ORAL CANCER

RESECTION AND RECONSTRUCTION

Magdalen Foo

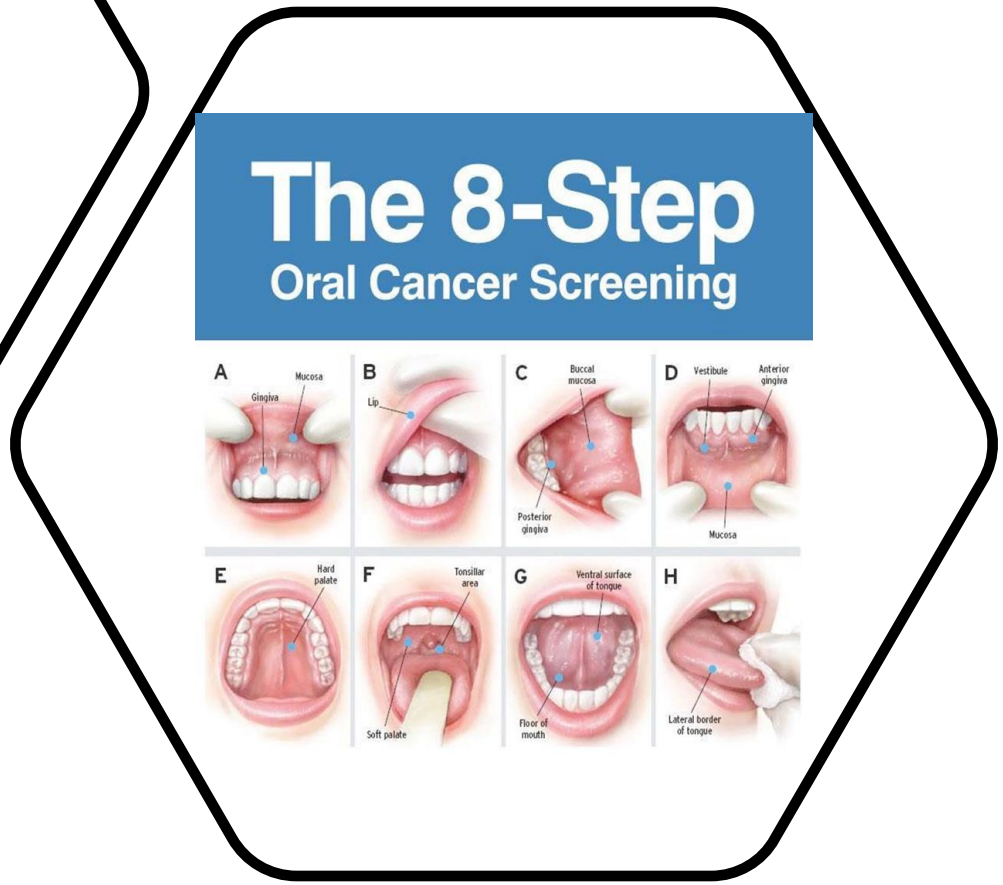
Oral Maxillofacial Surgeon

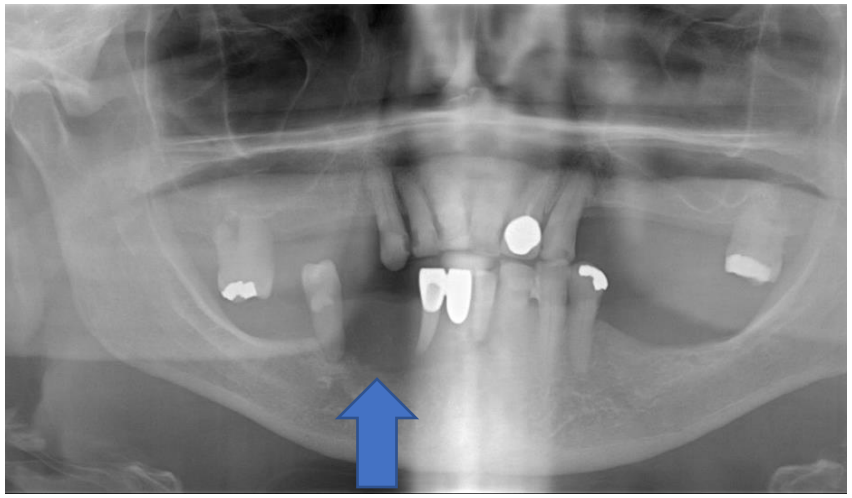
Describe	Describe the clinical aspect, diagnosis and management of oral cancer
Understand	Understand the role of Multidisciplinary Team in head and neck cancer management
Appreciate	Appreciate the contribution of the dentist pre, during and post head and neck cancer treatment

Head and neck cancer statistics in Australia

- 7th most commonly diagnosed cancer in Australia
- >5000 new cases of head and neck cancer diagnosed in 2020
- >1000 deaths from head and neck cancer in 2020

Early diagnosis saves lives





Signs and symptoms

- Lump in the neck
- Mobile teeth
- Swelling or sore on the lip that won't heal
- Difficulty or painful swallowing
- Changes in speech
- Bleeding or numbness in the mouth
- White or red patches on the mouth, tongue or gums
- Unexplained weight loss

Investigations

- Biopsy - removal of a small amount of tissue which is sent to a pathologist to determine if cancer cells are present
- Radiographs – OPG and chest x-ray
- Imaging - PET, CT and MRI scans to determine the location, **stage** and spread of cancer
- An flexible nasal endoscope is used to examine the nose, sinuses, larynx and pharynx

