Preoperative assessment in head and neck cancer

Katy Gibb
Outline: case based discussion

- Why me?
- Clinic assessment
- Nutrition, dentition and refeeding
- Frailty, sarcopaenia and cachexia
- Time limited trials of care
- Worse than death
Audience poll

- Surgeons with head and neck experience
- Other surgeons
- Anaesthetists
- Nursing
- Allied health
3 assumptions in high risk head and neck cancer population

- Death is inevitable
- People would prefer not to die slowly in hospital with a lot of interventions
- Surgeons don’t like their patients dying
World Mortality Rate

1800: 100%
1900: 100%
1950: 100%
2000: 100%
2015: 100%
Aims of the high risk clinic

• Objective component to decision making
• Assess
• Optimise:
  – Organ based
  – Geriatric domains
• Consider risk:benefit ratio of intervention
• Discuss w patients and surgical teams
Physician led High Risk Clinic

- Referrals from surgeons/anaesthetists
- Complex medical issues that may impact on outcomes after surgical intervention
- Need to discuss time limited trials of care
- Need to discuss end of life wishes
Outcomes: organ vs function
Complexity
Demographics primary HNC

- Uncommon cancer
- Often late presentation
- 60% risk local failure
- 30% risk distal failure
- BUT
- Australian skin!!!
Surgical complexity

- Oral maxillofacial surgeons
- Plastic surgeons
- Otorhinolaryngology surgeons
- Neurosurgeons
- Cardiothoracic surgeons
- Breast and endocrine surgeons
Medical complexity

- Smoking
- Alcohol
- Nutritional compromise
- Frailty
- Older patients
It takes a while to eat when you’re using a feeding tube.

For free help to quit smoking, CALL 1-800-QUIT-NOW.
Thaumaturgy
Reality
Sydney

- 81 year old man
- Was living alone until 2 months ago when son moved in to help him
- Walked with stick
- Scooter outside in garden
- History of
  - Myopathy since 2005
  - Hypertension
Sydney’s story

- Presented in extremis requiring emergency tracheostomy with laryngeal malignancy with bilateral neck nodes
- Elevated troponin with ECG changes.
- Coronary angiography showed 40-50% lesions but culprit 80% OM. Cardiologist opt not to stent but commence DAPT
- EF 43%
Sydney: Options for therapy

• Surgery with 12 hour procedure followed by 6 weeks of radiotherapy.
  – Lifelong tracheostomy and likely nursing home placement
  – Best option for local control
• Radiotherapy under palliative framework
  – Lifelong tracheostomy and likely nursing home placement
• Sydney would like surgery
Audience poll: Would you offer Sydney surgery?

- Yes
- no
Decision

- Not offered surgery
- Proceeding to palliative radiotherapy
- Advanced care directive and end of life wishes discussed and documented
- Aim for placement near family
Changing landscape of treatment

Current Treatment Options for Recurrent or Metastatic Head and Neck Squamous Cell Carcinoma

Assuntina G. Sacco and Ezra E. Cohen

J Clin Oncol 33:3305-3313. © 2015 by American Society of Clinical Oncology
Nutrition and head and neck cancer

- Dentition
- Nutrition
- Refeeding syndrome
Teeth
Dentition

• Difficult to find data
• 24% DMFT...decayed, missing or filled
• Increases significantly after radiotherapy (74% at 7 years)
• Treatment associated ‘dentopathy’
• Poor dentition associated with
  – Diabetes
  – Poor socioeconomic class
  – Smoking
  – Poor self care
HNC specific risks for poor dentition

- Saliva reduction (cancer vs treatment)
- High calorie diet during therapy
- Reduced oral hygiene from local factors (pain)
- Radiation direct effects
Sequelae of poor dentition: all magnified in HNC

• Increased oral infection
• Dietary adaptations leading to nutritional deficiencies
• Pain
• Speech alteration
• Chronic inflammation
• Negative body image
Nutritional deficiencies in HNC

- Screening tools
  - MUST
  - Bloods
    - Albumin
    - zinc
    - Vitamin C
    - INR (Vitamin K)

- Incidence uncertain
  - 5-10% community dwelling older population and 15% with cognitive impairment
FIGURE 3

Muscle mass and physical recovery in ICU: innovations for targeting of nutrition and exercise. Wischmeyer, Paul; Puthucheary, Zudin; San Millan, Inigo; Butz, Daniel; Grocott, Michael

DOI: 10.1097/MCC.0000000000000431

FIGURE 3. Muscle glycogen scores via ultrasound. Adapted from ref. [10][black small square].
Benefit of nutritional optimisation

