The Reconstruction of the Mandibular Continuity Defect by Nonvascularized Rib Graft: About two Cases

Ouattara B¹, Koffi KM*, Harding MB¹, Bissa HC¹, Kone R¹, Garba I², Bouletreau P³

¹Department of stomatology, maxillo-facial and plastic surgery of the face, CHU Cocody (RCI), Côte d’Ivoire
²Department of radiology, CHU Yopougon (RCI), Côte d’Ivoire
³Department of stomatology, maxillo-facial, plastic and the face surgery CHU-Lyon Sud (France), France

*Corresponding Author: Koffi KM, Department of stomatology, maxillo-facial and plastic surgery of the face, CHU Cocody (RCI), Côte d’Ivoire. Email: marckoffi@ymail.com

Abstract: We often come across mandibular continuity defect in current practice. They are the result of traumatal, infectious, tumoral and abnormalcy pathologies. The treatment of such a case is nowadays well codified requiring bony drafts, endoprosthesis and osteogenic distraction. We describe our experience of two clinic cases of continuity defect of mandibular reconstruction by nonvascularized rib graft. In the two cases with some respective retreat of twelve and twenty-three months, the results were satisfactory by taking into account the functional and esthetical aspect.

Keywords: Reconstruction – mandibular – traumatism – tumor – graft

1. INTRODUCTION

The anatomical reconstruction of mandibular continuity defects is not an easy task for the surgeon to cope with because of the complexity in the working of the mandibular and the specificity related to the treatment of lesions which affect the neck and face segment [1, 2]. These defects bring about some aesthetical, functional (chewing, swallowing, speech, phonation, respiratory) and so social consequences.

In developed countries with the advent of microanatomosistissular transfert technics (or free laps) in the neck and face area started in 1970s. The management of these defects is well structured [1,2,3,4]. That is not the case in our medically underserved countries where those mandibular continuity defects represent serious problems of reconstruction affecting considerably sick men socio professional reinsertion.

We report our experience on two cases of mandibular continuity defect reconstruction by non-vascularized rib graft.

2. OUR OBSERVATIONS

First Case

A 30 years patient (woman) who has been consulted suffering from avoluminous mandibular tumor which has started developing since ten years. The sympathology would have been started by a left angulomandibular oncosis which increased gradually. Everything combined in a painless context with mobilities, migration and spontaneous loss of teeth. The patient had previously started using a traditional medication based on plant decoction and substance meant to be inhaled on vapour and over and steel didn’t recover from her pain. The clinical analysis of the inside omouth reveals a volumous left mandibular tumefaction exceeding the median line by giving “double head” aspect, covered by aglossy skin, painless of heterogenous consistency with an hypothesis in the area of ipsilateral mandibular nerve and a lack of neck and face adenopathy (figure 1&2).

Fig1. Patient full face with “double head aspect”
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**Fig2. Patient from the side with "double head aspect"**
Inside the mouth analysis we noticed an open mouth by the tumor which was covered by an anetoderma made of numerous venous maze carrying antagonist teeth print. Dental check-up brought to light some migration and some dental mobilities from thirty-five to forty-six with lack of left inferior group of back teeth. In paraclinical sphere, the CT brought to light an osseous fenestrum of polygeodic images occupying all the left semi mandibular other passing the median line and extending till forty-six, and in 3D … reconstruction we noticed some images in "beenest" (figure 3&4).

**Fig3. CT in aseous fenestrum multigeode aspect**

**Fig4. 3D CT, bees aspect**

In doing so we suspected a benign tumor and a surgery instruction had been given. A continuity resection had been realized for this patient at the right angular level with disarticulation at left, realizing a defect of "T" type followed by an immediate metallic endoprosthesis reconstruction (figure 5, 6 et 7).

**Fig5. During the surgery after moving the tumor**

**Fig6. Operative piece**

**Fig7. Patient full face after endoprosthesis reconstruction**
After the surgery an ameloblastoma was found. Ten months later we have seen our patient for a metallic endoprosthesis and non-vascularized two free osseous rib graft reconstruction taking at the fifth and sixth rib level and conform according to the form of defect to be reconstruct (figure 8).

**Fig8. Rib graft after the fifth and sixth rib modeling**
The patient had been regularly treated, at eleven months we observed a good osseous graft and we proceeded to a prothetic rehabilitation by an amovable prothesis, allowing the restoration of the facial balance (figure 9, 10, 11).