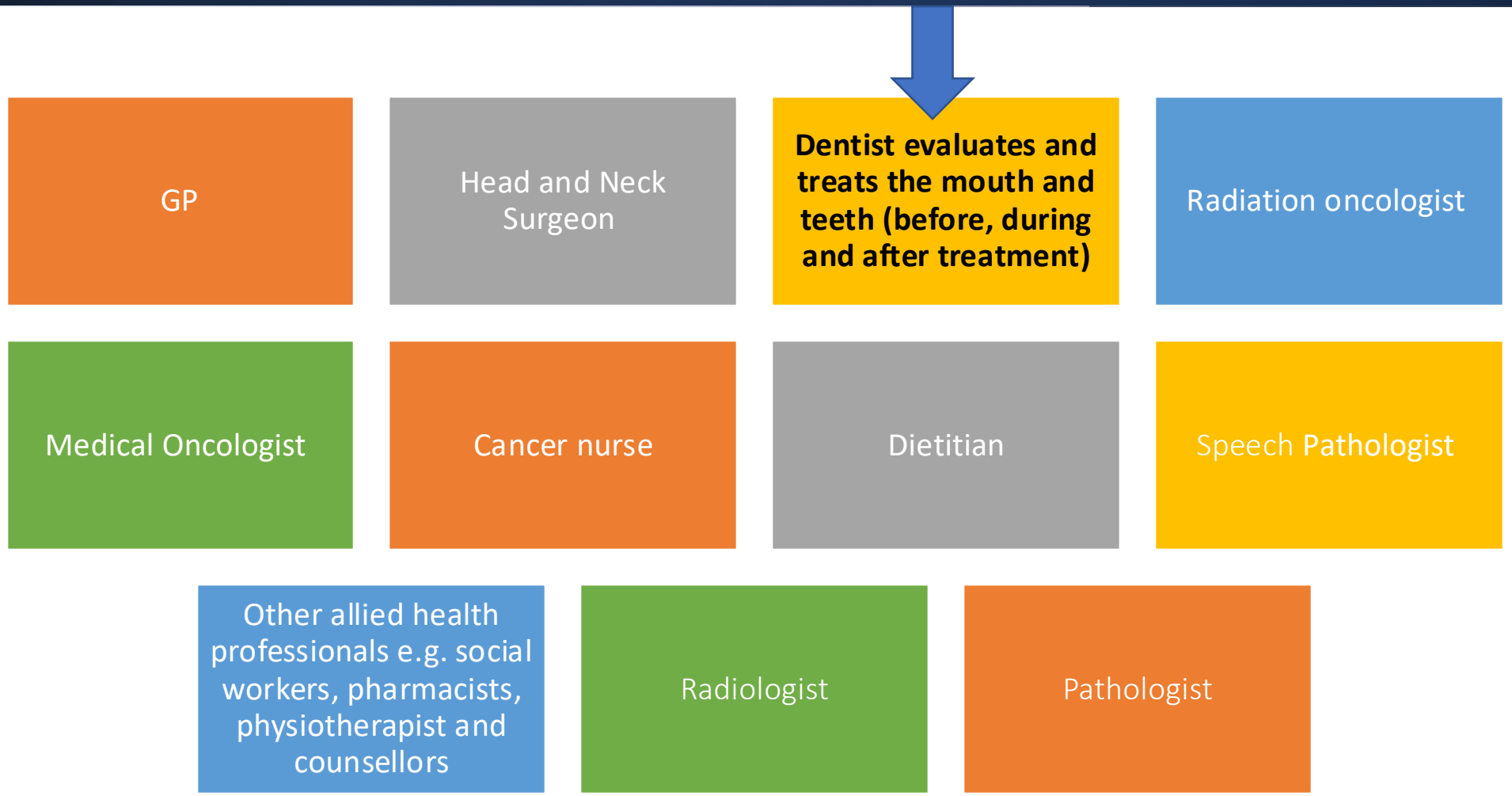
Clinical Staging of Head and Neck Cancer (TNM)

- Used to designate the extent of disease and to determine the most appropriate treatment for patient
- Uniform staging system provides comparisons of results of types of treatment
- Helps predict treatment response and outcomes

Management

- Every patient with oral cancer should be presented at a Multidisciplinary Team (MDT) Meeting
- Integrated team approach to healthcare whereby medical and allied health professionals consider all relevant treatment options and collaboratively develop an individual and care plan for each patient

Multi-Disciplinary Team



Treatment

- Curative versus palliative
- Surgery – primary modality of treatment for oral cancer. Removes tumour and lymph nodes
- Adjuvant radiotherapy depends on pathological staging, surgical margins and nodal status
- Radiotherapy used on its own to treat when organ preservation e.g. oropharyngeal cancers. Used concurrently with chemotherapy
- Chemotherapy – standard of care in locally advanced head and neck SCC

Pre-treatment dental assessment

Cancer	Diagnosis, prognosis Treatment modality Radiation fields Start dates
Patient	Treatment goals Socio-economic factors Quality of life Motivation
Oral Health	Dental history Oral hygiene Maintenance ability
Dentition	State of dentition Existing oral health Future rehabilitation potential and considerations

During radiotherapy and chemotherapy

- Changes in taste
- Oral hygiene maintenance – mucositis
- Systemic considerations – pancytopenia, opportunistic infections

Post treatment dental management

Regular review and maintenance

Motivation

Recommendations for dental follow-up

Initially 3 monthly review for caries and periodontal management

Once oral condition stabilize, 6 monthly recalls – look out for mucosal changes, xerostomia, candidiasis, changes in occlusion

Fluoride at each recall – Neutrafluor 5000 toothpaste and fluoride varnish

Surgery

Primary modality of treatment for oral cancer

Ablation and neck dissection

Reconstruction

Assessment in oral cancer

Utility of CT and MRI in assessment of mandibular involvement in oral cavity cancer

Andreea Nae [1], Gerard O'Leary [1], Linda Feeley [2], Cassie Fives [2], Brendan Fitzgerald [2], Elena Chiriac [3], Patrick Sheahan [1]

World J Otorhinolaryngol Head Neck Surg 2019 Mar 22;5(2):71-75

T*he results suggest that combined CT and MRI have diagnostic utility in detecting mandibular invasion by oral cancer, but with significant false positive rate*

Outcomes

Histological grading is a significant predictor for treatment failure and recurrence

Tumour size and lymph node status are also prognostic factors

Surgery

The Effect of the Surgical Margins on the Outcome of Patients with Head and Neck Squamous Cell Carcinoma

Consider margins of 5 mm and > as clear, 1-5 mm as close and < 1mm as involved

There is significant impact of positive surgical margins on the outcome in recurrence rate and overall survival

Adjuvant radiotherapy/chemotherapy cannot fully compensate for the close and positive margins

Surgical margins

What is the adequate margin of surgical resection in oral cancer?

