Recommendations
  - Regarding steroids: “Even a small possibility of hearing improvement makes this a reasonable treatment to offer patients considering the profound impact on QOL a hearing improvement may offer.”

UCSF

Oral Steroids

- Prednisone 1mg/kg/dose = max 60 mg/day
  - Full dose for 7-14 days, taper
  - Tapered over 2 weeks
- = Methylprednisolone 48 mg
- = Dexamethasone 10 mg

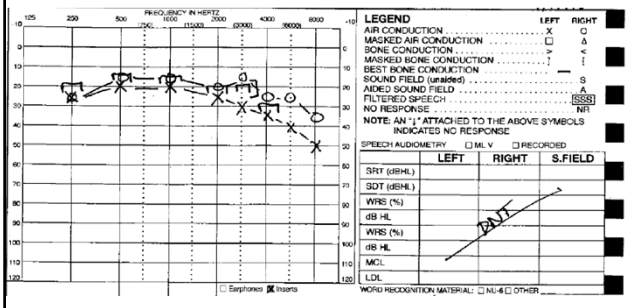
UCSF

Intratympanic steroids

- Benefits
  - Increased drug concentration in perilymph and endolymph *(Parnes et al. Laryngoscope 1999)*
  - Reduced systemic effects
- Risks
  - Pain, transient vertigo, tympanic membrane perforation, otitis media

UCSF

Audiogram



UCSF

Case #3: Sudden SNHL

- REFER! Urgent Referral
- "Sudden Hearing Loss"
- Urgent Hearing Test and Evaluation

UCSF

Hearing Loss

Conductive

- Cerumen Impaction
- TM Perforation
- Effusion/OM
- Otosclerosis

Sensorineural

- Presbycusis
- Noise Induced
- Congenital
- Acoustic Neuroma
- Idiopathic

UCSF

Nose

UCSF

Case #4: Nose

- 44y/o man with nasal congestion and clear nasal drainage for 6 months
- HPI
  - "I Always have a cold"
  - Facial congestion/pressure
  - Occasional exacerbations with green/yellow drainage
  - Loss of smell
  - Allergy testing negative

UCSF

Case #4

- PMH: asthma
- Meds: has tried mometasone spray, loratadine, pseudoephedrine, and multiple antibiotics without improvement
- Exam
  - Bilateral inferior turbinate enlargement
  - Clear nasal mucus

UCSF

Guideline Executive Summary

Clinical Practice Guideline (Update): Adult Sinusitis Executive Summary

Richard M. Rosenfeld, MD, MPH[1], Jay F. Piccirillo, MD[2], Sujana S. Chandrasekhar, MD[3], Itzhak Brook, MD, MSc[4], Kaparaboyna Ashok Kumar, MD, FRCS[5], Maggie Kramper, RN, FNP[6], Richard R. Orlandi, MD[7], James N. Palmer, MD[8], Zara M. Patel, MD[9], Anju Peters, MD[10], Sandra A. Walsh[11], and Maureen D. Corrigan[12]

FOUNDATION
Otolaryngology–Head and Neck Surgery
2015, Vol. 152(2S) S1–S39
© American Academy of Otolaryngology—Head and Neck Surgery Foundation 2015
Reprints and permission:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/0194599815574247
http://oto.sagepub.org
SAGE

Table 5. Definitions of Chronic Rhinosinusitis and Recurrent Acute Rhinosinusitis.

Term	Definition
Chronic rhinosinusitis	Twelve weeks or longer of 2 or more of the following signs and symptoms: • mucopurulent drainage (anterior, posterior, or both) • nasal obstruction (congestion), • facial pain/pressure/fullness, or • decreased sense of smell. AND inflammation is documented by one or more of the following findings: • purulent (not clear) mucus or edema in the middle meatus or anterior ethmoid region, • polyps in nasal cavity or the middle meatus, and/or • radiographic imaging showing inflammation of the paranasal sinuses.
Recurrent acute rhinosinusitis	Four or more episodes per year of acute bacterial rhinosinusitis without signs or symptoms of rhinosinusitis between episodes: • Each episode of acute bacterial rhinosinusitis should meet diagnostic criteria in Table 1.

