Airway Evaluation and Oral Pathology

Shannon Fraser, MD

Airway Evaluation: History

- Snoring
- Witnessed apnea
- Recurrent croup
- History of Downs syndrome, Pierre Robin, Treacher-Collins, etc.

- Prior history of difficult intubation
- History of head and neck cancer
- History of radiation

Airway Evaluation: Physical Exam

- Craniofacial abnormalities
- Obesity
- Thyromental distance
- Head/neck mobility
- Mallampati score
- Airway mass/lesion
- Trismus
- Upper lip bite test
- Neck thickness

Tonsil Classification

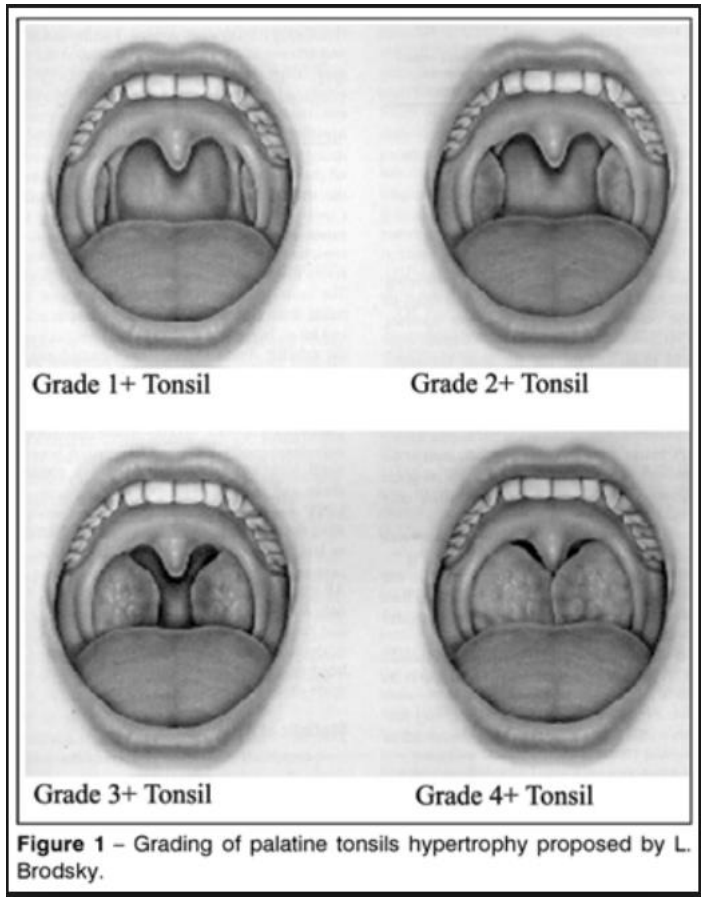


Figure 1 – Grading of palatine tonsils hypertrophy proposed by L. Brodsky.

