

Reconstruction of Oropharyngeal Defect

연세대학교 의과대학 성형외과학교실

卓 寬 哲

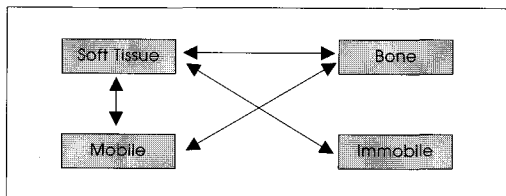
Introduction

종양의 외과적 절제 직 후 노출된 Vital Structure를 보호하면서 정상에 가까운 기능과 외형을 유지해 줄 수 있는 효과적인 재건이 가능해짐에 따라 과감히 종양 부위를 절제하여 완치 효과를 증진시키고 적극적인 보조치료의 기회를 확대시키게 됨으로써 두경부 종양치료의 전체 성적은 향상되게 되었다.

■ Considering in Head and Neck Reconstruction

- 1) Physiological Function
- 2) Aesthetic Appearance
- 3) Psychosocial Rehabilitation
- 4) Vocational Rehabilitation

■ Planning depends on Extent of Tissue Loss



Oropharyngeal Reconstruction

• Intra oral tumor의 resection은 다음과 같이 두경부의 appearance와 function에 영향을 미치게 된다.

- Tongue : speech, swallowing
- Mandible : chewing problems
- Symphysis : drooling, Andy Gump deformity
- Lip : drooling, speech articulation disorders.
- Maxilla : speech unintelligible
- Orbit floor : dystopia, diplopia
- Pterygoid fossa : trismus

- Function of Oral Cavity & Oropharynx
- ▶ Deglutition

- ▶ Mastication
- ▶ Articulation
- ▶ Airway protection
- ▶ Taste

• Phase of Swallowing

- Oral Preparatory Phase : motion of jaw and anterior tongue
- Oral Phase : propulsion of the bolus to Oropharynx by tongue
- Pharyngeal Phase : palatoglossal contact, elevation of larynx

• Factors relating to resection :

- Resection site and extent
- Mobility of residual tongue
- Residual structure and volume
- Residual neuromuscular function
- Selection of adequate donor site
- Pedicle length of flap
- Flap volume and size
- Flap design

• Problems in oral & oropharyngeal reconstruction

Difficult flap design due to complexity of oral cavity
No standard method of flap design

• Essential Goals of Oropharyngeal Reconstruction

1. Restoration of swallowing
2. Intelligible speech.
3. Prevention of drooling
4. Avoidance of salivary fistulas
5. Acceptable aesthetic result

구강이나 인두 종양 절제 후 재건을 위해서는 기존의 모든 방법들이 다 사용될 수 있다. 하지만 성공적인 재건과 종

은 예후를 기대하기 위해서는 수술 전 혹은 수술 후의 Radiotherapy가 필수이므로 혈행이 왕성한 조직의 사용이 우선적이다.

따라서 대부분의 경우 free flap이 우선권이 있다고 해도 과언이 아니다.

1. Reconstruction of Large Defects with Pedicled Flap

작은 defect는 일차적 직접봉합(direct closure)이나 tongue flap, posteriorly based lateral flap 등으로서 재건할 수 있으나 결손이 큰 경우는 다음의 여러 가지 방법들을 사용하여 재건할 수 있다.

- 1) Nasolabial flap
- 2) Forehead flap based on superficial temporal vessels
- 3) Cervical apron flap on facial vessels
- 4) Deltopectoral flap on internal mammary perforators
- 5) Pectoralis major MC flap: thoraco acromial axis
- 6) Trapezius MC flap: Transverse cervical vessels
- 7) Platysma MC flap: Facial vessels
- 8) SCM MC flap: Occipital vessels

2. Free Flap Transfer

1) Mucosal Replacement

- a. Radial forearm flap
- b. Ulnar forearm flap
- c. Scapular flap
- d. Lateral arm flap
- e. Dorsalis pedis flap
- f. Jejunal patch flap

