Minimally Invasive Head and Neck Surgery

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Disclosures

- Consultant: Bristol Myers Squibb
Objectives

- Assess the scope of head and neck squamous cell cancer and our general treatment paradigms
- Appreciate the opportunity for surgical approaches for this disease
- Understand where minimally invasive techniques can be advantageous in head and neck cancer treatment
Head & Neck Squamous Cell Carcinoma

- 45,000 cases/yr in the US (3%), over 500,000 worldwide
- Associated with tobacco, alcohol, betel, HPV, chemical exposure
- Overall poor prognosis: 5-yr survival ~50%
- Presents at later stage due to compliance, lack of symptoms
- Early detection is critical
The Workup

- History
- Exam
- Tissue (biopsy)
- Imaging
- Referrals – dental, radiation oncology, medical oncology, SLP, social work, dietary
- Tumor board
- Treatment!
Head and Neck Cancer
Treatment Overview

• Treatment = balance of form and function
• Surgery or radiotherapy for early stage disease
• Surgery/Radiotherapy/Chemotherapy for late stage disease
• Subsite and stage greatly affect our decisions
What affects medical decision-making?

- Survival
- Choices offered
- Family input
- Cost
- Confidence in providers
- Internet
- Quality of life / anticipated function after treatment
- Patient factors
Minimally Invasive Surgery

- Goal: quicker return to function, perform procedures otherwise difficult/impossible to accomplish
- Use of advanced instrumentation to reduce or eliminate incision size
- BUT – should not sacrifice on desired outcome of surgery
  - Safety, Cost, Adoptability, Time
## Treatment by subsite

### Early Stage (I/II)

<table>
<thead>
<tr>
<th>Subsite</th>
<th>Surgery</th>
<th>Chemo/Radiotherapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasopharynx</td>
<td>-</td>
<td>+++</td>
</tr>
<tr>
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### Late Stage (III/IV)

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Oropharynx

- Soft palate
- Uvula
- Palatine tonsils
- Oropharynx
Oropharynx

- Soft palate to vallecula (in front of epiglottis)
- Function: swallowing, air passage
- Cancer: rising in incidence, HPV related
- Often presents with lymphadenopathy (cystic)
- May be treated surgically – transoral, lateral approach, versus mandibular split
- Trend has been towards chemoradiotherapy?
HPV in H&N cancer
Overview

- HPV 16 & 18, and others
- Occurs in younger nonsmoker/nondrinkers
- Cystic neck nodes
- Thought to be a sexually transmitted disease
- Latency period is decades
- Confers a better prognosis

- Patients live longer with treatment effects
Complications of Chemo/radiotherapy

- Trismus
- Xerostomia
- Dysphagia
- Esophageal stricture
- Fibrosis
- Osteoradionecrosis of jaw
- Secondary malignancies
Surgical Considerations

- Mandible split/swing, resection, free flap is a lot to go through – previously standard
- reconstruction required?
- C/RT needed anyway
- Can you see transorally?
- Patient selection
TORS  
(TransOral Robotic Surgery)

- Minimally invasive approach
- Good resections, good results (functional and oncologic)
- Patient selection?
Wide View and High Magnification
Three Dimensional Optics

0 and 30 degree standard and high magnification 3-D telescopes
Tongue Base Resection
Benefits of TORS/ELS

1. Quicker return to normal activities
2. Shorter hospitalization
3. Reduced risk of swallowing problems
4. Fewer complications compared to traditional surgery
5. Less scarring than traditional surgery
6. Less risk of infection
7. Less risk of blood transfusion when compared to open surgery
8. No routine use of tracheostomy compared to open surgery
Which patients benefit from TORS?

- Strongest benefit in:
  - smoker/drinker, non HPV patients
  - patients in whom CRT is not an option medically
  - Early stage
  - patient preference
  - option to reduce therapy
- True survival benefit at least equivalent to primary CRT
- Studies underway to determine role of TORS and de-escalation therapy
Larynx
Larynx anatomy and function

- Arytenoid is the mobile joint
- Vocal cord mucosa = vibratory layer
- Thyroid cartilage provides framework

- Voice, communication
- Breathing – window to the trachea
- Last protective element to prevent aspiration
Larynx Cancer
Larynx Cancer

• Early stage (T1-2) – radiotherapy vs endoscopic laser surgery
• Later stage (T3-4) – chemoradiotherapy vs ELS vs open partial surgery
• Late stage (T4) – total laryngectomy
• Less propensity for nodal spread
Endoscopic Laser Surgery

- Custom resections
- Incisions avoided
- Rarely requires tracheostomy
- Good oncologic/functional outcomes
- Requires patience and expertise
Oncologic Results

• T1 local control rates ~85-93%, survival >95%
• T2 local control rate ~70%, survival ~90%
• Laryngeal preservation rate T1=97%, T2=85%
• Studies indicate similar results for radiation failure groups
• Extreme lateral extension and anterior commissure extension may increase recurrence rate
Benefits

- Duration of treatment
- Cost effectiveness
- Minimal morbidity
- Preservation of normal tissue
- Saves radiation for future/appropriate use
Suspension microlaryngoscopy
CO2 laser setup
68 yo man with hoarseness
3 weeks later, after initial biopsy
After completion of laser surgery
9 months postop
Supraglottic Carcinoma, T2N0
• Bilateral neck dissections performed, negative. No further treatment given.
• Some swallowing difficulty – required PEG for 2 weeks
• Resolved completely to normal PO diet
Endoscopic Supraglottic Laryngectomy 3 weeks postop
Endoscopic Supraglottic Laryngectomy  3 yrs postop
Partial Surgery Considerations

- Patient must be good medical/surgical candidate
- Postop expect swallowing difficulty
- If laryngeal then voice difficulty depending on depth of resection
- Needs especially close follow-up
- Riskier if in setting of radiation failure
Conclusions

• Early detection is critical
• Surgery is a consideration in select groups based on subsite
• MIS changes our surgical options
• Treatment and rehabilitation concerns vary with stage/subsite & is related to anatomy
• Significant morbidity due to any therapy is possible: cosmesis, xerostomia, dysphagia, social dysfunction
Thanks for your attention