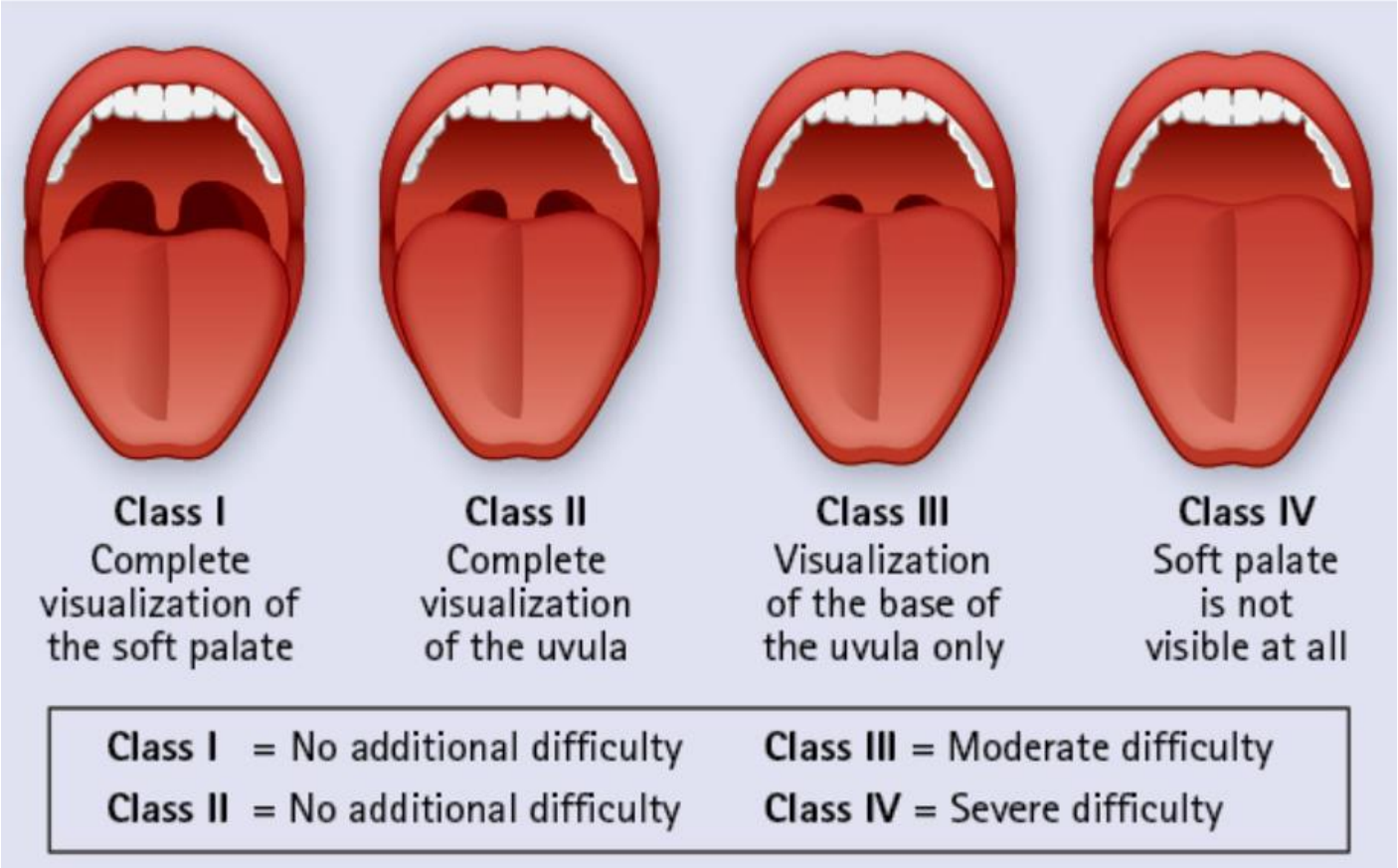
Table 1. Brodsky Grading Scale[9]

Grade	Airway, %
1	≤25
2	26-50
3	51-75
4	>75

Indications for Tonsillectomy

- Pediatric Obstructive Sleep Apnea
  - Requires diagnosis by polysomnography
  - Apnea-Hypopnea Index >1/hour
- Sleep Disordered Breathing
  - Family reported history of snoring with witnessed apneic events
- Recurrent tonsillitis
  - 7 episodes of strep tonsillitis in 1 year
  - 5 episodes yearly for 2 years
  - 3-4 episodes yearly for >2 years
  - History of >1 peritonsillar abscess
- Asymptomatic tonsillar hypertrophy is not an indication for surgery
  - If noted on exam this should prompt questions regarding snoring, witnessed apneic events, recurrent tonsillits

Mallampati Score



Pre operative airway evaluation

Airway Assessment for Office Sedation/ Anesthesia

Morton B. Rosenberg, DMD,* and James C. Phero, DMD†

*Professor of Oral Maxillofacial Surgery, Head, Division of Anesthesia and Pain Control, Associate Professor of Anesthesia, Tufts University Schools of Dental Medicine and Medicine, Boston, Massachusetts, and †Professor Emeritus, Anesthesiology, College of Medicine, University of Cincinnati Academic Medical Center, Cincinnati, Ohio