PATIENT INFORMATION ON

Treating Acute Bacterial Rhinosinusitis (ABRS)

QUESTION	ANSWER
How long will it take before I feel better?	Most patients with ABRS feel better within 7 days, and by 15 days, about 90% are cured or improved.
If I have ABRS, do I have to take an antibiotic?	No, both *watchful waiting* and *antibiotic therapy* are proven ways to treat ABRS. Most people get better naturally, and antibiotics only slightly increase symptom relief (about 10 to 15 people must use antibiotics to get 1 more person better after 7-15 days).
Is there any downside to using antibiotic?	Antibiotics have side effects that include rash, upset stomach, nausea, vomiting, allergic reactions, and causing resistant germs.
How is watchful waiting done?	Your doctor can give you an antibiotic prescription, but you should only fill the prescription and take the antibiotic if you do not get better after 7 days or if you get worse at any time. If you do use the antibiotic, contact your doctor's office and let them know.

http://www.entnet.org/content/clinical-practice-guideline-adult-sinusitis

UCSF

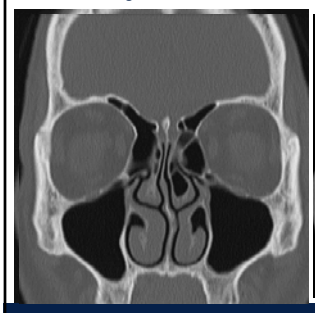
Case #4

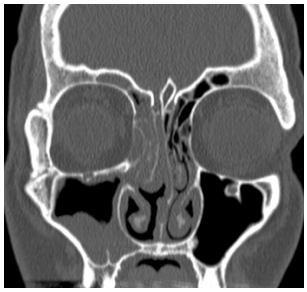
- Diagnosis
  - Possible Chronic Sinusitis
- Evaluation
  - Nasal Endoscopy
  - CT scan

UCSF

Chronic Sinusitis

- CT Findings





UCSF

Impact of Topical Nasal Steroid Therapy on Symptoms of Nasal Polyposis: A Meta-Analysis

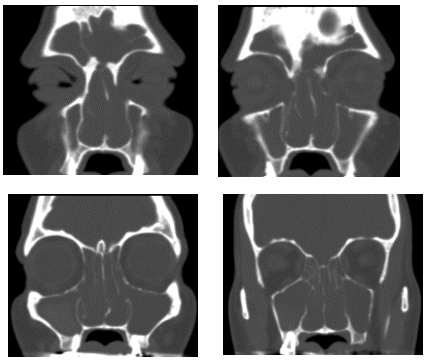
Luke Rudmik, MD; Rodney J. Schlosser, MD; Timothy L. Smith, MD, MPH; Zachary M. Soler, MD, MSc

- Structured literature review and meta-analysis
- Identified & analyzed 12 randomized, placebo-controlled trials
- Demonstrated statistically significant improvement in nasal symptoms
  - Extent of improvement not well-quantified
  - QOL impact unknown
- All steroid formulations demonstrated improvement

Laryngoscope 2012 Jul;122(7):1431-7

UCSF

Intranasal Corticosteroid?



UCSF

Oral corticosteroids in the management of adult chronic rhinosinusitis with and without nasal polyps: an evidence-based review with recommendations

David M. Poetker, MD, MA[1], Luke A. Jakubowski, MD[1], Devyani Lal, MD[2], Peter H. Hwang, MD[3], Erin D. Wright, MDCM, MEd[4] and Timothy L. Smith, MD, MPH[5]