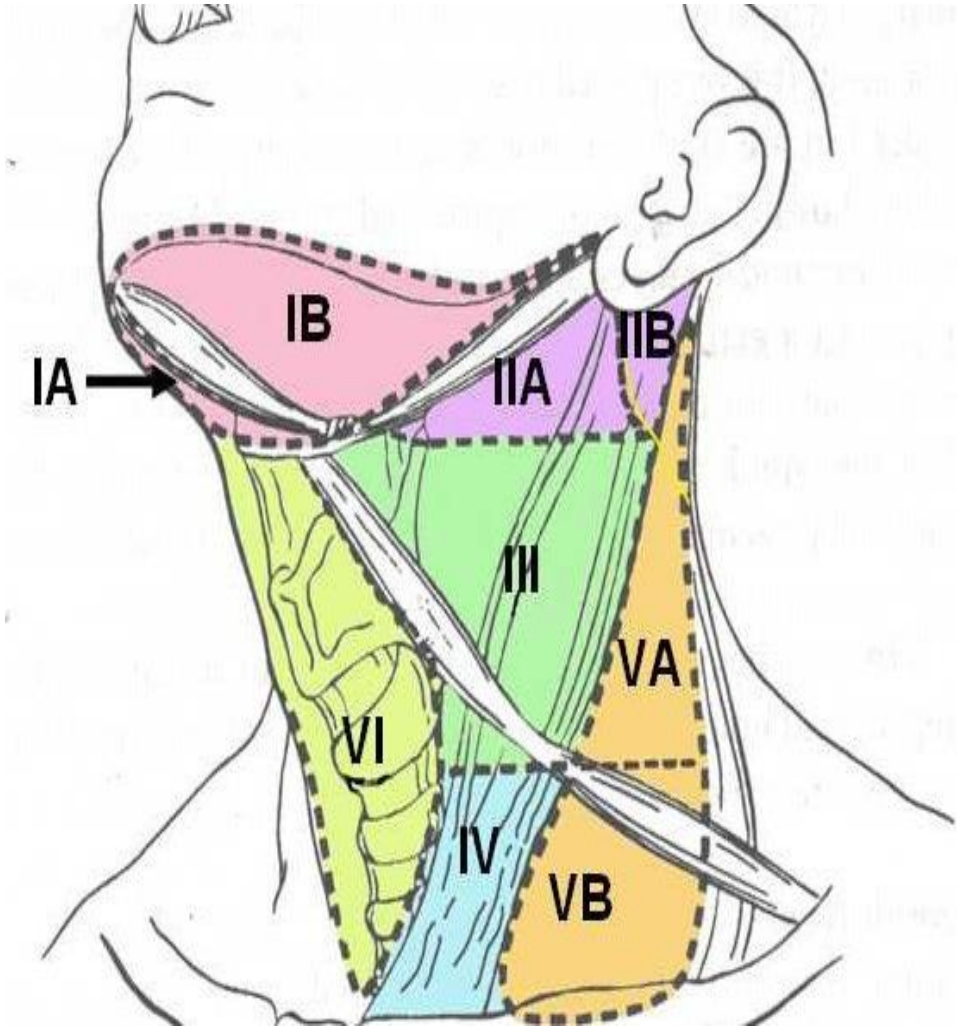
Richard W Nason [1], Abdulaziz Binahmed, Kumar A Pathak, Ahmed A Abdoh, George K B Sándor

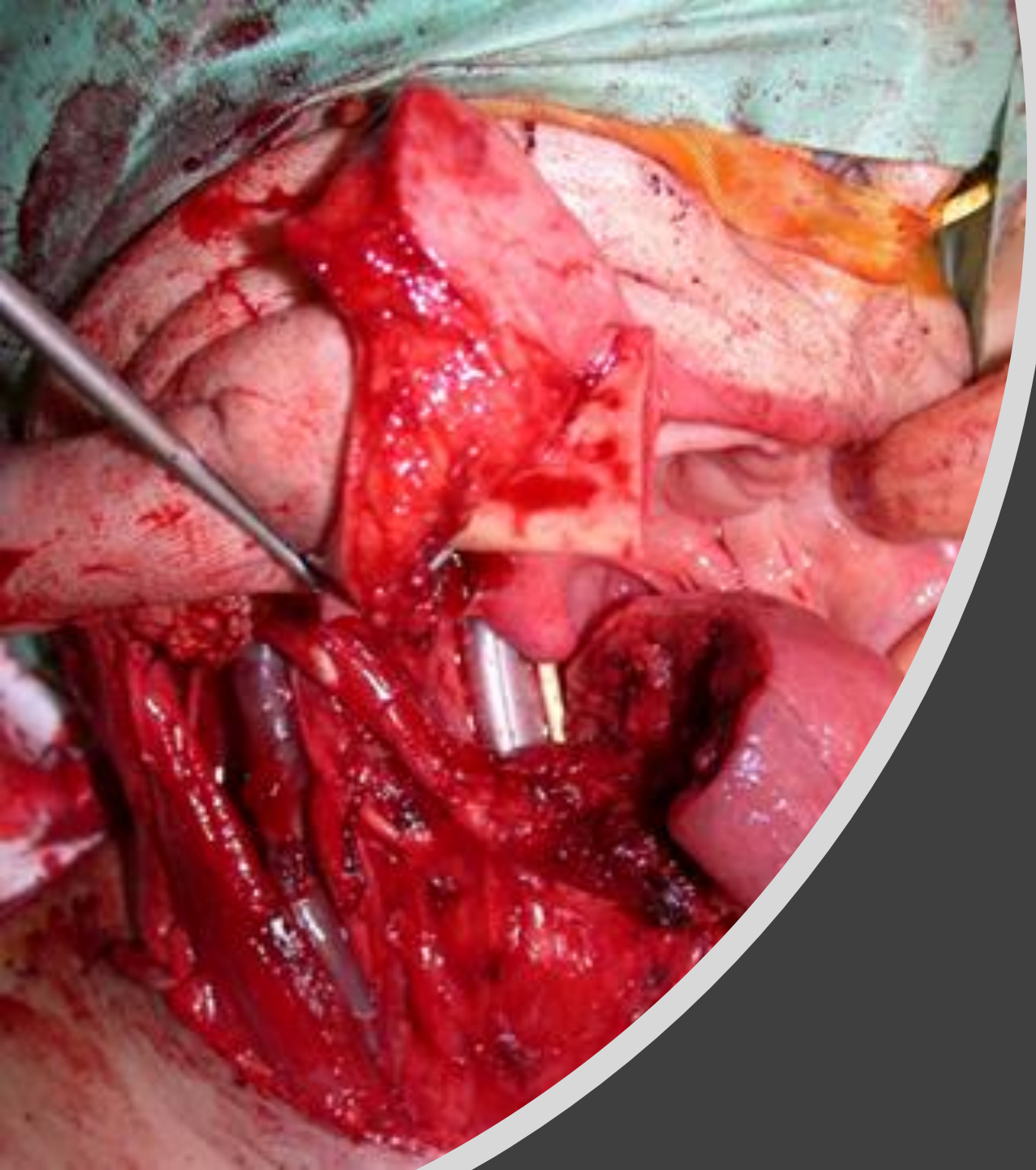
Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2009 May;107(5):625-9

Survival improves with each additional millimeter of clear surgical margin. This systematic evaluation of surgical margins suggests that an adequate resection in oral cancer should provide a margin of greater than 3 mm on permanent pathology section.