2) Mucosa and Bone Replacement

FREE VASCULARIZED BONE GRAFT(생-유리골 이식)

• FREE VASCULARIZED BONE GRAFT의 특징과 RATIONALE

- 1) Independent of the local conditions in the recipient bed
- 2) Remains organized and alive following transfer
- 3) Keeping its original size and form
- 4) Linear bone formation rate is equal to that of unaffected bone
- 5) Graft participates actively in the repair processes

• FREE VASCULARIZED. BONE GRAFT ON NUTRIENT ARTERY

- (1) POSTERIOR RIB & CUTANEOUS FREE FLAP ; Östrup, 1975, Pedicle : Posterior intercostal vessel
- (2) ILIAC BONE & CUTANEOUS FREE FLAP ; Taylor. 1979, Pedicle : Deep circumflex iliac vessel
- (3) FIBULA FREE FLAP ; Hidalgo, 1987, Pedicle : Peroneal vessel, use for reconstruction of Mandible
- (4) SCAPULAR FREE FLAP for Mandible Reconstruction, Pedicle : Descending branch of circumflex scapular A.
- (5) 2ND METATARSAL FREE FLAP ; O'Brien. 1979, Pedicle : Dorsalis pedis vessel, can be used for reconstruction of anterior segment of Mandible
- (6) RADIAL FOREARM FLAP ;

3. Other Reconstructive Measures

- 1) Maxilla: Dental prosthesis
- 2) Mandible

1) Conventional free rib or iliac bone graft

(1) Conventional Autogenous Bone Graft

Most of the cells in a conventional autogenous bone graft die, and the matrix of the graft serves merely as a scaffold for ingrowing host cells with osteogenic properties.

■ 단 점 :

- 1) Survival of graft cells depends entirely on the nourishment they receive from the surrounding bed.
- 2) Majority of cells die because of mechanical barriers to the establishment of early nutrition, and this leads to absorption.
- 3) Blood supply and vitality of the recipient bed is highly essential to the successful take. Infection or anoxia such as irradiated tissue usually leads to failure.
- 4) Broad contact with recipient bone and functional stress are important factor for the maintenance of the size and form of a bone graft.
- 5) Heterotropic bone grafts are absorbed and replaced by fibrous tissue
- 6) Only grafts are gradually reduced to small rudiments

■ Possible Conventional Bone Graft for Head & Neck :

- 1) Splitted or whole Rib bone for Cranium, Orbit, Maxilla and Mandible
 - 2) Outer table of Calvarial bone for Cranium, Orbit and Maxilla
 - 3) Iliac bone for Maxilla and Mandible
 - 4) Long bones such as fibula, metatarsal
- (2) Composite Bone Flap Pedicled on Periosteal Vasculature Network
- ① TEMPOROPARIETAL CALVARIAL FLAP pedicled on the Temporal vessels for reconstruction of Calvarium, Orbit, Maxilla
 - ② CLAVICULAR OSTEO-MUSCULO-CUTANEOUS FLAP ; Conley, 1972 pedicled on Sternocleidomastoid muscle
 - ③ 11TH RIB OSTEO-MYOCUTANEOUS FLAP; Bernstein. 1984, pedicled on Latissimus dorsi muscle
 - ④ 5TH RIB OSTEO-MYOCUTANEOUS FLAP ;

Cuono. 1980, pedicled on Pectoralis major muscle

- ⑤ 5TH RIB LATERAL PECTORAL OSTEO-MYOCUTANEOUS FLAP ; Little, 1983 ; pedicled on Pectoralis major and minor muscles

2) Metal tray filled with cancellous bone

4. SYNTHETIC IMPLANT or PROSTHESIS

1. Methylmetacrylate
2. Medpor
3. Hydroxyapatite
4. A.O. Plate for Mandible
5. Prosthesis for Maxilla

5. Complications

3. Infection
4. Hematoma
5. Skin necrosis
6. Salivary fistula
7. Exposure of vital structure
8. Catastrophic hemorrhage