TABLE 7. Summary of recommendations for the use of steroids in CRS

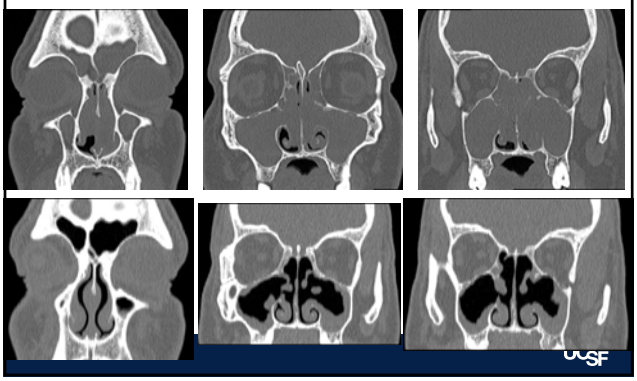
CRS patients	Grade of evidence	Balance of benefit to harm	Recommendation	Steroid protocol
CRSsNP	C	Perceived balance of benefit to harm	Option	
CRSwNP	A	Preponderance of benefit over harm in small, short-term follow-up	Strong recommendation	Consider oral prednisone for short term in CRSwNP
AFS	B	Benefits over harm in short term	Recommend	Consider oral prednisone for patients in AFS
Perioperative use in AFS	B	Benefit over harm, particularly after surgical debridement	Recommend	Consider oral prednisone perioperatively in AFS
Perioperative use in CRSwNP	B	Benefit over harm	Recommend	Consider oral prednisone perioperatively in CRSwNP
Perioperative use in CRSsNP	N/A	N/A	No recommendation	

AFS = allergic fungal sinusitis; CRS = chronic rhinosinusitis; CRSsNP = chronic rhinosinusitis without nasal polyps; CRSwNP = chronic rhinosinusitis with nasal polyps; N/A = not applicable.

Int Forum Allergy Rhinol. 2013 Feb;3(2):104-20

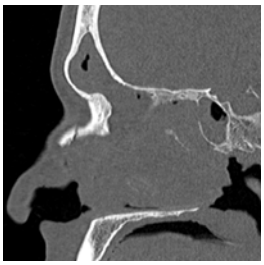
UCSF

Oral Corticosteroids

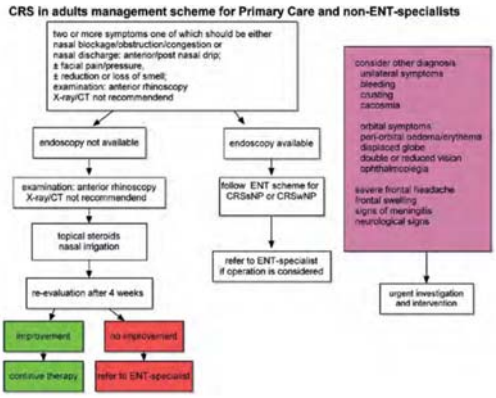


UCSF

Oral Corticosteroids

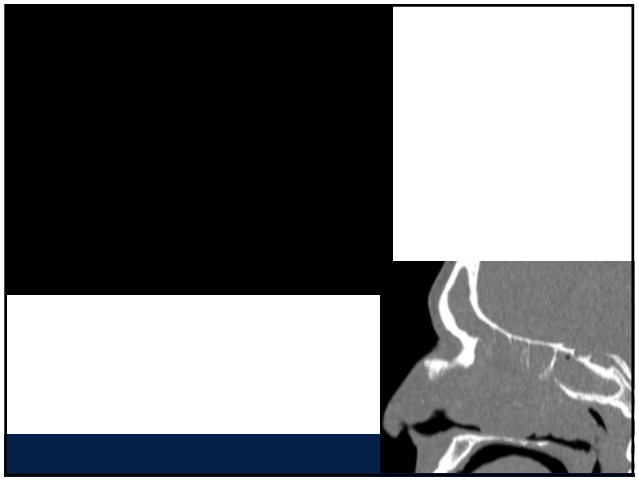


UCSF



Fokkens et al: European Position Paper on Rhinosinusitis and Nasal Polyps

UCSF



Nasal Polyp?

- WARNING
  - Unilateral
  - Epistaxis
  - Epiphora
  - Diplopia
  - Facial Numbness

UCSF

Throat

UCSF

Case #5 Obstructive Sleep Apnea

- 56 year-old male with daytime fatigue and sleep apnea
- HPI
  - Chronic daytime fatigue
  - Daily snoring and witnessed apnea
  - ESS: 21

UCSF

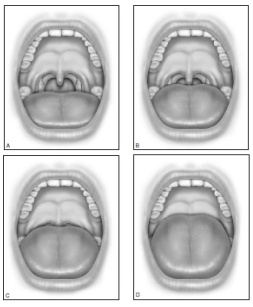
Case #5: Sleep Study

- Polysomnogram
  - AHI 26.5
  - Supine AHI 50.3
  - Non-supine 25
  - RDI 30
- CPAP prescribed
  - Could not tolerate, not using currently