Neck dissection

- Radical neck first described by Crile in 1906, involved removal of all lymphatic structures between mandible and clavicles
- Shah stratified cervical lymph nodes into 6 group levels
- Currently, selective neck dissection with the preservation of non-lymphatic structures





Surgery – ablation and neck dissection

Head and neck cancer

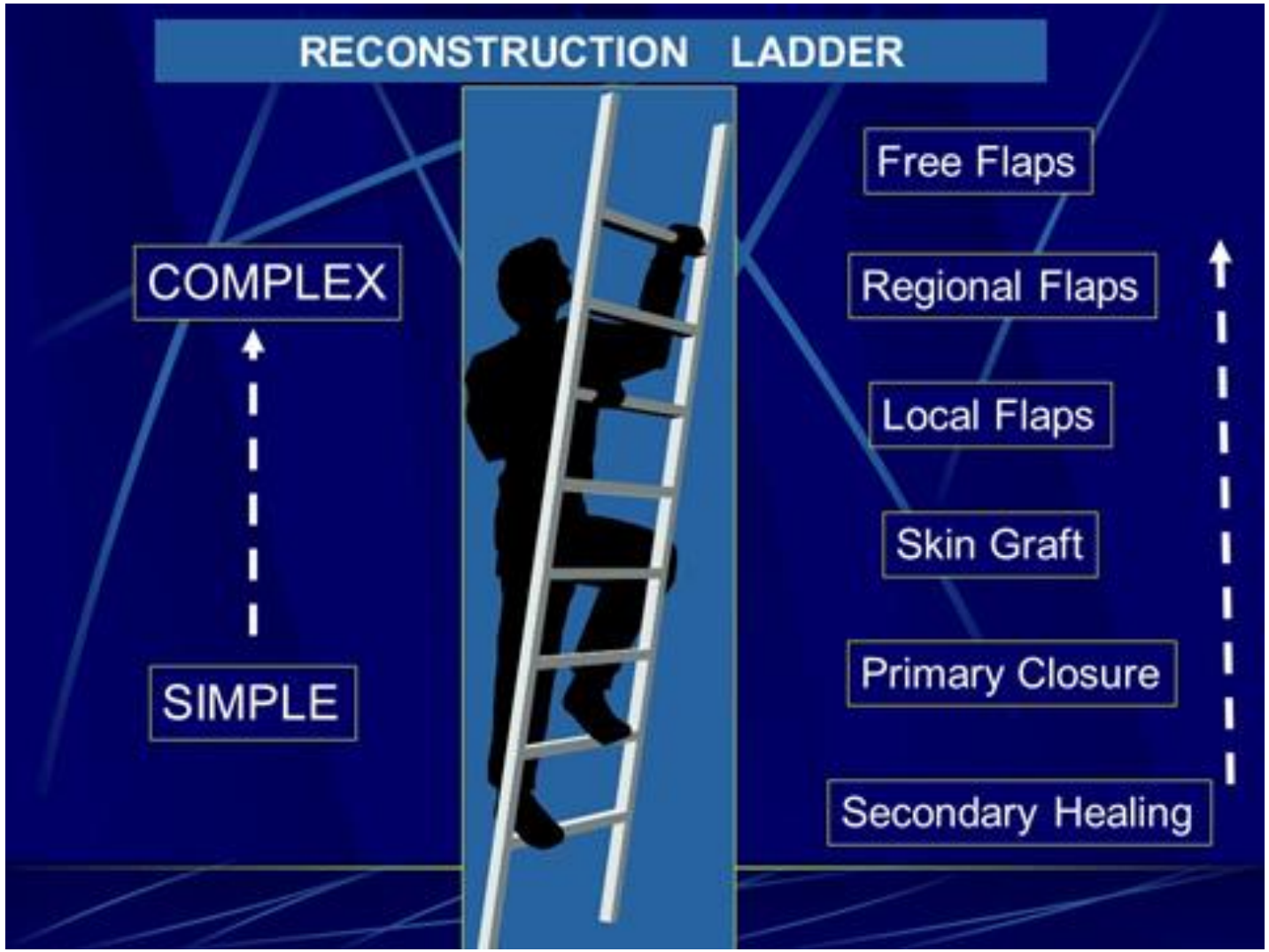
After resection, more than 50% of the resection require reconstructions of the defect

This may involve soft tissue reconstruction or involve a bony reconstruction

Maxillomandibular resection may involve a rim (marginal) or complete segment (segmental)

A marginal mandibulectomy can be reconstructed with local flaps or skin graft, whereas a segmental mandibulectomy requires an osteocutaneous flap