Table 4. Difficult Intubation Tests

External anatomic features
Head and neck movement (atlantooccipital joint)
Jaw movement (temporomandibular joint)
Mouth opening
Subluxation of mandible
Receding mandible
Protruding maxillary incisors
Obesity
Thyromental distance
Sternomental distance
Visualization of the oropharyngeal structures
Anterior tilt of larynx
Radiographic assessment

Predictors of difficult intubation defined by the intubation difficulty scale (IDS): predictive value of 7 airway assessment factors

Suk-Hwan Seo, Jeong-Gil Lee, Soo-Bong Yu, Doo-Sik Kim, Sie-Jeong Ryu, and Kyung-Han Kim

Department of Anesthesiology and Pain Medicine, Kosin University College of Medicine, Busan, Korea

Table 5. Airway Factors for Difficult Intubation by Multivariate Logistic Regression Analysis

Airway factors	P value	Odd ratio	95% CI
TAS (> 6)	0.001	13.57	2.99−61.54
ULBT (Class III)	0.002	12.48	2.50−62.21
Head & neck movement (< 90°)	0.081	3.11	0.87−11.13
Inter-incisor gap (< 4 cm)	0.144	2.32	0.75−7.19
BMI (≥ 25 kg/m^2)	0.120	2.22	0.81−6.06
Mallampati classification (≥ Class III)	0.737	1.22	0.38−3.89

TAS: total airway score, ULBT: upper lip bite test, BMI: body mass index, CI: confidence interval.

- No single physical exam finding is predictive of difficult intubation
- Consider both physical exam and history
- Tonsillar hypertrophy in the absence of snoring or apnea does not require ENT evaluation

Oral Pathology

- Benign
- Pre-malignant
  - Dysplasia
- Malignant
- Infectious
- Autoimmune

Benign

- Physiologic pigmentation
  - Increased melanocyte activity
  - Bilateral
  - Brown-gray band of attached gingiva, hard palate, FOM, buccal mucosa
- Traumatic ulceration
  - Look for adjacent cracked teeth
  - Ill-fitting denture
- Pyogenic granuloma
  - Rapidly growing lesion due to traumatic irritation
  - Erythematous, non-painful, smooth
  - Bleeds easily
  - Surgical excision
- Fibroma
  - Firm nodular lesion
  - Smooth

Benign

- Aphthous ulceration
  - Painful oral lesions
  - Localized, shallow, round to oval
  - Recurrent
  - Can be associated with inflammatory diseases (celiac, inflammatory bowel disease, Behcet syndrome, SLE)
  - Treatment: time, topical anesthetic, topical steroid, treatment of underlying disease process

Benign

- Mucocele
  - Fluid filled, bluish, dome shaped
  - Most common on the lower lip
  - Can spontaneously rupture and drain
  - Frequently recur

- Ranula
  - Pseudocyst of the sublingual gland
  - Cystic structure in the floor of mouth
- Plunging ranula
  - Extends through the mylohyoid into the neck
  - Presents as a neck mass, floor of mouth frequently appears normal on exam
- Treatment: Transoral excision of the sublingual gland
- Pre operative imaging: Ultrasound, CT

TABLE 1

Common Oral Lesions That Appear as Masses

Condition	*Clinical presentation*	*Treatment*	*Comment*
Palatal and mandibular tori[2,3]	Bony protuberances of the palate or lingual aspect of the mandible	Removal required only if interferes with function or denture fabrication, or is subject to recurrent trauma	Developmental anomaly
Pyogenic granuloma[4]	Rapidly growing, red, lobulated mass	Refer for surgical excision; observe in pregnancy unless excision warranted (e.g., excessive bleeding)	Possible postpartum regression
Mucocele[5]	Bluish, fluctuant mucosal swelling, often with a history of periodic rupture	Excision of lesion and adjacent "feeder" minor salivary glands	Pathologic examination of specimen required
Fibroma[6]	Firm, pink, smooth-surfaced nodule	Excision	Pathologic examination required
Leukoplakia[7]	White patch that does not wipe off	Refer for biopsy and surgical excision	No evidence that surgical excision prevents malignant transformation
Erythroplakia[7]	Red patch without obvious cause	Refer for biopsy and surgical excision	No evidence that surgical excision prevents malignant transformation
Squamous cell carcinoma[8]	Nonhealing ulcer or mass	Refer for biopsy, staging, surgery, and treatment	—

Information from references 2 through 8.

