

# Resent & Future of Head & Neck Reconstruction

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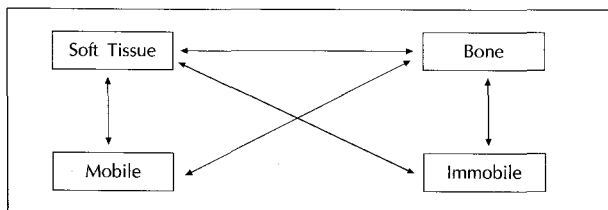
## 1. Introduction

중양의 외과적 절제 직후 노출된 Vital Structure를 보호하면서 정상에 가까운 기능과 외형을 유지해 줄 수 있는 효과적인 재건이 가능해 짐에 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



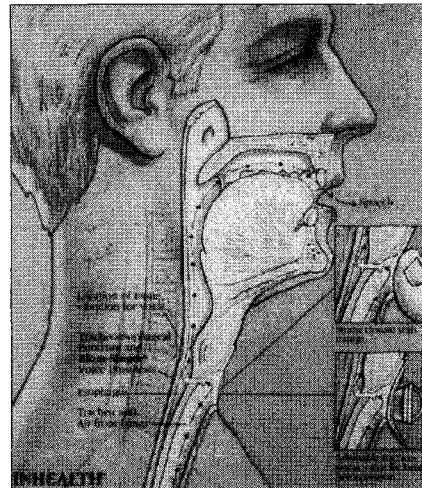
## 2. Soft Tissue Reconstruction of Head & Neck

- 1) Galeal frontalis myofascial flap : 악안면, 두개기 저부
- 2) Temporoparietal musculofascial or osteomusculofascial flap : 악안면
- 3) Midline forehead flap : 코재건
- 4) Washio flap : 코재건
- 5) Scalping forehead flap : 코재건
- 6) Trapezius musculocutaneous flap : 악안면, 구강재건
- 7) Sternocleidomastoid musculocutaneous flap : 구강재건
- 8) Tongue flap : 구강재건
- 9) Deltopectoral flap : 경부, 구강재건
- 10) Pectoralis major myocutaneous flap : 악안면,

경부, 구강재건

## 11) Free Flaps

- A. Scapular Flap
- B. Latissimus Dorsi Myocutaneous Flap
- C. Radial Forearm Flap
- D. Rectus Abdominis Muscle Flap
- E. Omentum
- F. Jejunum
- G. Elephant's Nose Type Tracheoesophageal Shunt with Jejunal Free Flap for Voice Restoration
- H. Free Ileocolon Transfer for Speech Rehabilitation
- I. DCIA Pedicled Iliac OsteoCutaneous Flap
- J. Dorsalis Pedis Flap



## 3. Bony Structure Reconstruction of the Head & Neck

### 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 Onlay 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

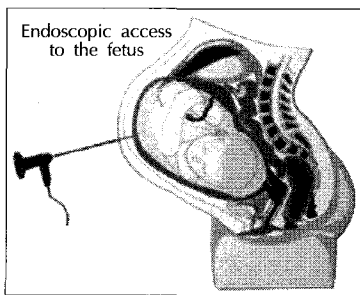
**2) COMPOSITE BONE FLAP PEDICLED ON PERIOSTEAL VASCULAR NETWORK**

- (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

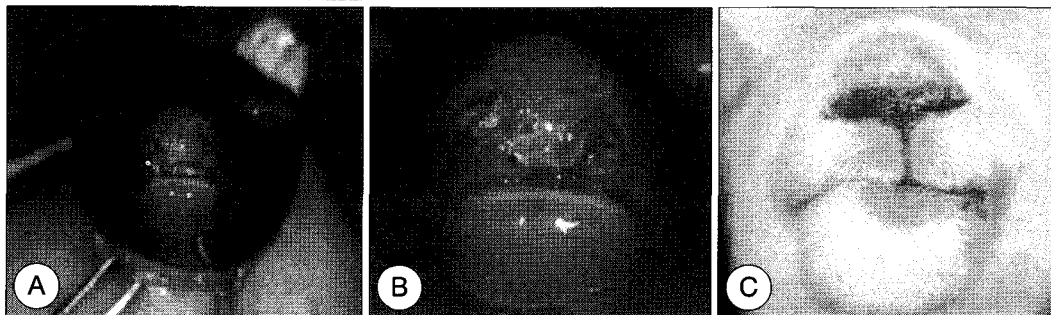
**3) FREE VASCULARIZED BONE GRAFT(생-유리골 이식)**

