CASE SERIES

Free Fibula Osteocutaneous Repair—A Novel Approach to Mandibular Defects

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ABSTRACT

Abstract: Head and neck cancers are managed by a multimodality approach. However, after oncologic resection, reconstruction should focus on restoring form and function. Herein, we report a series of 04 cases who underwent resection of oral cavity tumors followed by reconstruction with a free fibula osteocutaneous flap and its functional outcome.

Keywords: Free fibula osteocutaneous flap, reconstruction, functional outcome

INTRODUCTION

Oral cancers are treated by a multimodality approach, including surgery and adjuvant treatment. Oncologic resections focus on disease clearance with adequate margins, which may impair vital functions like mastication, swallowing, speech, and breathing due to loss of bony, muscular, and neural structures.[1,2] Therefore, reconstruction in head and neck surgery aims at restoring form and function. Flap reconstruction can be of different types, depending on patient and disease factors. Herein we report a series of oral cavity cases who underwent oncologic resection and reconstruction with a free flap (free fibula) and their functional outcome.

MATERIALS AND METHODS.

We report a series of 4 patients who underwent composite resection with free fibula flap repair.

This series includes 04 patients, 01 female and 03 male, aged 45 to 57 years. Around 01 recurrent and 03 per primum cases underwent reconstruction by free fibula osteocutaneous flap following oncologic resection of oral cavity primary tumor.

Out of 04 cases, 01 patient was re-explored in view of flap congestion noticed on postoperative day 01. One more patient had plate exposure post-surgical wound dehiscence, managed conservatively. All 04 patients were referred to a speech and swallow therapist for functional evaluation on POD 7.

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Subsequently, they were decannulated in the second week after surgery. They were initiated on oral feeds at one week, except for one patient, who was on nasogastric tube feeding for 2 weeks due to moderate dysphagia and aspiration.

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All flaps were viable with good functional outcome and minimal morbidity of the patient. The details have been summarized in Table 1.

DISCUSSION

Reconstructive surgery begins in the late 20th century with various types of flaps, but microvascular free flap reconstruction has revolutionized the field of plastic surgery as it is advantageous in reconstructing large defects, either using single or double flaps for both bony and soft tissue defects.

No	Age/sex	Site	Histology	Defect to be reconstructed	Anastomosis	Re exploration	Graft	TT	Speech swallow assessment
1	57/M	Mid lower alveolus	WDSCC	Mid 3rd, angle to angle FOM	STA, CFV	-	healthy	8	FOIS - 4 PSS HNC diet -40 , Speech -50 G0 R0 B0 A0 S0 100 mL water swallow test - able to swallow well, laryngeal elevation noted on palpation, pre and post swallow voicing same
2	55/M	Maxilla, Hard palate	WDSCC	B/L type1 vertical maxillectomy, horizontal type D maxillectomy	FA,AJV	-	healthy	10	FOIS-5 PSSHN-60, Speech -100 100 ml water swallow test -able to swallow well. Laryngeal elevation noted on palpation .pre and post swallow voicing same.
3	45/M	Lower alveolus	MDSCC	Right Lateral incisor to Left RMT	FA,EJV	POD1	Healthy	7	FOIS - 4 PSS HNC diet -40 , Speech -50 G0 R0 B0 A0 S0 100 mL water swallow test - able to swallow well, laryngeal elevation noted on palpation, pre and post swallow voicing same
4	48/F	Lower alveolus	PDSCC	Stump mandibulectomy	FA,EJV end to side	-	healthy	8	FOIS - 4 PSS HNC diet -40 , Speech -50 G0 R0 B0 A0 S0 100 mL water swallow test - able to swallow well, laryngeal elevation noted on palpation, pre and post swallow voicing same

The free fibula osteocutaneous flap, described by Taylor in 1975,[3] is ideal for large mandibular defects, as it allows multiple osteotomies with minimal donor site morbidity. Better bone quality thereby supports dental implants with reliable vascularity of skin and bone.[4,5] It comprises both internal and external skin paddles for reconstructing intra- and extraoral defects, restoring form and function. Therefore it remains a preferred flap in reconstructing mandibular defects.[6-9] However, it has its own limitations, as it requires a long learning curve, donor site morbidity like sensory loss, instability of the ankle, and angiography of the lower limb required to rule out peripheral vascular disease. In our study one patient was re-explored, but all flaps were viable. All patients were subsequently decannulated, and no patient has an orocutaneous fistula.

In a study by Lima et al, one patient developed osteomyelitis, and a defect was noticed at the contour of the mandible with a feasibility rate of 100%.

Portinho et al, 2013,[10] in his study, noted complications: fistula, necrosis, dehiscence, infection, and bleeding with its incidence.

All the patients in our series had good functional outcomes in terms of mastication, speech, swallowing, breathing, and aesthetics.

Our series is limited by its sample size and lack of long-term assessment of functional outcomes. Patient-reported outcome measures were limited.

Recent advances include CAD/CAM-assisted, patient-specific plates that are used these days to improve quality of life.

CONCLUSION

Free fibula flaps remain the prioritized option in managing mandibular defects. Though it proves to restore form and function, it depends on the location of defects and extent of defects, the general condition of the patient, and surgeon expertise, as there is a long learning curve.

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