UCSF

Case #5

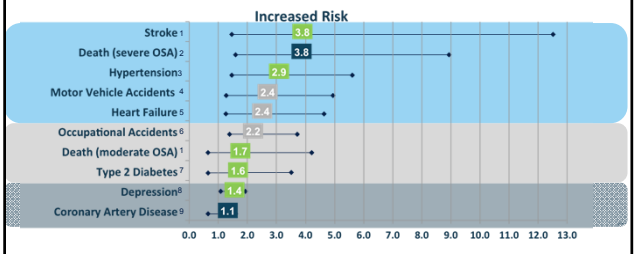
- Exam
  - Mild septal deviation
  - Modified Mallampati 3
  - Tonsils 2+
  - Moderate palate and uvula thickening
  - Increased tongue size
  - Mild retrognathia



UCSF

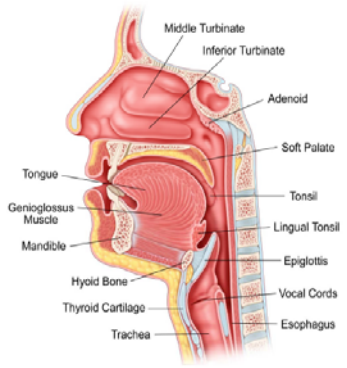
Obstructive Sleep Apnea = OSA

- 9% US population: moderate-severe OSA (AHI>15)
- Untreated OSA -> Increased morbidity and mortality



UCSF

Level of Airway Obstruction



UCSF

OSA Treatment

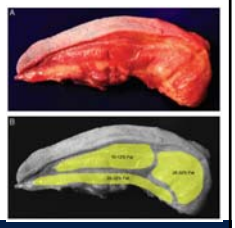
- CPAP
- Weight Change
- Position
- No alcohol prior to sleep
- Oral appliances
- Surgery
  - Soft tissue
  - Bony
  - New Therapies

UCSF

The Effects of Weight Loss

- BMI
- BMI > 35 associated with worse outcomes after most surgical procedures
- Tongue fat correlates with BMI (Nashi 2007)
- 10% weight loss ~ up to 47% AHI drop (Johansson 2009)
- 10% weight gain ~ 32% AHI increase (Peppard 2000)

Category	BMI
Very Obese	>35
Obese I	30 - <35
Overweight	25 - <30
Normal	18.5 - <25



Nashi et al. Laryngoscope 2007.

UCSF

Oral appliances

- Devices
- Anatomy
- Advantages
  - Nonsurgical; Well-tolerated
- Disadvantages
  - TMJ pain
  - Tooth pain and alignment changes
  - Gum irritation and dry mouth

Drug- Induced Sleep Endoscopy (DISE)

- Described in 1991 by Pringle and Croft.
- 3D dynamic assessment of the airway during sedation
- Evaluation of vibration/obstruction severity and location
- Goals:
  - Understand airway phenotypes
  - Direct surgical treatments

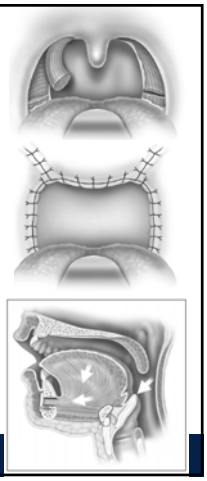
UCSF

Drug Induced Sleep Endoscopy Videos

UCSF

Surgery for OSA

- Palate and Oropharynx
  - Tonsillectomy
  - Modified Uvulopalatopharyngoplasty
- Tongue
  - Lingual tonsillectomy
  - Tongue reduction procedures
  - Genioglossus Advancement
- Epiglottis
  - Hyoid suspension
  - Epiglottectomy



Goals of Treatment

- Reduce symptoms: daytime fatigue
- Improve quality of life
- Minimize risk: mortality, cardiac, motor vehicle accidents