■ 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



**Fig. 1.**  
 A : Intrauterine Cleft Lip Formation  
 B : Intrauterine Millard Rotation Advancement Cheiloplasty  
 C : New born without any scar



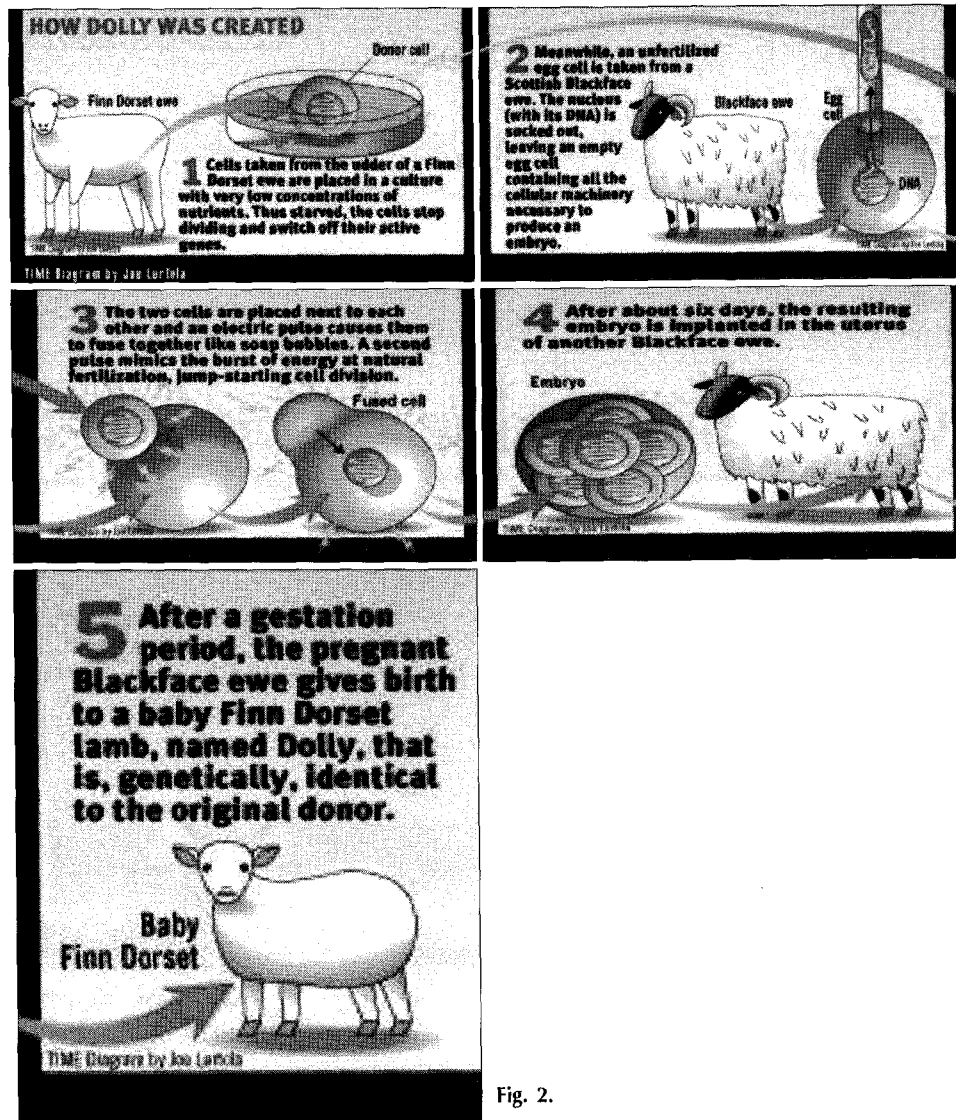


Fig. 2.

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

4) SYNTHETIC IMPLANT or PROSTHESIS

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

5) COMBINED IMPLANT, FREE BONE and/or FREE FLAP

4. Prefabricated Flaps

5. Endoscopic Surgery for Head & Neck

6. Fetal Endoscopic Surgery(Fig. 1)

- Congenital Diaphragmatic Hernia

Recent Tx : Intrauterine

Temporary

Tracheal Occlusion

- Congenital Cystic Adenomatoid Malformation
- Complicated Monochorionic Twinning
- Myelomeningocele
- Amniotic Band Syndrome
- Cleft Lip & Palate
- Congenital High Airway Obstruction Syndrome
- Chronic Fetal Vascular Access
- Fetal Stem Cell Transplantation

7. Tissue Engineering and Organ Cloning(Fig. 2)