Common Oral Lesions: Part II. Masses and Neoplasia

WANDA C. GONSALVES, M.D., ANGELA C. CHI, D.M.D., and BRAD W. NEVILLE, D.D.S.
Medical University of South Carolina, Charleston, South Carolina

Figure 1. Palatal torus.

Figure 2. Mandibular tori: bilaterally symmetric bony protuberances on the lingual aspect of the mandible.

Figure 3. Pyogenic granuloma: erythematous gingival nodule.

Figure 4. Mucocele: nodule involving the lower labial mucosa.

Figure 5. Fibroma: a firm nodule of the anterior buccal mucosa at the level of the occlusal plane.

Figure 6. Leukoplakia: white plaque involving the lateral tongue.

Infectious

- HSV
  - Small painful ulcers
  - Clear fluid filled vesicles
  - Oral anti-virals, supportive care

- HPV
  - Papilloma: Most common benign mass in the oral cavity
  - Benign papilloma associated with subtypes 6 and 11
  - Squamous cell carcinoma associated with high risk subtypes (16, 18)
  - Offer surgical excision

- Oral candidiasis (Thrush)
  - Pediatric patients
  - Immunocompromised patients
  - Oral antifungals

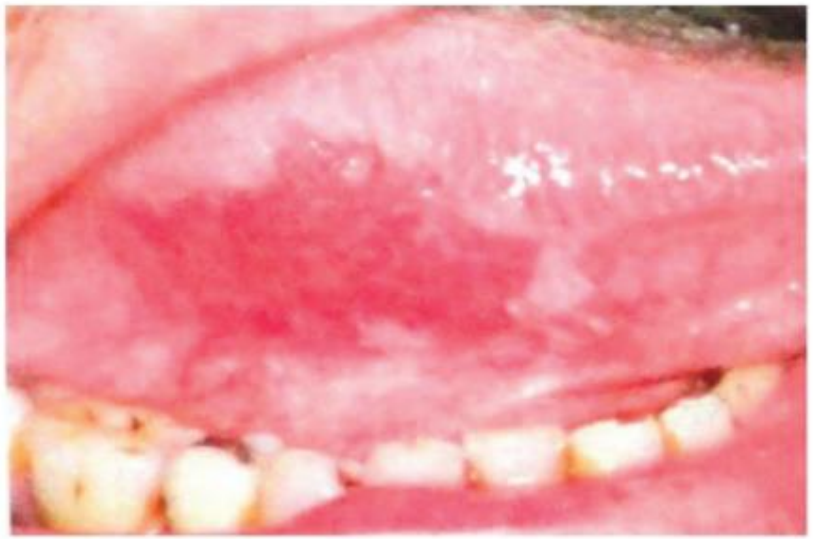
- Coxsackie virus (Hand-Foot-Mouth Disease)
  - Pediatric population
  - Supportive care

Pre-malignant lesions

- Leukoplakia
  - WHO: “white patch or plaque that cannot be characterized clinically or pathologically as any other disease”
  - Pathology: hyperkeratosis (thickened epithelial layer)
  - 2-5% are dysplastic
  - Annual rate of malignant transformation 1%
  - Risk factors for malignant transformation: dysplasia, female gender, long duration of leukoplakia, location on tongue or FOM, non-smoker, >2cm
  - Excision is the only definitive way to determine whether a lesion is dysplastic

Pre-malignant lesions

- Erythroplakia
  - WHO: “a bright red velvety patch that cannot be characterized clinically or pathologically as being caused by any other condition”
  - Higher malignant potential (90%)
  - Surgical excision is recommended



When to biopsy?

