TREATMENT OF SPEECH ISSUES DUE TO CANCER OF THE LIPS, TONGUE AND OROPHARYNX

Jeff Searl, Ph.D., CCC-SLP
Associate Professor
Hearing and Speech Dept.
University of Kansas Medical Center
Kansas City, KS
jsearl@kumc.edu

THE SCOPE OF THE TALK - ANATOMICALLY

THE SCOPE OF THE TALK – CONTENT AREAS

NO!!!
- Psychological
- Emotional
- Common co-morbidities
- Other impacts on the body (GI, neck/shoulder mobility, energy and fatigue levels, etc.)
- Swallowing

YES!!!
- Causes (some prevention)
- Medical treatment options
- Speech changes following treatments
- Interventions to assist speech (maybe communication more generally)
  - Behavioral
  - Prosthetic
  - Other

GENERAL ISSUES BY WAY OF INTRODUCTION

- Dramatic impact that goes well beyond speech/swallow
  - Daily functioning
  - Psychosocial
  - Emotional
  - Economic
  - … etc.
- Terms
  - Carcinoma = rapid cell growth (soft tissue)
  - Nodes (lymph) = typical route for metastasis
  - Squamous cell = typical head/neck cancer type
  - -ectomy = remove
  - -otomy/ostomy = opening

GENERAL ISSUES BY WAY OF INTRODUCTION

- You’re likely to be the primary educator and counselor for many of these.

GENERAL ISSUES BY WAY OF INTRODUCTION

- Resources to check out further:
  - NCI – SEER (Surveillance, Epidemiology and End Results Program): http://seer.cancer.gov/
  - American Cancer Society: http://www.cancer.org/
  - Head and Neck Cancer Alliance: http://www.headandneck.org/static-files/KN0MEtlmE6.82812726x.B00H/Alliance.htm
  - Support for People with Oral and Head and Neck Cancer: http://www.sphonc.org/
ACS “CANCER FACTS & FIGURES 2012”
- Excellent resource for
  - Your own knowledge … to support pt. education, allocate resources in the community, etc.
  - Talking to groups

LET’S LOOK AT PARTS OF IT
- P4 – estimated CA cases and deaths by site
- P5 – estimated CA case by state
- P10 – leading new cancer cases/deaths – 2012 estimates
- P17 – some details on oral cavity and pharynx cancer

ORAL CAVITY AND PHARYNX BY THE NUMBERS FOR 2012

<table>
<thead>
<tr>
<th></th>
<th>Estimated New Cases</th>
<th>Estimated Deaths</th>
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<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Tongue</td>
<td>9,040</td>
<td>3,730</td>
</tr>
<tr>
<td>Mouth</td>
<td>7,030</td>
<td>4,580</td>
</tr>
<tr>
<td>Pharynx</td>
<td>10,790</td>
<td>2,720</td>
</tr>
<tr>
<td>Other oral cavity</td>
<td>1,680</td>
<td>670</td>
</tr>
<tr>
<td>TOTAL</td>
<td>28,540</td>
<td>11,710</td>
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A QUICK PEEK AT THE LARYNX NUMBERS FOR COMPARISON – 2012 ESTIMATES

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<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Larynx</td>
<td>9,840</td>
<td>2,520</td>
</tr>
<tr>
<td>Lung &amp; bronchus</td>
<td>116,470</td>
<td>109,690</td>
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<tr>
<td>Other respir.</td>
<td>3,960</td>
<td>1,700</td>
</tr>
<tr>
<td>Total</td>
<td>130,270</td>
<td>113,910</td>
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ORAL CAVITY AND PHARYNX BY THE NUMBERS FOR 2012
- Incidence
  - Men 2x > Women
  - 2004 – 2008: incidence decline of 1% for Women; stable for men

  BUT
  - More recent data: increased incidence associated with HPV in white men & women
  - Death Rates: declining by 1-2% in past decade for men and women

2012 LEADING NEW CANCER CASES
- Survival – deteriorates as you go from lips to pharynx
- 10-15% have other types of head/neck tumors
- 75% of head/neck cancers start orally – why?
CANCERS WITH INCREASED INCIDENCE FROM 1999-2008
HPV-RELATED OROPHARYNGEAL CANCER

