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Abstract

Mandibular Reconstruction with Various Methods Including Iliac and Fibular Osteocutaneous free Flaps

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Reconstruction of the composite mandibular defect resulting from ablative resection of tumor involved jaw has been challenging task to the plastic surgeon. A wide variety of different techniques were used with limited success until the advent of microsurgery. The high success rate of microsurgical procedures has allowed for significant improvement in both functional and aesthetic results. A variety of free flap donor sites have been used successfully for mandibular reconstruction.

Between April of 1991 and August of 1998, 20 mandibular reconstructions were performed for oncologic defects. 4 patients underwent mandibular reconstruction with pectoralis major flap, 3 patients with free nonvascularized bone graft, 1 patient with metal plate. 12 patients underwent microvascular mandibular reconstruction(8: fibula, 4: ilium). The type of free flap was determined by the requirements of the defect. Satisfactory aesthetic and functional results were achieved in all cases without significant complications. So microvascular mandibular reconstruction should be considered as primary choice in all mandibular defect without hesitation.

Key Words : Mandible reconstruction, Free flap

* 1998 45

* 1999

Table 1. Tissue Diagnosis

| Diagnosis | No. |
|----------------------------|-----|
| Osteosarcoma | 8 |
| Adenoid cystic carcinoma | 4 |
| Mouth floor cancer | 4 |
| Chondrosarcoma | 2 |
| Complex composite odontoma | 1 |
| Malignant fibrohistiocyoma | 1 |

Table 2. Bone defect

| Type of defect | No. |
|--|-----|
| L :Lateral type | 16 |
| H : Hemimandible type(including condyle) | 2 |
| LC : Lateral type + Central type | 2 |

가
가

가

가 가

가 가

(metal

plate)

가 1975

Talyor¹⁾

1.

20 16 : 4 가 ,

17 72

48 40 60 가 13 65%

20

5 2) 40%
(metal plate)

19 8 ,

4 ,

4 , 2 ,

(instability)

(malignant fibrohistiocyoma) 1
(complex composite odontoma)

1 (Table 1).

2.

4.8cm 15cm

8.9cm (Fig. 1)

80%,

1991

10%,

1998 8 12

가 10% (Table 2).

8 , 4

4 , 가 3

1 ,

8 , 4



Fig. 1. Classification of mandibular defect. This is based on reconstructive difficulty rather than on classic anatomical landmarks. **C** represents the central segment of the mandible containing the canines and the incisor teeth. **L** represents a lateral segment of any length minus the condyle. **LC** would be used if the entire **C** segment were part of it. **H** is the same as **L** except that it includes a condyle.

Table 3. Reconstruction Methods

| Methods | No. |
|------------------------------------|-----|
| Rib bone graft | 3 |
| Metal plate | 1 |
| Pectoralis major myocutaneous flap | 4 |
| Fibular free osteocutaneous flap | 8 |
| Iliac free osteocutaneous flap | 4 |

. 4

2

(Table 3).

2

75

32

가

12

(osteointegrated implant)

7

2

(extrusion)

(metal plate)

13

1

21

52

3

1

(Fig. 2).

(adenoid cystic carcinoma)

(hemimandiblectomy)

(neck dissection)

