Surgical options for the treatment of oral cancer

Professor Alexander D. Rapidis MD DDS PhD FACS
Chairman Dept. of Maxillofacial / Head and Neck Surgery
Greek Anticancer Institute, Saint Savvas Hospital
Athens Greece

Surgery has traditionally been the treatment of choice of squamous cell carcinoma of the oral mucosa.
Contemporary oncological surgery is part of a multidisciplinary therapeutic team that provides treatment for head and neck malignancies.

Surgical treatment of early (Stage I and II) disease

Surgery remains the mainstay of treatment for early (Stage I and II) squamous and non-squamous carcinomas of the oral cavity.
Tongue Carcinomas
Primary Approaches:

- Trans-oral
- Mandibulotomy
- Pull-through

Local excision and skin grafting
Local excision and neck dissection
Local excision, neck dissection and grafting
General principles regarding management of early oral cavity stage diseases

- Surgery, surgery, surgery
- Frozen section analysis of all margins
- First surgery should be the best and only surgery
- Initial biopsy should be limited and not sutured
- Elective management of the neck utilized for invasive carcinomas of the tongue and floor of mouth and other sites when ultrasound, FNA or CT evidence suggest lymph node involvement

Early Stage Oral Cavity Indications for Post Operative Adjunctive Treatment

**Radiation Therapy Only When**

- Positive margins (note: radiotherapy is not a substitute for inadequate surgery)
- Multiple positive nodes
- Multiple levels of lymph node metastases

**Concomitant Chemoradiotherapy-Intensification of Therapy**

- Perineural Invasion
- Extracapsular lymph node extension
Surgical treatment of late or advanced (Stage III and IV) disease

UICC/AJCC Staging for advanced oral cavity cancer

• Locally Advanced
• T3-4, any N
  – T3  > 4cm
  – T4a invasion of adjacent structures, cortical bone, deep tongue muscles, maxillary sinus, skin
  – T4b “unresectable” invasion of masticator space, pterygoid plates, skull base, or carotid encasement
UICC/AJCC Staging for advanced oral cavity cancer

• Regionally advanced
  – T1-T2, N2-3

  – Tumor < 4 cm with 2 or more cervical metastases, one or more contralateral cervical metastases, or cervical metastasis > 3 cm

Primary surgery + radiation indicated for advanced oral cavity cancer: Historical Data

• Low local control for primary radiotherapy for advanced oral cavity (30-40%) and poor survival (25%)

• Increased local control with surgery + radiotherapy (60%) and improved survival (55%)

• Local control significantly improved for locally advanced T3, T4 oral cancers using surgery + postoperative radiotherapy vs. primary RT
Therapeutic management of advanced oral cavity cancer

- Initial modality is surgery followed by radiotherapy +/- chemotherapy
- Postoperative radiotherapy and chemotherapy in eligible patients with good performance status
  - Multiple nodes, ECS
  - Positive margins, neural/vascular invasion
  - T3 or greater, N2 or greater
  - Oral/Oropharyngeal sites with level IV, V disease
- Novel molecular directed therapies incorporated into next generation trials

The role of reconstruction in advanced cancer of the oral cavity

- Without reconstruction treatment may be as crippling as the disease itself
- Allows more radical surgery and radiotherapy
- Essential to preserve or restore critical functions
  - Breathing
  - Swallowing
  - Speech
- Improves quality of life in patients with lowered life expectancy
- Allows patient to socially re-integrate
The evolution of reconstructive surgery in the head and neck region

1960s
- Tube Pedicles

1965 - 1975
- D.P. Flap

1978 - 1990
- P.M.M.C. Flap

1990 - 2007
- Free Flaps
  - Fibula
  - Iliac crest
  - Radial forearm
  - Lateral thigh
  - Rectus abdominis
  - Latissimus Dorsi
  - Jejunum

“The introduction of free flap surgery to plastic surgery can be aptly compared to the advent of aviation to transportation”

Harry J. Bunke MD
Clinical Professor of Surgery, University of California, San Francisco

July 16, 1922 - May 18, 2008
Microsurgical free tissue transfer

Donor sites

More than 20 free flap donor sites have been described for the head and neck.