- Red
- Indurated
- Ulcerative
- Risk factors (tobacco, alcohol)
- Functional impairment (tongue mobility, trismus)
- Associated symptoms: Dysphagia, weight loss, neck mass

Dysplasia:

Pathologic diagnosis, requires biopsy

- Loss of epithelial stratification
  - Change in maturation of cells from the basal cell layer to mature squamous cells
  - Individual cellular changes
    - Enlarged nuclei, prominent nucleoli, increased nuclear to cytoplasmic ratio
  - Increased cellular density
  - Increased mitotic activity

Grading Dysplasia

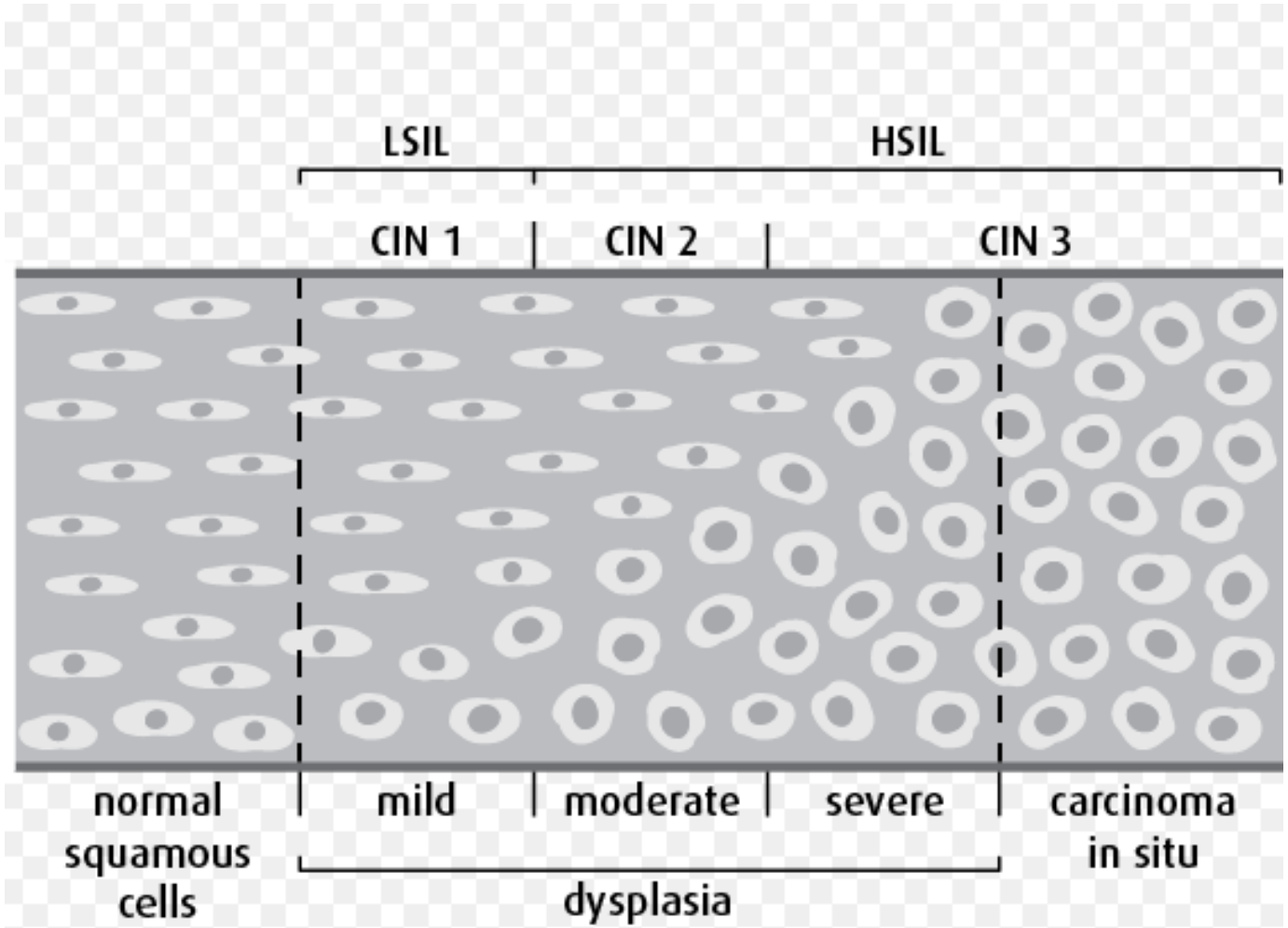
- Mild
  - Cellular changes limited to the basal/parabasal layer
- Moderate
  - Basal layer to the middle of the granular layer