1

가

-

. 18cm

5

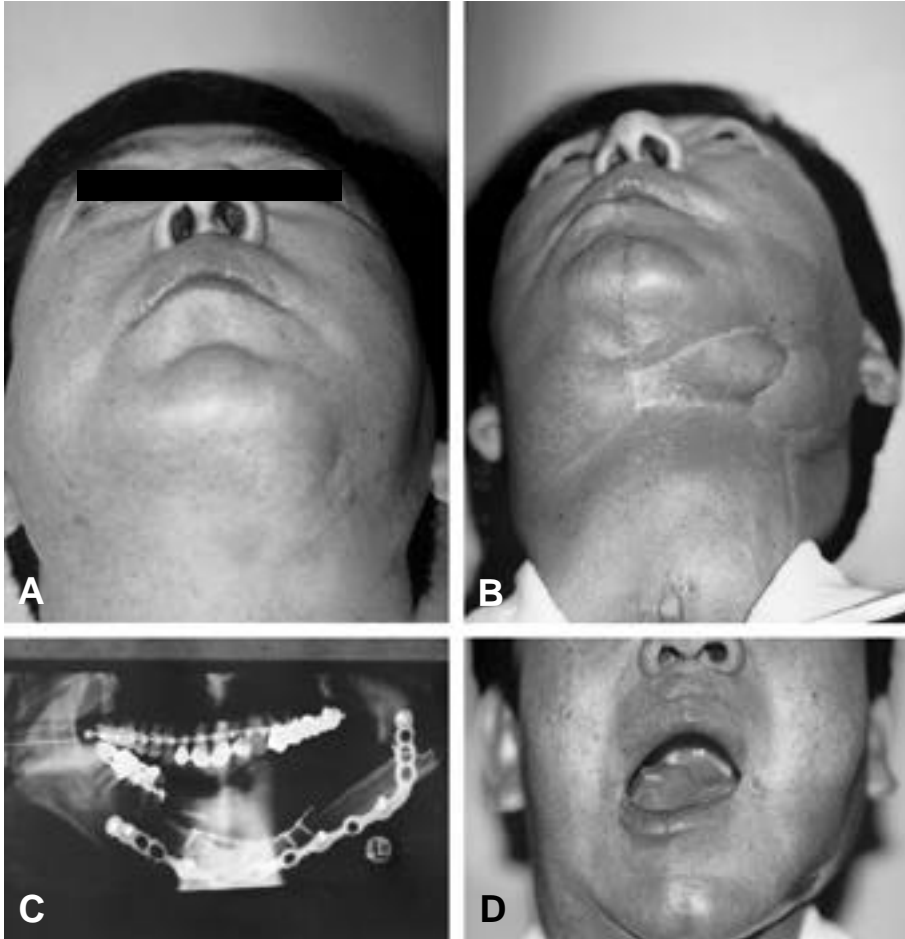


Fig. 2-A. A 52 - year - old male patient with adenoid cystic carcinoma in left submandibular gland.
 B. 5 months after reconstruction with fibular osteocutaneous free flap
 C. Postoperative panoramic view shows neomandible with fibular osseous segment. Mandibular plate and miniplate are used.
 D. After reconstruction, the gap between upper incisor and lower incisor is measured about 40mm.

| | | | | | |
|-------------------|--------------------|----------|-----------|-----------|---|
| × 3cm | | | | | |
| 10cm | 3 | 가 | 4cm | 가 | . |
| (miniplate) | | | | 2 | |
| | (mandibular plate) | | 19 | | |
| | 5 × 3cm | | 가 | | 4 |
| (monitoring flap) | | | | (Fig. 3). | |
| | 45 | | | | |
| | | 6660 cGy | | 5 × 4cm | |
| 6 | | 12 | 가 (ramus) | | |