Reconstructive guidelines

- Free-tissue transfer is a successful method for repairing oral cavity defects and is safe even in previously irradiated areas.
- Most of the defects needing microsurgical reconstruction can be successfully rehabilitated using one of five major free-flap donor sites.
- Microvascular success is very high (above 95%) due to the vast experience gained over the years.
Free flaps used for head and neck reconstruction in the Greek Anticancer Institute

1. soft tissues
   radial forearm, rectus abdominis, latissimus dorsi

2. hard tissues
   mandibular reconstruction fibula, composite radial forearm
   maxillary reconstruction composite radial forearm, scapula, rectus abdominis

Tongue Carcinomas
Primary Approaches

• **Trans-oral**

• **Mandibulotomy**

• **Pull-through**
Tongue Carcinomas
Primary Approaches

- Trans-oral
- Mandibulotomy
- Pull-through

Hemiglossectomy, neck dissection, immediate reconstruction with radial forearm
Hemiglossectomy, neck dissection, immediate reconstruction with radial forearm

Shah JP 2003

Hemiglossectomy, neck dissection, immediate reconstruction with radial forearm

Shah JP 2003
Hemiglossectomy, neck dissection, immediate reconstruction with radial forearm

Shah JP 2003
Hemiglossectomy, neck dissection, immediate reconstruction with radial forearm
Hemiglossectomy, neck dissection, immediate reconstruction with radial forearm

Reconstruction of soft tissues of the head and neck
Tongue and floor of the mouth

Hemiglossectomy: radial forearm
Reconstruction of soft tissues of the head and neck
Tongue and floor of the mouth

Hemiglossectomy: radial forearm
Tongue Carcinomas
Primary Approaches:

- Trans-oral

- Mandibulotomy

- Pull-through

Preoperative RT/CT (NR), total glossectomy, bilateral neck dissection, immediate reconstruction with rectus abdominis free flap
Preoperative RT/CT (NR), total glossectomy, bilateral neck dissection, immediate reconstruction with rectus abdominis free flap

Shah JP 2003
Preoperative RT/CT (NR), total glossectomy, bilateral neck dissection, immediate reconstruction with rectus abdominis free flap
Preoperative RT/CT (NR), total glossectomy, bilateral neck dissection, immediate reconstruction with rectus abdominis free flap
Preoperative RT/CT (NR), total glossectomy, bilateral neck dissection, immediate reconstruction with rectus abdominis free flap
Preoperative RT/CT (NR), total glossectomy, bilateral neck dissection, immediate reconstruction with rectus abdominis free flap
Preoperative RT/CT (NR), total glossectomy, bilateral neck dissection, immediate reconstruction with rectus abdominis free flap
Preoperative RT/CT (NR), total glossectomy, bilateral neck dissection, immediate reconstruction with rectus abdominis free flap
Surgical Approaches

• Transoral and Visor Approaches
  – Cosmetic but may limit exposure

• Lip Splitting
  – Modest cosmetic disadvantage with excellent posterior exposure for mandibulotomy

• Paramedian or midline mandibulotomy
  – Avoidance of alveolar nerve

---

reconstructive options

1. Combination of soft tissue free flaps and alloplastic materials
   Lack of bone reconstruction — problems during RT

2. Combination of free and regional pedicled flaps
   Insufficient regional flap versatility
   Inability to reconstruct central jaw defects

3. Dual free flap transfer
   Prolongation of operation time
   Need of two pairs of anastomoses
New methods of surgery will not impact the prevention, control of disease or survival of patients with either early or advanced stage oral cavity carcinomas.

It is clear that advances in the management of oral cavity carcinomas require the development of defined molecular biologic, cellular and or humoral predictors which provide biologic predictive assays and mechanisms for novel targeted therapy.

Lessons learned

Rules and guidelines regarding the role of surgery in the management of squamous cell carcinoma of the oral cavity.
Surgical treatment of carcinoma of the oral cavity:
Is there any basic rule we must follow?

There is only one rule.

The rule is there is no rule. Each and every patient should be treated individually to his particular disease profile using all therapeutic options and treatment should follow the guidelines set for him by the combined oncological team.
Second World Congress of the International Academy of Oral Oncology (IAOO)
June 8 – 11, 2009
Sheraton Centre, Toronto

Invitation to Toronto!