- Oropharynx: posterior 1/3 of tongue, soft palate, tonsils, side and back walls of throat
- Squamous cell mostly
- Oropharynx CA can be HPV-related, or not (tumor test for HPV)
- HPV 16 subtype
  - Many types of HPV
  - 90% of HPV-related oropharynx cancers = HPV 16 subtype
- Prior infection with HP 16 = 9 x increased risk for tonsil, tongue, epiglottis cancer
- HPV exposures/risks: oral sex, open mouth kissing, smoking

Incidence increased 4.4% white men and 1.9% white women
No change in incidence rates in other ethnic groups
In contrast to decreasing incidence for non-HPV-related oropharyngeal cancers

SURVIVAL: better for HPV-related cancer
PREVENTION:
- Promote safer sexual practices
- Tobacco cessation
- HPV vaccine – might wider use result in decrease in HPV-oropharyngeal cancers?

REMINDERS: STAGING

Primary Tumor (T)
- T0: No evidence of primary tumor
- Tis: Carcinoma in situ
- T1, T2, T3, T4: Size and/or extent of the primary tumor

Regional Lymph Nodes (N)
- N0: No regional lymph node involvement
- N1, N2, N3: Involvement of regional lymph nodes (number of lymph nodes and/or extent of spread)

Distant Metastasis (M)
- M0: No distant metastasis
- M1: Distant metastasis is present

Stage Definition
- Stage 0: Carcinoma in situ
- Stage I, II, and III: Higher numbers indicate more extensive disease: Larger tumor size and/or spread of the cancer beyond the organ in which it first developed to nearby lymph nodes and/or organs adjacent to the location of the primary tumor. The cancer has spread to another organ(s).
- Stage IV: The cancer has spread to other organ(s).

LIP CANCER
LIP CANCER

- Causes:
  - Tobacco (all forms; incr with use/day)
  - Alcohol (major risk factor; incr. with drinks/day)
  - HPV
  - Sun exposure – UV rays are implicated in up to 90% of all lip cancers
  - Wind exposure
  - Other chronic irritation
  - Genetics

Prevention

- Avoid or cut down the causes
- BIG TIME UV PROTECTION
- Vitamin E?
- Beta carotene?
- Several clinical trials underway re: oral/head-neck (anti-inflammatory, green tea extracts, etc.)

http://cancer.gov/clinicaltrials/search

LIP CANCER

- Presentation:
  - >45 years
  - Males > females
  - Light skin > dark skin
  - Almost always lower lip (not upper)
  - Juncture of mid and outer thirds of lip
  - Lump in the lip; pain; numbness; bleeding; restricted oral mobility; sore that doesn’t heal; deep crack/crack
  - Dentists often are the ones to first identify the lesion

Leukoplakia = white lesion
Erythroplakia = red lesion

LIP CANCER – MEDICAL TX

- Staging dictates (mostly)
  - Very very small lesions, superficial – cauterize, cryo, surgery
  - OTHERWISE –surgical excision +/-XRT, +/-chemo

LIP CANCER: CASE EXAMPLES OF SURGERY

- Excision with primary closure

LIP CANCER: CASE EXAMPLES OF SURGERY

- Abbe lip flap
  - Remove tumor from top lip
  - Raise flap from lower lip
  - Close upper lip defect
LIP CANCER: CASE EXAMPLES OF SURGERY
(ANOTHER ABBE LIP FLAP)

LIP CANCER: CASE EXAMPLES OF SURGERY
(TONGUE AND CHIN FLAP FOR CLOSURE)

LIP CANCER: CASE EXAMPLES OF SURGERY

LIP CANCER: CASE EXAMPLES OF SURGERY

LIP CANCER: SPEECH OUTCOMES

• What do you expect re: speech following such surgeries?
• Mobility (possibly beyond the lip), unusual contours/grooves/crevices
• Jaw issues if XRT is used
• Saliva issues impacting speech?
• Sensation issues impacting speech
LIP CANCER: SPEECH EVALUATION

- What to do?
- No formalized assessment protocols agreed upon across facilities
- No standardized tests specific to oral cancer
- SO...???
  - Phoneme inventory with careful attention to what they are doing
  - Speech intelligibility
  - Acceptability, functionality, impact
  - Oral mechanism exam

PHONEME INVENTORY?