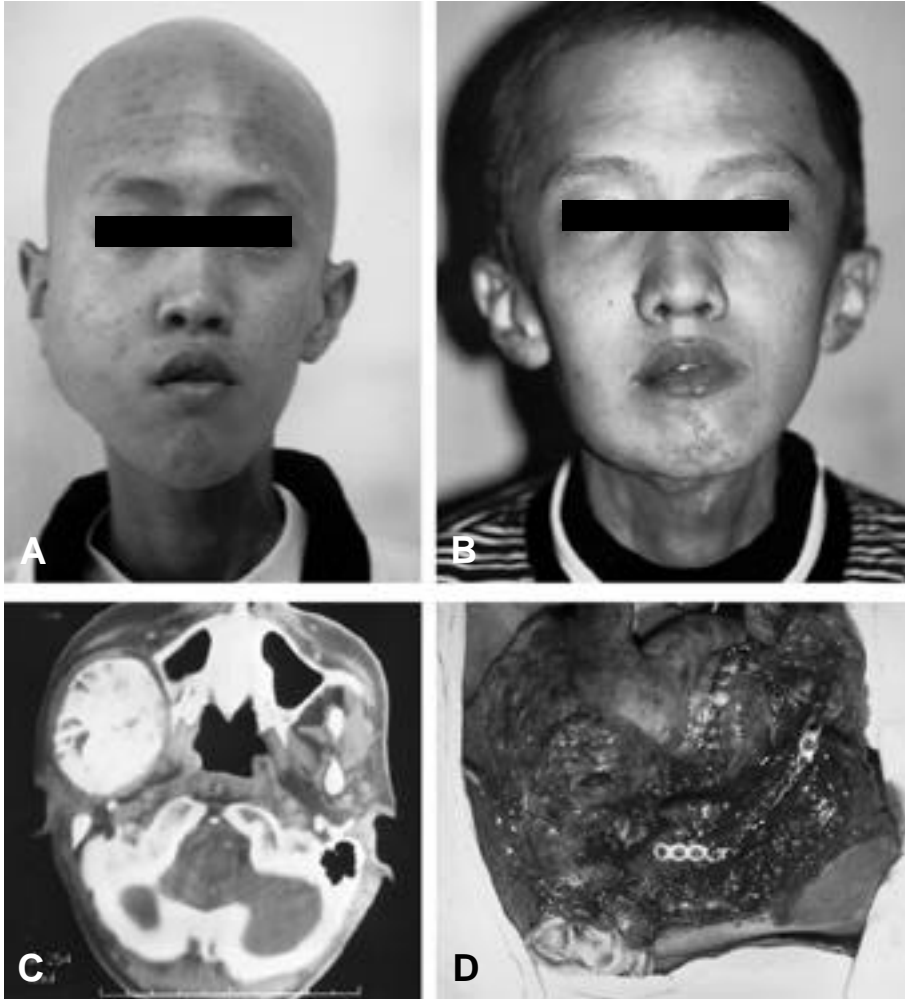
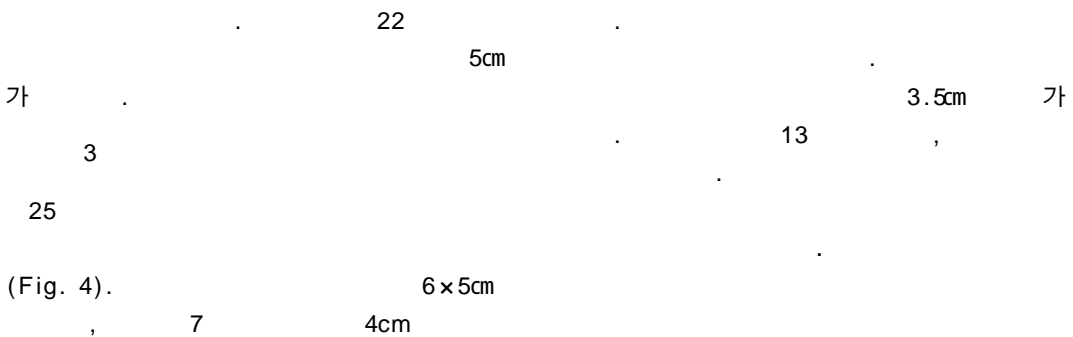


Fig. 3-A. A 19 - year - old male patient with osteosarcoma in the body of right. Mandible.
B. 15 months after reconstruction with iliac osteocutaneous free flap.
C. Preoperative CT scan shows large mass in right. Mandible.
D. Intraoperative view shows iliac osteocutaneous flap fixed to remained mandible with mandibular plate.



(Fig. 4).