Reconstruction



T1 SCC Lateral tongue

Primary closure

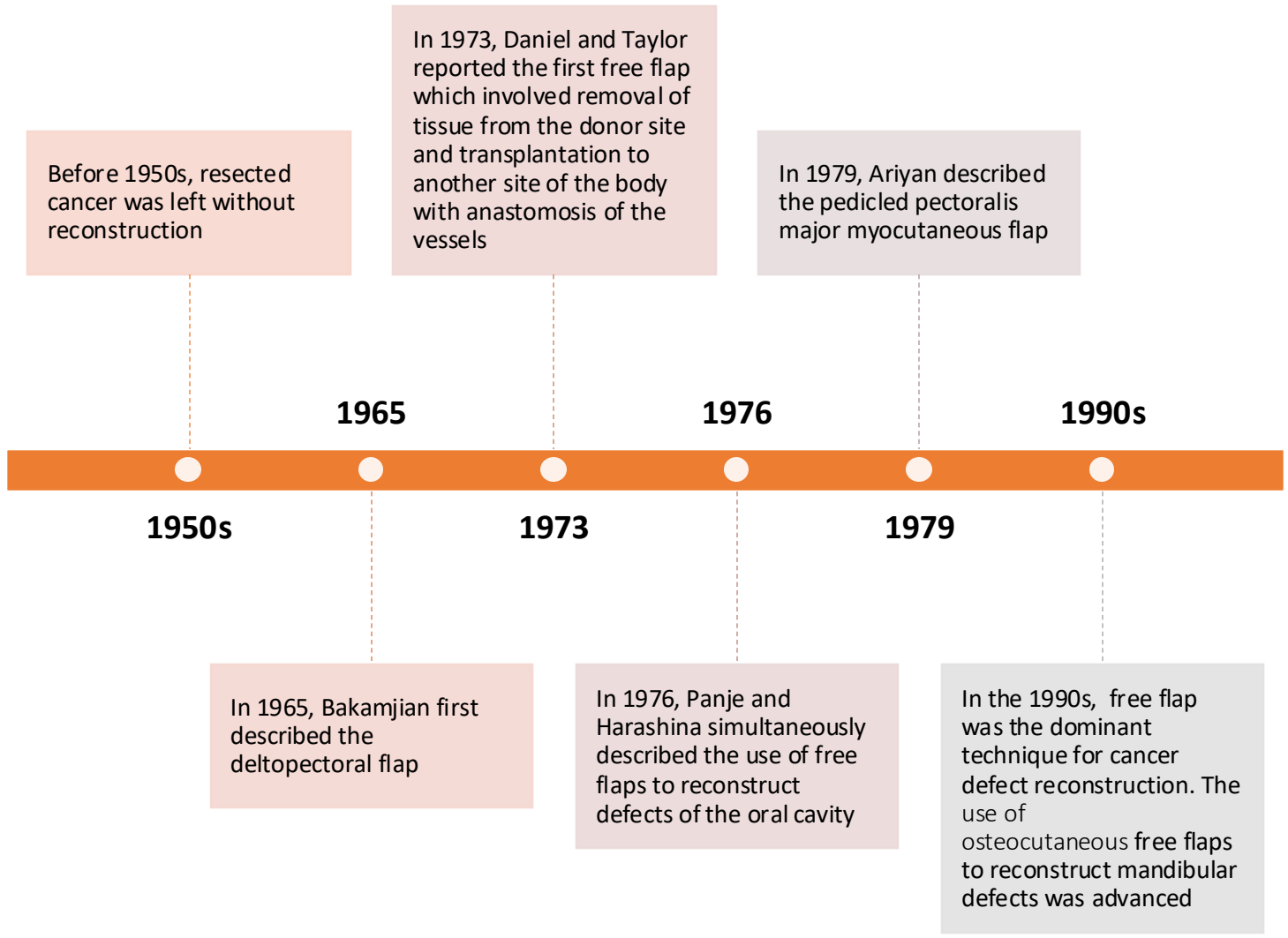
Local flap

Facial artery musculomucosal (FAMM) flap

Regional flap

Temporalis muscle flap

Reconstruction



Challenges in jaw reconstruction

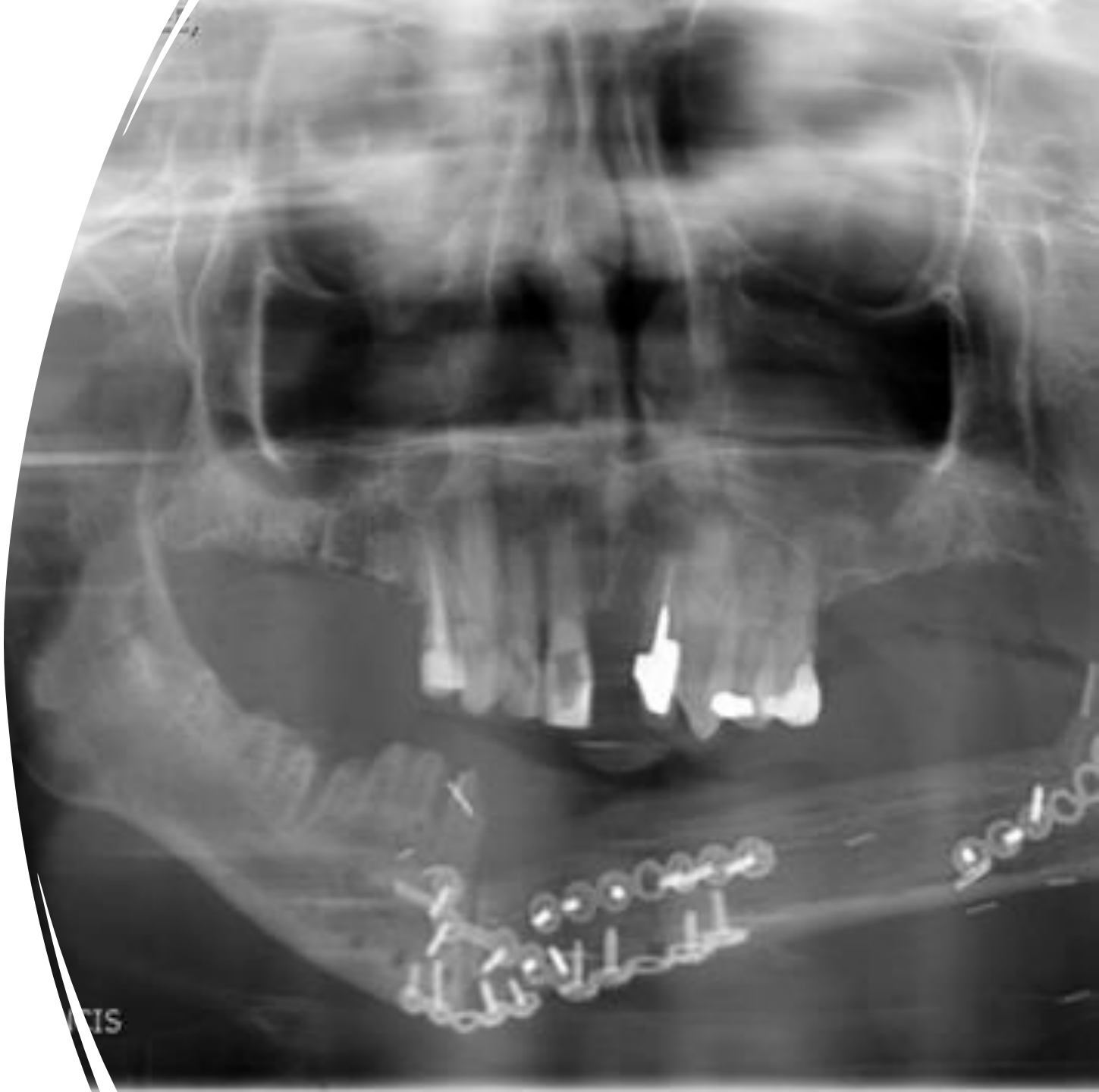
Malposition of the bone graft can negatively affect

- facial symmetry
- appearance
- support
- occlusal function
- masticatory movement
- dental rehabilitation

Inferior Jaw reconstruction

Incorrect positioning of the fibular free flap

Inadequate fixation of the bone graft



Surgical planning

3D printing first described by Hideo Kodama in 1981 when he started manufacturing 3D plastic models

Surgical planning was improved, which facilitated resection, flap harvesting, and graft positioning

Surgical planning

- increased accuracy,
- improved bone to bone contact,
- decreased operating room time,
- lower surgeon stress,
- reduced ischemia time in the microvascular free flap reconstruction
- enhanced treatment outcome