4-11% risk of malignancy

- Severe
  - Basal layer to the upper and middle layer of epithelium

Up to 35% risk of malignancy

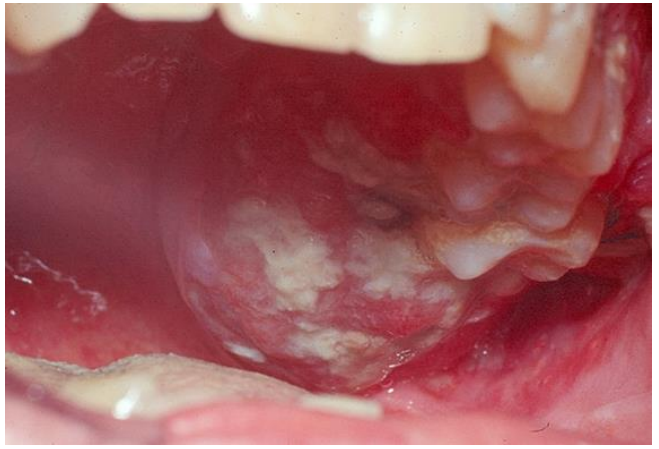
- Carcinoma in situ
  - Dysplasia extends to the surface of the mucosa
  - Basal cell layer is intact


LSIL
HSIL
CIN 1
CIN 2
CIN 3
normal squamous cells
mild
moderate
severe
carcinoma in situ
dysplasia

Malignant

- Squamous cell carcinoma (90% of oral cavity cancers)
  - Tobacco use
  - Alcohol use
  - HPV (oropharynx)

  - Syncronous primary in 1.5% of cases



Concerning Features

- Ulcerative or indurated lesions
- Invading or fixed to local structures
  - Impaired tongue mobility
  - Involvement of the mandible
  - Trismus (involvement of pterygoids)
- Friable
- Associated symptoms
- Risk factors

Squamous Cell Carcinoma

- Oral cavity
  - Tongue, floor of mouth, mucosal lip, buccal mucosa, palate, retromolar trigone
  - Tobacco/EtOH are primary risk factors

- Oropharyngeal carcinoma
  - Palatine tonsil
  - Lingual tonsil
  - A majority are now HPV+

Malignant

- Minor salivary gland tumors
  - Hard palate (60%), lips (25%), buccal mucosa (15%)
  - Mucoepidermoid carcinoma (54%)
  - Adenocarcinoma (17%)
  - Adenoid cystic carcinoma (15%)

Fig. 2. Slowly growing, otherwise asymptomatic salivary gland tumor of the palate. The biopsy showed the presence of a pleomorphic adenoma.

- Mucosal melanoma
  - Rare
  - Locally aggressive and frequently metastatic
  - Hard palate and gingiva

Autoimmune/Other

- Mucous membrane phemphigoid/Bullous pemphigoid
- Pemphigus vulgaris
- Bechets Disease
- Inflammatory Bowel Disease (Crohn's)
- SLE
- Stevens Johnson Syndrome
  - Medication related
  - Necrosis and detachment of the epidermis
  - Mucosal involvement tends to precede skin

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