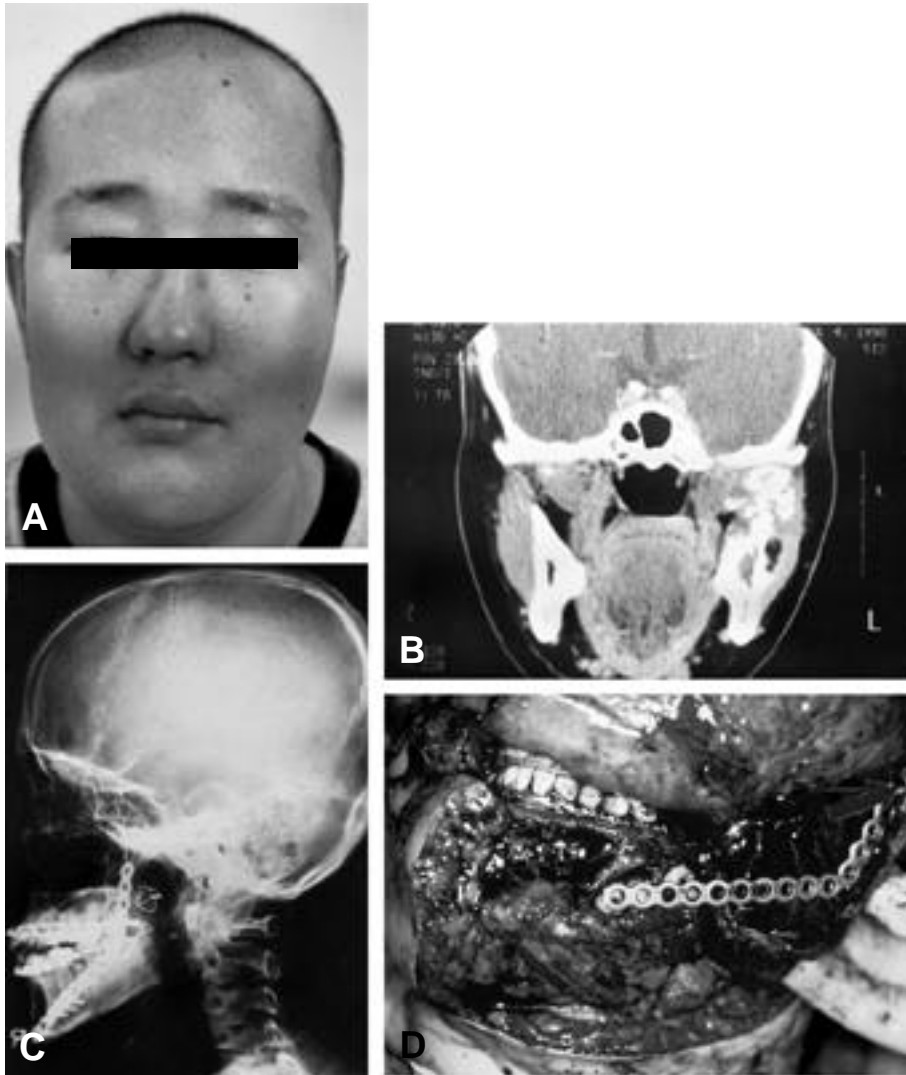


Fig. 4-A. A 25 - year - old male patient with osteosarcoma in the condylar process of left. Mandible.
B. Postoperative cephalogram shows iliac bone flap fixed with mandibular plate.
C. Tumor invasion of left condylar process is shown in preoperative CT scan
D. Intraoperative view : for the reconstruction of the condyle, 7th costal cartilage was fixed to iliac osteocutaneous flap(arrow)

가

가

(free

nonvascularized bone graft)

. 1900

Sykoff가

(remodeling)

Table 4. Comparison of Osteocutaneous Donor sites

| Flap | Tissue Characteristics | | | Donor site Characteristics | |
|---------|------------------------|------|---------|----------------------------|-----------|
| | Bone | Skin | Vessels | Position | Morbidity |
| Fibula | A | C | B | A | A |
| Radius | D | A | A | C | D |
| Scapula | C | B | B | D | D |
| Ilium | B | D | D | B | C |

* Flaps rated best (A) to worst(D)

가 , 가 , 가⁴⁾ . 1

6 가 .

Millard⁵⁾ (wire)

(extrusion), (resorption) , (infection) 1975 Taylor⁹⁾가 50% 80%

6)

5cm 가 가

(metal plate)

(radial forearm free flap)

5 40%

Sutar¹⁰⁾ (cortical bone) 10cm

가 가 (screw) 가 (fracture) (fatigue) 가 (anterior arch defect)

7,8) 가

가 (flexibility)

(osteocu- taneous flap) Snyder⁸⁾ 가

가

가

가 가

(endosteal)

가

가

(Table 4).

1988 Hidalgo¹¹⁾

20

가

가

가

가

(flexor hallucis longus muscle)

(osteointegrated implants)

가

가

가

¹²⁾ Hidalgo ¹¹⁾

가

가

(mobility)

가

가

가 가

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