• Low albumin strong predictor of poor outcomes
• Need for protein supplementation to reduce catabolic metabolism and muscle loss
• Need for micronutrients for wound healing
• Scurvy????
Concerns with refeeding

• Occurs after commencing feeds in people with malnutrition

• Definition uncertainty
  – Hypophosphataemia
  – Fluid and electrolyte shifts (Mg, K, Glucose)
  – Disturbance of organ function (cardiac, respiratory)
Prevention or treatment

- Hypocaloric feeding initiation
- Thiamine infusion
- Phosphate supplementation

CONSIDER IT!!!!!
Multimorbidity: Barry

- **Surgical issues**
- Rapidly growing SCC right neck
- Concerns raised re potential for carotid blowout
- Planned for wide local excision, neck dissection and pec major flap
Barry W

- Medical issues

  - Acute myeloid leukaemia 2 years
    - Transfusion dependent every 2-3 weeks
    - WCC 45 on long term antiviral and antifungal prophylaxis
    - Platelet count 38

- Limited exercise tolerance 5-10m

- Nutritionally compromised
Overlapping geriatric syndromes.

Partridge J S L et al. Age Ageing 2012;41:142-147
Why frailty?

Trajectories of Dying

Acute illness

CHF, COPD

Cancer

Alz, CVA, PD, hip fx, incont, PNA, dehydration, syncope

Audience poll: Regular assessment of frailty

- Yes
- No
Audience poll:
Do you have access to a multimodal team to assess and optimise frailty?

• Yes
• No
Vicious cycle of frailty

Definitions

**FRAILTY**
- Phenotype vs deficits
- A state of increased vulnerability toward stressors in older individuals with a state of reduced physiological reserve
- One or more clinical systems at or beyond the threshold of clinical failure
- ? inflammation

**SARCOPAENIA**
- A syndrome characterised by progressive loss of skeletal muscle mass and strength associated with adverse outcomes such as physical disability and mortality
- Measurable and comparable between people and populations clinically and radiologically
Outcomes sarcopaenia

- Bad

Mortality risk after colorectal cancer
Odds ratio 15-43

Minimal data for head and neck cancer

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Hepatocellular carcinoma Voron et al
*Ann Surg* 2015;261:1173–1183

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**TABLE 3. Logistic Regression Analysis for Risk Factors of Mortality**

<table>
<thead>
<tr>
<th>Mortality Rate</th>
<th>Univariate Analysis</th>
<th>Multivariate Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td><em>P</em></td>
</tr>
<tr>
<td>Sarcopenia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1/162</td>
<td>1</td>
</tr>
<tr>
<td>Yes</td>
<td>13/148</td>
<td>15.50 (2.00–120.0)</td>
</tr>
</tbody>
</table>

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**FIGURE 3.** Kaplan-Meier curve showing overall survival according to sarcopenia.
Incidence sarcopaenia

• Community dwelling over 80
  – 12.5%

• Nursing home over 75
  – 33%

• Elderly patients having emergency surgery
  – 73%
Definition of sarcopaenia

• Low muscle mass
  – AND EITHER
• Low grip strength
• Low physical performance

  – European working group on sarcopaenia in older people
The power of numbers

- 6 minute walk test
- Distance
- Pulse rate after walk
- Grip strength
Feasibility of using head and neck CT imaging to assess skeletal muscle mass in head and neck cancer patients

Justin E. Swartz MD a,*, Ajit J. Pothen MD b, Inge Wegner MD a,c, Ernst J. Smid MD d, Karin M.A. Swart MSc e, Remco de Bree b, Loek P.H. Leenen MD, PhD e, Wilko Grolman MD, PhD a,c
Morphomic analysis as an aid for preoperative risk stratification in patients undergoing major head and neck cancer surgery

Jacob Rinkinen, BA, Shailesh Agarwal, MD, Jeff Beauregard, MS, Oluseyi Aliu, MD, Matthew Benedict, BS, Steven R. Buchman, MD, Stewart C. Wang, MD, PhD, and Benjamin Levi, MD

Fig. 1 – Cross-section computed tomographic analysis displaying isolated TFPV (yellow) and zygomatic arch thickness
Barry: 2 paths discussed

– (1) Palliation with symptom relief
  • ADVANTAGES
    – No immediate risk to life and independence
  • DISADVANTAGES
    – Risk carotid blowout
    – Local symptoms

– (2) Surgery with time limited trials of care
  • ADVANTAGES
    – Control of malignancy
  • DISADVANTAGES
    – Risks of death, infection, loss of independence
Collaboration: more than just doctors
Team discussion w Barry