- Borrow from motor speech protocols
- Make up your own
- Sample all phonemes (not just lip)
- Syllable initiating and terminating
- Varying length/complexity

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SPEECH INTELLIGIBILITY

- Often use Computerized Assessment of Intelligibility of Dysarthric Speech (CAIDS)
- Sentence Intelligibility Test (SIT)
- Sample more listeners than yourself if possible (you, family, unfamiliar listener)

ACCEPTABILITY, FUNCTIONALITY, IMPACT

- Patient self report via history
- Family report
- Scaling (VAS? EIST?)
- Head/Neck QOL questionnaire

ORAL MECH EXAM

- Critical to find out what structures are intact/altered
- Type of reconstruction
- Relative position of structures
- Parameters to assess
  - Range of motion
  - Speed of movement
  - Coordination of movement
  - Strength (?) Maybe as an indication of where they are working in physiologic range

LIP CANCER

- Treatments: freeze, cauterize, radiation, surgery
- Outcomes
  - Speech –
    - generally not significant impacts in vast majority of cases where cancer is not deep
    - But, with resection, if deep, could limit mobility – impacts on speech?
  - Swallow – not usually significant problem, but...
  - Generally curable

BUT...
LIP CANCER: CASE TO CONSIDER

40 year old male who presented with a cancerous tumor on his bottom lip almost a year ago.

TREATMENT

- Our basis for intervention:
  - Logic and understanding of 1) normal speech sound production and 2) abilities of remaining articulators
  - Expert opinion

TREATMENT: WHAT FOLKS HAVE TRIED

1. Non-speech range of motion, resistance, coordination types of activities
   - What might that look like
   - Does it work?
2. Training acceptable substitutions
3. Training general speech intelligibility strategies
   - Rate
   - Contextual cuing
   - Gestural or other augmentations to communication

LINGUAL CANCER: PICS OF

LINGUAL CANCER

- Associations/Causes: tobacco use, alcohol use, gender, previous XRT, diet low in fruits/veggies, vitamin A deficiency, betel nuts (?), suppressed immune system, HPV, alcholic mouthwashes?, lichen planus
- Presentation
  - Male, middle age and older
  - Smoker, drinker
  - Signs: lumps, sores, pain (later), ear pain (auriculotemporal and lingual nerve involvement)
  - Dysthagia (later)
  - Numbness; tongue mobility problems (might change speech)
- Impacts on speech/swallow are largely dependent on...
  - Extent of resection: partial vs. total
  - Type of surgery: closure vs. reconstruction
  - Other structures involved: jaw, teeth, ?
DEGREES OF TONGUE RESECTION
- Partial Glossectomy (less than one third of tongue)
- Hemiglossectomy (one third to half of tongue)
- Near-total glossectomy (half to three quarters of tongue)
- Total glossectomy (greater than three quarters of tongue)

RECONSTRUCTION LADDER: SIMPLEST TO COMPLEX
- Healing by secondary intention
- Primary closure
- Skin grafting (split or full thickness)
- Composite grafts
- Local flaps
- Regional pedicled flaps
- Free tissue transfer

SOME REPAIR OPTIONS
1. PRIMARY CLOSURE
2. PECTORALIS FLAP
3. RADIAL FOREARM FLAP – no pic.

PARTIAL GLOSSECTOMY
- Better speech and swallow results with primary closure
- What determines speech change?
- Expected speech changes to what phonemes?
- Video example
- May need split or full-thickness skin graft to reduce scar contracture

HEMIGLOSSECTOMY AND NEAR-TOTAL GLOSSECTOMY
- Free tissue reconstruction usually preferred
- Can match flap to defect in terms of size and volume
- Large defects can be filled
-Possibility for microanastomotaphy procedure
- Flap tissue not exposed to XRT

TOTAL GLOSSECTOMY
- Tongue "pull through" technique unless tumor invades mandible
- May require rectus abdominis or anterior lateral thigh flap rather than forearm due to need for increased bulk
TOTAL GLOSSECTOMY

- Pectoralis flap
- Anterolateral thigh flap

LINGUAL CANCER

- What changes with surgical resection:
  - Mass of the tongue
  - Mobility of the tongue
  - Size of the oral cavity
  - Sensation

- Effects of surgical resection:
  - Speech (what aspects) – more in a minute
  - Saliva control – what happens?
  - Eating – take the dysphagia class
  - Appearance – what do you think they’d look like?