**Fig9.** Full face picture after rib graft reconstruction

**Fig10.** Thirteen months, postsurgery control with a successful osseous graft

**Fig11.** Thirteen months after prothetic restoration by a removable prothesis

**Second Case**

A 32 years patient (man), victim of ballistic traumatism which causes a mandibular continuity defect in a type of "La". He was taken into charge initially by ametallic endoprosthesis reconstruction with feeble parts repair. The patient consulted us for a bonegraft reconstruction. The outside mouth clinic analysis revealed a left lower cheek depression and a left lip and chin anaesthesia. Inside the mouth analysis we noticed a limitation of 30mm while opening the mouth and a lack of tooth from 31 to 37. The CT realized showed a mandibular defect from the median line to the left preangular area, reconstructed by ametallic endoprosthesis (figure 12).

**Fig12.** 3D CT, bony continuity defect reconstruction by metallic endoprosthesis

For this patient we have made a reconstruction of mandibular by a ribosseous free graft with the fifth right rib. The evolution was satisfied with a retreat of twenty-three months(figure 13 & 14)

**Fig13.** 3D CT with a good grip of bony graft

**Fig14.** Twenty three months post operative patient with a good facial aesthetical restoration

3. **Discussion**

The aims of the construction are morphologic, also functional with the ability to open and close the mouth. The primary reconstruction is always desirable in order to obtain best results. It exists different procedures:
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- Prosthetic tools: It consists in replacing the mandibular defect by a big blotch or splint in titanium or its alloys like temporary space or definitive.

- Osteogenus distraction: It is based on the concept of bone elongation thanks to a distractor put inside the mouth. The progressive traction practising with in the osseous fragment send an osteogenus in the interfracture under the periosteum activity. The osteogenus distraction is able to treat the same time the associate integument retraction that allows prothetic dental implant rehabilitation.

- The osseous auto grafts that can be either free nonvascularized or free vascularized [5, 6, 7].

Cariou [8] distinguish five types of mandibular defect according to their past or lateral situation which determine the priority of osseous reconstruction.

- Type A with subdivision in :
  - "Aa" Defect limited to the symphysis area.
  - "Ab" Defect spread to the whole man dibulararch from angle to angle.

- Type L with subdivision in :
  - "La" Defect limited to the horizontal branch.
  - "Lb" Defect increase to a semi-mandibular with or without the mandibular condyle.

- Type T: Mandibular continuity defect beyond a semi-mandibular and causing bone length problem to bring.

In the two cases showed we noticed a defect of type T and another of type "La". The continuity defect of mandibular care is well codified in developed countries call on micro anastomosis lap. At ours because of the lack of resources we are always obliged to use nonvascularized graft. Before doing this reconstruction we must do a deep pre surgery check-up which is composed of:

- Local factors:
  - Bones which permit to determine exactly the volume and the morphology of the defect to be reconstructed.
  - local factors around bones are covering tissue which will help to isolate the reconstruction of septic place inside the mouth and of the dental outside place.

- an accurate dental check-up shall be done.

- Intercurrent factors: They modify the local conditions of the reconstruction (X-ray therapy, dental local infectious focus, active or quiescents osseous or growing site activity and the pediatric periosteum must be respected).

- General factors( age, sex, mental condition and cooperation that we should expect from the patient, nutritional condition, metabolic condition, cardio respiratory condition, lifestyle and exeresis adjuvant treatment.

- Aetiology factors (benign or malign tumoral pathology, traumatic pathology, osteoradionecrosis and ostetic pathology). According to literature all continuity defect superior to 8 cm need a reconstruction by microanastomosis lap for both patients. The continuity defect extended beyond 8 cm and the reconstruction had been done by nonvascularized ribgraft. After the different surgeries the results have been satisfied with good grafts on respects retro treat of 13 and 23 months. For the partisan of such grafts, the interestis in its test facility and its weak morbidity [9,10].

4. CONCLUSION

Continuity defect of mandibular represents a complex decisonal process for the surgical team. It always deals with particular case to which we must take into account the interest of the patient. We must continually take into consideration the satisfaction of the surgeon when he reconstructs mandibular and the happiness of the patient.

If in medically served countries the reconstruction through micro anastomosis grafts well appropriate, the use of nonvascularized free grafts always constitute a credible alternative in our skies.

REFERENCES