- Wife very concerned about carotid blowout
- Haematology agreed to support surgery
- Decision to proceed to surgery with time limited trials of care
- Negotiated point at which conversation regarding change to palliative care would occur
  - ICU>48 hours
  - Returns to ICU
  - Significant deterioration
    - Sepsis
    - Bleeding
  - Prognosis becomes bleak
Outcome

• Survived
• 14 day admission
• Significant haematology input re Hb/WCC and platelet support
• Chest wall haematoma needing evacuation and return to theatre
• Febrile neutropaenia protocol for infection required once
Lillian E

- **Surgical issues**
  - SCC mandible
  - Mandibulectomy, bilateral neck dissections and fibula reconstruction
  - Surgeons confirmed 12-14 hour procedure
  - No smaller surgical intervention
  - Possible palliative radiotherapy

- **Medical issues**
  - Hypertension
  - Epilepsy
  - COAD with recalcitrant smoking
  - Ca lung radiotherapy 2015
  - Recurrent falls w #NOF
  - Had a carer for herself
  - Also had a disabled son at home
Organ based assessment

• Cardiac
  – No symptoms = no further assessment

• Pulmonary
  – PFTs + ABG
  – FEV1 0.8
  – ABG pO2 48 pCO2 47

• Renal
  – Normal eGFR
Functional assessment

• Sarcopaenia
  – Recurrent falls needing full time carer
  – 5-10m then limited by pain in hip (unable to do 6 min walk test)
  – Grip strength below expected age range

• Cachexia
  – Weight 54 kg Height 165 cm
  – BMI 19.8
  – Only eating biscuits with coffee and fish due to jaw discomfort
  – Recent weight loss ? >10kg
Overlapping geriatric syndromes.

Partridge J S L et al. Age Ageing 2012;41:142-147

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Welcome to the ACS NSQIP Surgical Risk Calculator

With this tool you can enter preoperative information about your patient to provide estimates regarding your patient’s risk of postoperative complications.

☑ I have read the disclaimer below.

Continue

Disclaimer: The ACS Surgical Risk Calculator estimates the chance of an unfavorable outcome (such as a complication or death) after surgery. The risk is estimated based upon information the patient gives to the healthcare provider about prior health history. The estimates are calculated using data from a large number of patients who had a surgical procedure similar to the one the patient may have.

Please note the risk percentages provided to you by the Surgical Risk Calculator are only estimates. The risk estimate only takes certain information into account. There may be other factors that are not included in the estimate which may increase or decrease the risk of a complication or death. These estimates are not a guarantee of results. A complication after surgery may happen even if the risk is low. This information is not intended to replace the advice of a doctor or healthcare provider about the diagnosis, treatment, or potential outcomes. ACS is not responsible for medical decisions that may be made based on the risk calculator estimates, since these estimates are provided for informational purposes. Patients should always consult their doctor or other health care provider before deciding on a treatment plan.

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Begin by entering the procedure name or CPT code. One or more procedures will appear below the procedure box. You will need to click on the desired procedure to properly select it.

You may also search using two words (or two partial words) by placing a ‘+’ in between, for example: "cholecystectomy + cholangiography"

- **Procedure**: 21045 - Excision of malignant tumor of mandible; radical resection

**Are there other potential appropriate treatment options?**
- [ ] Other Surgical Options
- [ ] Other Non-operative options
- [ ] None

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Please enter as much of the following information as you can to receive the best risk estimates. A rough estimate will still be generated if you cannot provide all of the information below.

**Age Group**
- 65-74 years

**Sex**
- Female

**Functional Status**
- Partially Dependent

**Emergency Case**
- No

**ASA Class**
- Severe systemic disease/constant threat to life

**Steroid use for chronic condition**
- No

**Ascites within 30 days prior to surgery**
- No

**Systemic Sepsis within 48 hours prior to surgery**
- None

**Ventilator Dependent**
- No

**Disseminated Cancer**
- No

**Diabetes**
- No

**Hypertension requiring medication**
- Yes

**Congestive Heart Failure in 30 days prior to surgery**
- No

**Dyspnea**
- With Moderate exertion

**Current Smoker within 1 Year**
- Yes

**History of Severe COPD**
- Yes

**Dialysis**
- No

**Acute Renal Failure**
- No

**BMI Calculation**
- **Height**: 62 in / 157 cm
- **Weight**: 111 lb / 50 kg
### Procedure
21045 - Excision of malignant tumor of mandible; radical resection

### Risk Factors
- 65-74 years
- Partially dependent functional status
- Severe systemic disease/constant threat to life
- HTN
- Dyspnea with moderate exertion
- Smoker
- COPD

### Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Your Risk</th>
<th>Average Risk</th>
<th>Chance of Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious Complication</td>
<td>50.1%</td>
<td>22.8%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Any Complication</td>
<td>54.3%</td>
<td>25.2%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>38.4%</td>
<td>8.0%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Cardiac Complication</td>
<td>2.2%</td>
<td>0.5%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Surgical Site Infection</td>
<td>16.9%</td>
<td>10.6%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Urinary Tract Infection</td>
<td>4.9%</td>
<td>1.6%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Venous Thromboembolism</td>
<td>0.6%</td>
<td>0.4%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Renal Failure</td>
<td>0.5%</td>
<td>0.2%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Readmission</td>
<td>19.8%</td>
<td>8.6%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Return to OR</td>
<td>15.5%</td>
<td>7.7%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Death</td>
<td>7.4%</td>
<td>0.6%</td>
<td>Above Average</td>
</tr>
<tr>
<td>Discharge to Nursing or Rehab Facility</td>
<td>60.8%</td>
<td>12.9%</td>
<td>Above Average</td>
</tr>
</tbody>
</table>

**Predicted Length of Hospital Stay:** 15 days
Where is thy sting?
Ratings of states of functional debility relative to death by patients in hospital with serious illnesses*, %

Compared with death

<table>
<thead>
<tr>
<th>Condition</th>
<th>Worse</th>
<th>Similar</th>
<th>Little Better</th>
<th>Somewhat Better</th>
<th>Much Better</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowel and bladder incontinence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rely on breathing machine to live</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannot get out of bed</td>
<td></td>
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<tr>
<td>Confused all the time</td>
<td></td>
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<tr>
<td>Need care all the time</td>
<td></td>
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</tr>
<tr>
<td>Rely on feeding tube to live</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Live in a nursing home</td>
<td></td>
<td></td>
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<tr>
<td>At home all day</td>
<td></td>
<td></td>
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<tr>
<td>Moderate pain all the time</td>
<td></td>
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<tr>
<td>In a wheelchair</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: *JAMA Internal Medicine

*Survey conducted July 1st 2015 to March 7th 2016, Philadelphia, United States
Shared decision-making (SDM) is an approach in which clinicians and patients communicate together using the best available evidence when faced with the task of making decisions.
Outcome

• ABG confirmed respiratory failure
• Marked deconditioning and sarcopaenia on clinic assessment
• Referred for palliative radiotherapy
Ensure ongoing support

- Conversation about Advanced Care Directives and end of life wishes and ACD form given
- Referred for community geriatric assessment
- Recommendations around nutritional support made to patient and GP
- Referral to community palliative services made
Collaboration in complexity
Key abbreviated references

• Delirium
  – The ABCDEF Bundle in Critical Care Annachiara Marra, MD, PhD(c)a, E. Wesley Ely, MD, MPHb, Pratik P. Pandharipande, MD, MSCI, FCCMc, Mayur B. Patel, MD, MPH Crit Care Clin 33 (2017) 225–243
  – Delirium in Elderly Patients and the Risk of Postdischarge Mortality, Institutionalization, and Dementia A Meta-analysis Joost Witlox, MSc et al JAMA, July 28, 2010—Vol 304, No. 4
  – Cognitive Trajectories after Postoperative Delirium Saczynski, Jane S, PhD ; Marcantonio, Edward R, MD ; Quach, Lien, MPH, MS; Fong, Tamara G, MD, PhD; Gross, Alden, PhD, MPH N Engl J Med 2012;367:30-9

• Poor Performance on a Preoperative Cognitive Screening Test Predicts Postoperative Complications in Older Orthopedic Surgical Patients Deborah J. Culley, M.D., Devon Flaherty, M.D., M.P.H., Margaret C. Fahey, M.A., James L. Rudolph, M.D., Houman Javedan, M.D., Chuan-Chin Huang, Ph.D., John Wright, M.D., Angela M. Bader, M.D., M.P.H., Bradley T. Hyman, M.D., Ph.D., Deborah Blacker, M.D., Sc.D., Gregory Crosby, M.D. ANESTHESIOLOGY 2017; 127:765-74
Exercise and risk

- Measures of Physical Performance Assessments Self-Paced Walk Test (SPWT), Stair Climb Test (SCT), Six-Minute Walk Test (6MWT), Chair Stand Test (CST), Timed Up & Go (TUG), Sock Test, Lift and Carry Test (LCT), and Car Task KIM BENNELL, FIONA DOBSON, AND RANA HINMAN Arthritis Care & Research Vol. 63, No. S11, November 2011, pp S350–S370
End of life References


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- Quill T Holloway R Time limited trials near the end of life JAMA Oct 5,2011:306(13)1483-1484

Frailty and sarcopaenia references

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Nutrition and ENT