UCSF

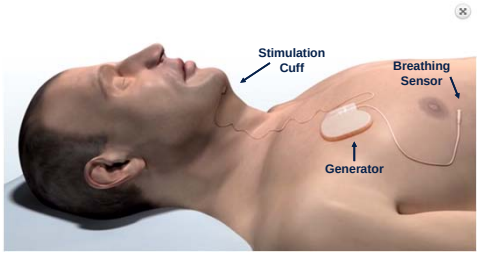
New Treatment: Inspire Hypoglossal Nerve Implant

- FDA 4/2014
- Breathing sensor
- Stimulator to nerve
- Fully implanted
- Sleep remote

UCSF

Inspire Therapy

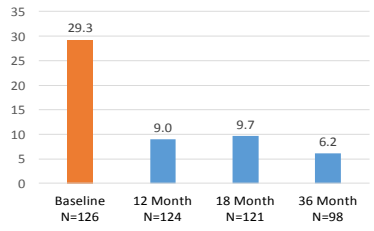
- Stimulation to the hypoglossal nerve improves muscle tone during sleep to reduce obstruction.



UCSF

Clinical Evidence

- STAR Trial: Strollo et al. NEJM 2014.
- 126 patients with mod-severe OSA
- 12-months post implant
- Reduced:
  - AHI (29.3 to 9)
  - ODI (25.4 to 7.4)
  - ESS survey
  - FOSQ survey
  - Daily use: 86%

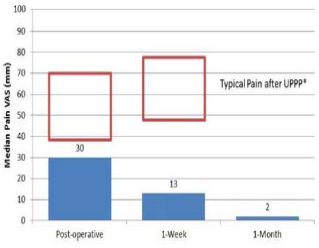


Strollo et al. NEJM 2014; Strollo et al. Sleep 2015; Woodson et al. OtoHNS 2015.

UCSF

Hypoglossal Nerve Implant

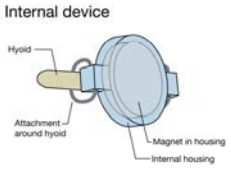
- Offers a new option for CPAP intolerant patients
- Improved AHI, sleep symptoms
- Titrated solution
- Reduced postoperative pain and medication use
- Reduced postoperative hospital stay
- Improved potential surgical candidacy



UCSF

OSA: New Therapies

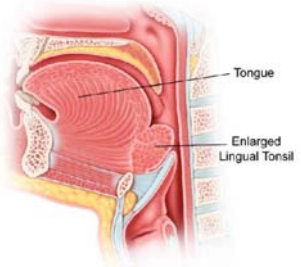
- Inspire Hypoglossal Nerve Implant – UCSF Regional Center
- MAGNAP: Clinical Trial

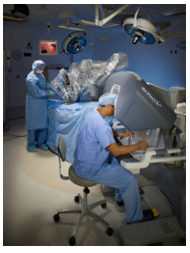


UCSF

Lingual tonsillectomy and partial glossectomy

- Transoral Robotic Surgery





UCSF

Case #7

Throat Pain & Hoarseness

Case #7: Throat Pain and Hoarseness

- 54y/o man with worsening hoarseness over the past 6 months
- HPI
  - Mild intermittent throat pain
  - Globus sensation when swallowing, but no dysphagia
  - 25 pack/year smoking history, drinks 6-pack of beer/night

UCSF

Case #7

- PMH: HTN
- Meds: atenolol, ASA, occasional pepcid
- Exam
  - Oral cavity WNL
  - No nasal abnormalities
  - No cervical adenopathy
  - Halitosis

UCSF

Case #7

Laryngoscopy

UCSF

Case #9

- Laryngeal Mass, R/O Cancer
- Direct Laryngoscopy, Biopsy
  - Path -> Squamous Cell Carcinoma

UCSF

Laryngeal Cancer

- Tobacco and EtOH are primary risk factors
- 4:1 male to female ratio
- Clinical Presentation often depends on site of origin

UCSF

Laryngeal Cancer

- Glottis
  - Earlier presentation (voice change)
  - Decreased risk of cervical metastasis
- Supraglottis
  - Later presentation
  - Increased risk of cervical metastasis

UCSF

Laryngeal Cancer

- Treatment
  - Surgery, Radiation, and Chemotherapy are three treatment modalities
  - Stage of cancer and local expertise determines treatment approach
  - Overall trend towards increased use of radiation/chemotherapy and “laryngeal conservation” surgery

UCSF