PARTIAL GLOSSECTOMY – SPEECH IMPACT

- really depends on size/site of resection and type of reconstruction

- An example:

PARTIAL GLOSSECTOMY: CASE 2

- http://www.youtube.com/watch?v=pju_5bmaEwo

PARTIAL GLOSSECTOMY: CASE 2

- Just after surgery #1

  You can see the black stitches. The tongue remained very swollen for about 3 days. Swelling continued for another 1-2 weeks until it went back to normal. My new “normal” is a thinner tongue with a chuck missing from the side where they cut out the cancer plus a security region around it. I have difficulty moving food around and nerve endings are slowly growing back a year later. I always have stuff in my teeth after eating solid because now I can’t clean with my tongue.

- After 1 staging and just before my 7 weeks of chemo and radiation began

  I got a backwash which required medicine to eliminate those little bumps in my throat and the back of my tongue. I could barely swallow. With dry mouth, the “food bacteria” does not stick to the mouth, more vulnerable to growing “bad bacteria.” This is very normal. Food with little oil was the easiest to swallow and chewed well.
PARTIAL GLOSSECTOMY: CASE 2

I had mucositis (worse side effect for me). With this condition, even lukewarm water caused extreme pain to my tongue. It was also difficult to talk because the tip of my tongue would touch my teeth while pronouncing some words. So I wrote a lot. I wouldn’t wish mucositis on my worst enemy.

After about 3 weeks of radiation

PARTIAL GLOSSECTOMY: CASE 2

Chapped cheeks from radiation. Crooked smile from weakened muscle and less flexibility in my neck, but still having fun. Who cares what others think, it’s time to do what you haven’t done before, it’s time to live!

Now after treatment, I have receded gums (increased sensitivity). Yes, the side effects they tell you about are very real. I also have dry mouth from 30 days of radiation. One saliva gland was completely removed and the remaining glands got fatigued very hard and don’t function well now. I carry water everywhere I go. Check out bloomberkem.com for a good steel bottle!

3 months after last radiation

HEMIGLOSSECTOMY: CASE 1

PARTIAL GLOSSECTOMY: CASE 1 – DH VIDEO
TOTAL GLOSSECTOMY

- Artic impacts – vowels

**Phoneme** | **Strategy**
--- | ---
front/back (e/a) | mandibular thrust
hi/lo (i/ae) | mand. Elevation
duration |

TOTAL GLOSSECTOMY - CONSONANTS

**Phoneme** | **Strategy**
--- | ---
t/d/n | sub lower lip for tongue tip
s/z/ | slit btw upper/lower teeth
or | slit btw tensed/spread lower lips
k/ng | pharyngeal contact with ?
l | midpoint lip-lip, buccal?
r | vocatric /r/; overlap lips
th | draw lower lip down from inside of upper lip and teeth
sh, ch | nothing great (try for any fricative)

TOTAL GLOSSECTOMY: CASE EXAMPLE

- **ODE TO THE PRESENT.**

This moment as smooth as a board and fresh. This hour, the day as clean as an untouched page. Not a single spiderweb from the past. We touch the moment with our fingers. We cut it to size, we direct its blooming. It’s living, it’s alive, it brings nothing from yesterday that can’t be redeemed, nothing from the lost past. This is our creation. It’s growing this very instant, kicking up sand or eating out of our hand.

<table>
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<tr>
<th>1 month post</th>
<th>11 month post</th>
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TONGUE RESECTION:

- **Evaluation**
  - Careful review of med Hx
  - Oral mech
  - Phoneme inventory
  - Speech intelligibility
  - QOL, impact

- **SLP Treatment**
  - What’s in the literature?
  - What do folks try

NOTE ABOUT SPEECH HANDICAP INDEX AND PROGNOSIS


ZWUDDAM ET AL -

- Looking at speech and swallowing outcomes in oral and oropharyngeal cancer patients at 1 year post - interested in possible clinical predictors of these outcomes
- UW-QOL for patients at 6 months, 1 year, and some beyond that
- N=278
- Various surgical resections and reconstructions

ZWUDDAM ET AL - RESULTS

- PREDICTORS of Speech outcomes (on UW-QOL) at 12 mos:
  - Tumor size (smaller = better)
  - XRT (none = better)
  - Closure/reconstruction (primary = better)
  - Neck dissection (less extensive = better)