Mandibular SCC

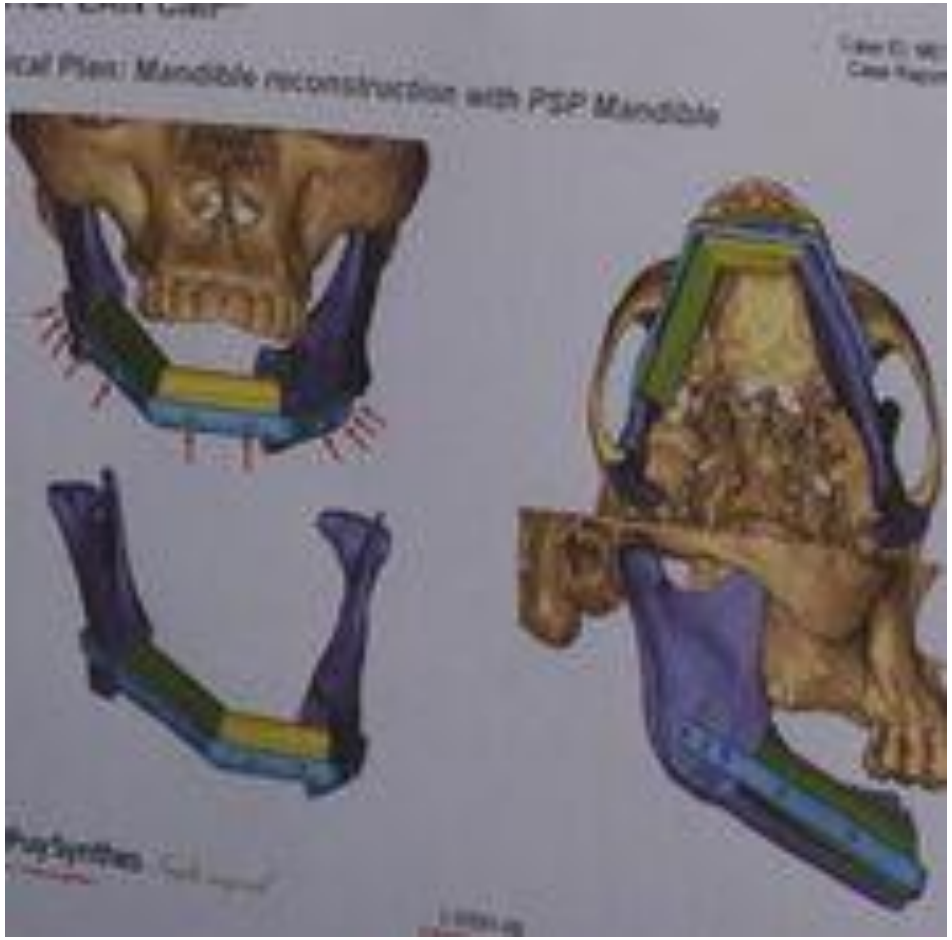
PRE-SURGICAL ASSESSMENT

Angiography

PLANNING THE RESECTION

Preoperative high-resolution computed tomography (CT)

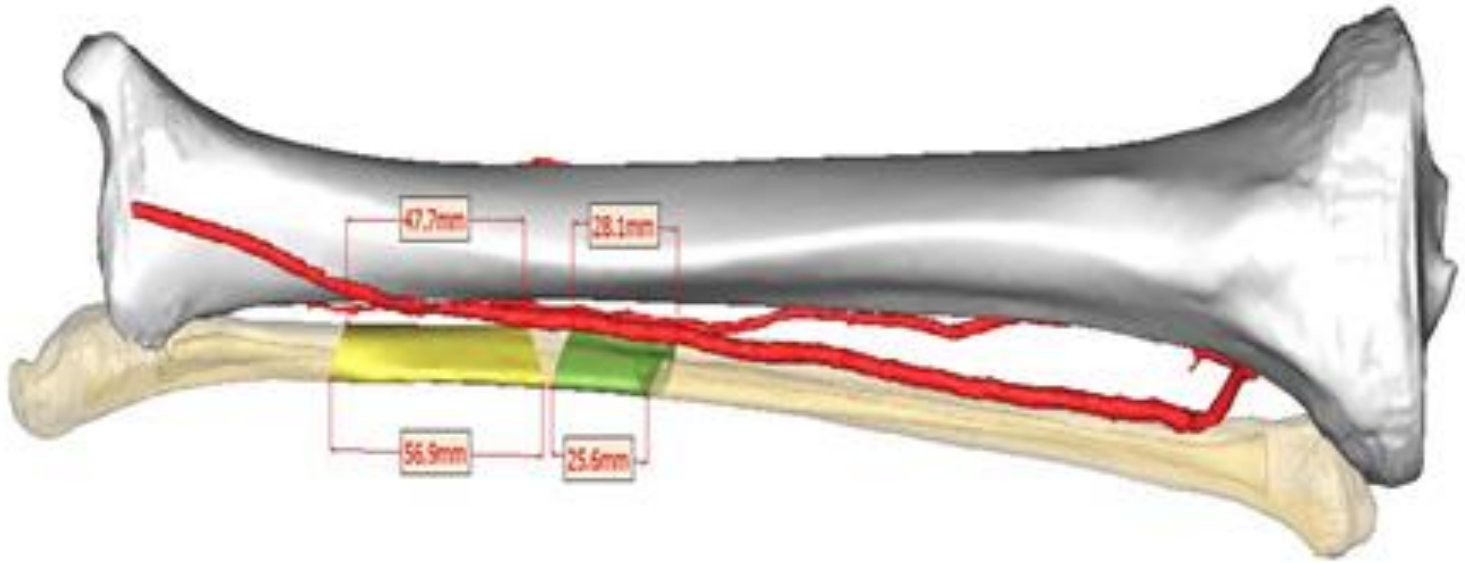
Surgical simulation and planning



SURGICAL TEMPLATE

3D printed surgical template fabricated to guide the procedure of tumour resection

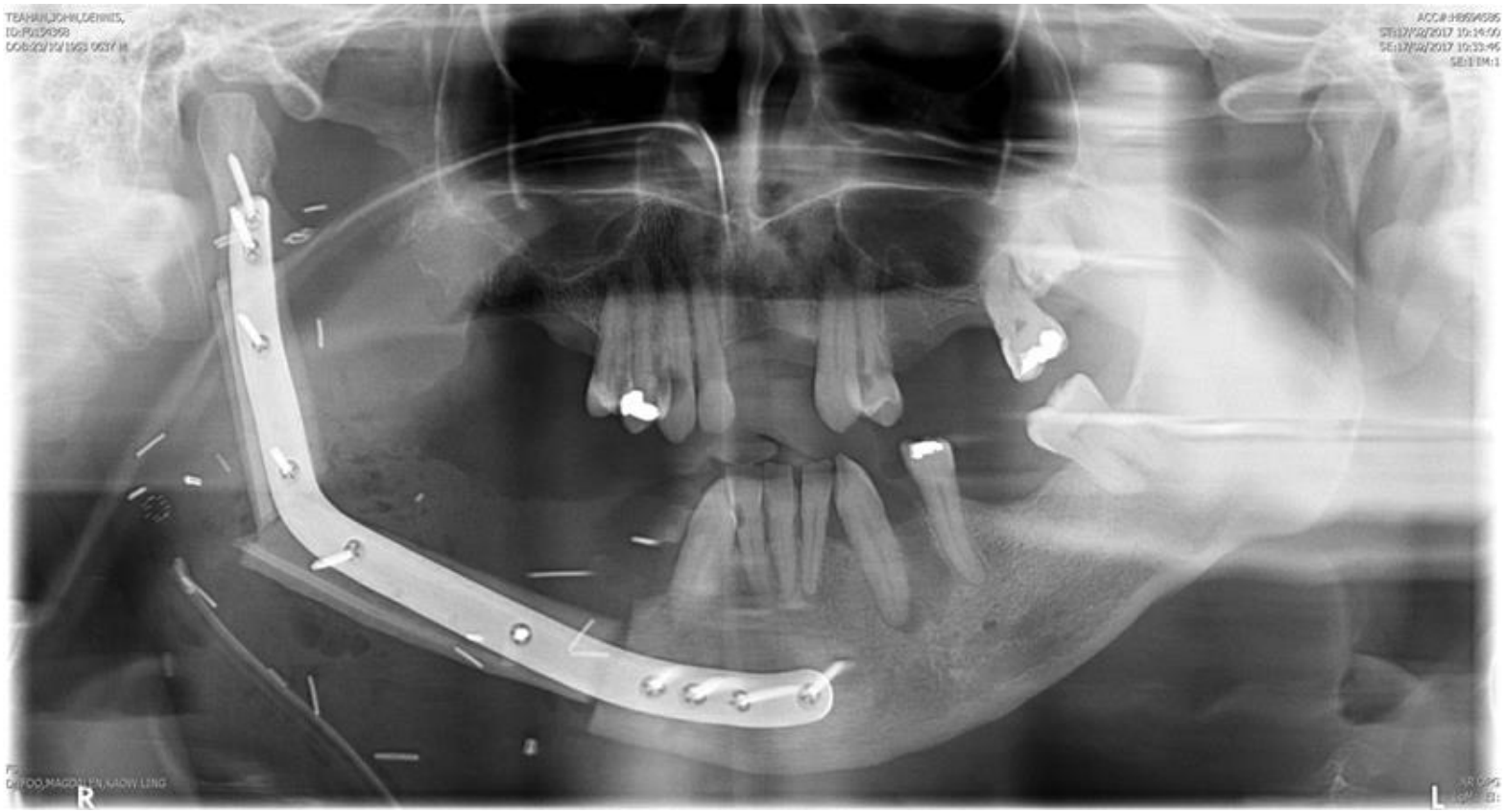
SURGICAL PLANNING



Graft harvesting

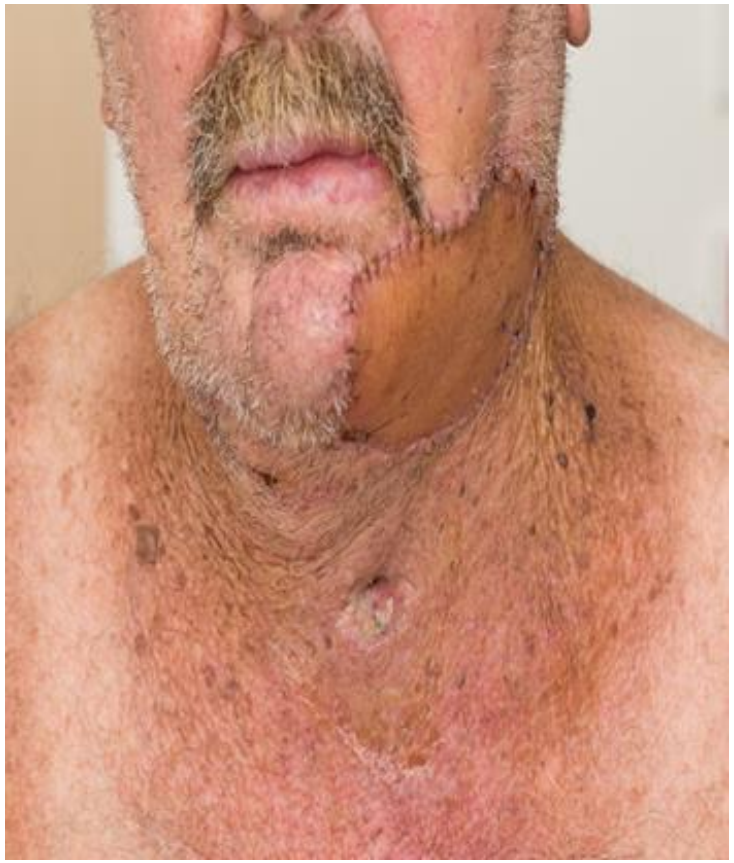
Surgical template for osteotomies

Post op OPG



POST OP PHOTO

Scapular flap



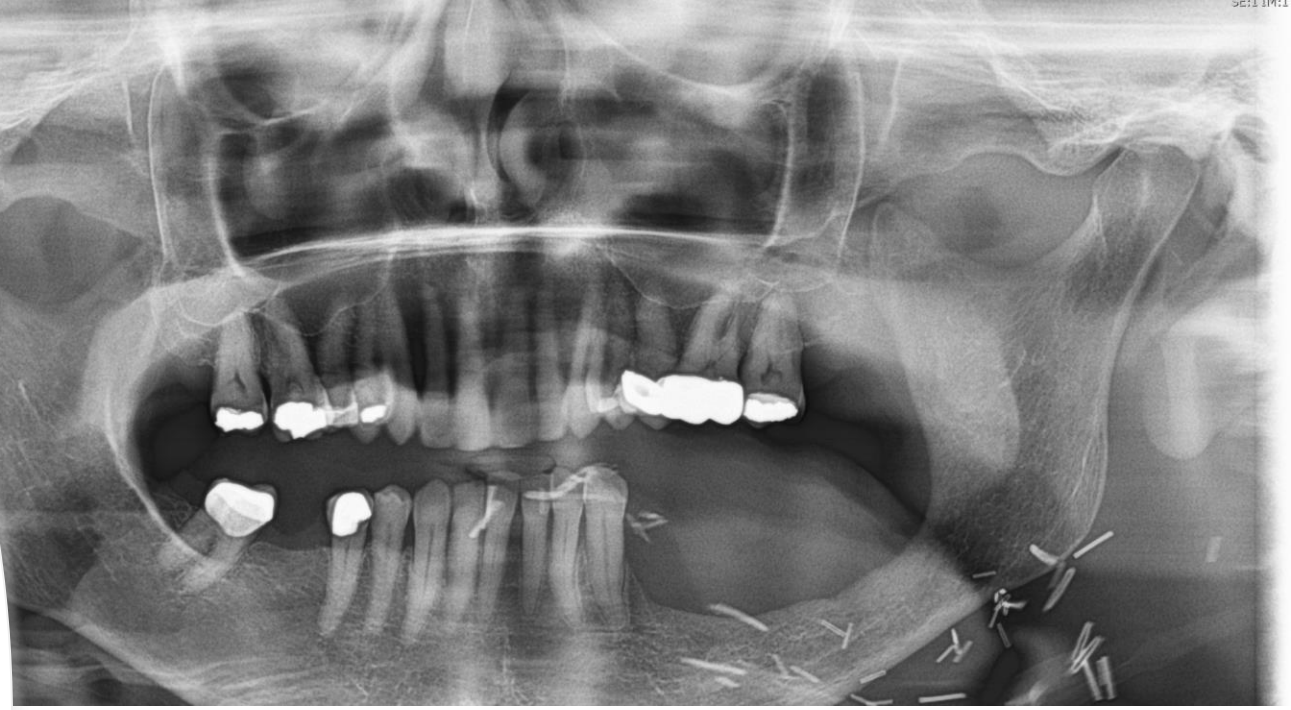
Osteocutaneous flap

Pre-op assessment

Allen's test

Marginal mandibulectomy

Radial forearm free flap reconstruction



Restoring form and function

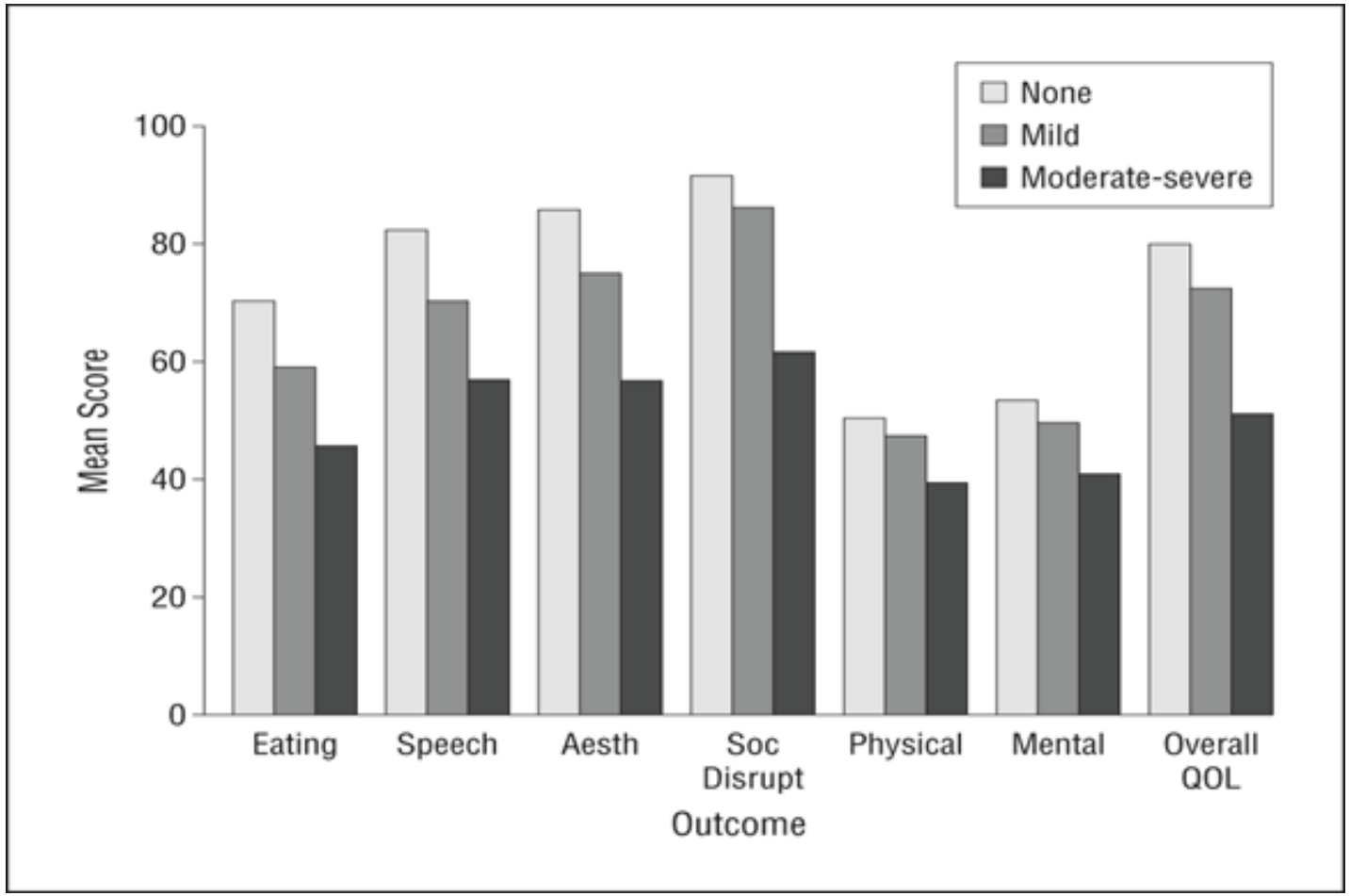
Minimal surgical morbidity

Reconstruction and oral rehabilitation

QUALITY OF LIFE :

- Individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns

QOL


None
Mild
Moderate-severe
100
80
60
40
20
0
Mean Score
Eating
Speech
Aesth
Soc Disrupt
Physical
Mental
Overall QOL
Outcome

UNIVERSITY OF WASHINGTON QUALITY OF LIFE QUESTIONNAIRE

1.Pain

2.Appearance

3.Activity

4.Recreation

5.Swallowing

6.Chewing

7.General questions

a)Health Related QoL month before developing cancer

b)Health Related QoL during past 7 days

c)Overall QoL

QOL BY TREATMENT

2 issues most important to patients were activity and mood

A greater proportion of those who received adjuvant radiotherapy rated QoL as worse than at diagnosis compared to those who received primary surgery only - this group experienced more pain and poorer swallowing

QOL

Health related QoL in treatment planning, and more personalised follow-up support

Results can be invaluable when counselling patients with a new diagnosis

Questions ?