

FIBULA OSTEOSEPTOCUTANEOUS FLAP AS A WORKHORSE FOR MANDIBULAR RECONSTRUCTION. – A CASE REPORT

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Abstract

The fibula transferred as a free osseous or free osteoseptocutaneous flap. It was first introduced in 1989; the Fibula osteoseptocutaneous flap is a versatile method for reconstruction of mandibular defects because it provide favourable foundation for three dimensional reconstruction of mandible. The flap is based on the peroneal artery and corresponding veins. It can be harvested with the flexor hallucis longus muscle to form extra soft tissue bulk, skin island can

be positioned either intra or extraorally, blood supply to the fibula is both intraosseous and segmental. so multiple osteotomies can be made without devascularizing the bone. The following case report describes the Fibula osteoseptocutaneous flap as a workhorse for mandibular reconstruction

Keywords: Mandibular reconstruction, Fibula osteoseptocutaneous flap, peroneal artery, Skin Island, dental implants

Introduction:

Current modality of head and neck cancer follows a multidisciplinary approach the principal of this approach provides optimal cancer treatment and to maximize the quality of the life for the patient with restoration of form and function for example young healthy patient with a mandibular defect is best Reconstructed using an osteocutaneous free flap at the time of tumor resection . The ladder for reconstruction of the head and neck region starting from direct closure and skin grafting and moving forward to local flaps region cutaneous and myocutaneous pedicled flap and finally to the wide variety of microvascular free flaps

Case report

A 60 years old male patient reported to our hospital with a chief complaint of non-healing painful ulcer in left side of mouth for 1 month. He also had difficulty in mouth opening. Further history revealed that he is a smoker for a period of 30

years, with a frequency of 6 cigarette per day. Intraoral examination, revealed ulceroproliferative lesion on left side of the retromolar trigone region, measuring about 3cm×2 cm in size. The ulcer had irregular margins and the borders were ill defined. The surface of the ulcer was covered with white slough and had an erythematous border it was also tender on palpation, patients mouth opening was about of 28 mm .The movements of the tongue where not affected. [Figure 1]

[Figure 1] Lesion involving the retromolar trigone



Patient's haematological investigations revealed hemoglobin level of 10 mg/dl but no change in other biological constants. Computer Tomography[CT] scan of the affected area showed large

moderately enhanced soft tissue density arising from retromolar with erosion of mandibular Buccal cortex region with regional lymph node involvement [figure 2]. Histopathological study of the biopsy tissue it showed features of squamous cell carcinoma and based on the correlative above clinical and laboratory findings the lesion was diagnosed as oral squamous cell carcinoma of retromolar trigone staged as stage IV [T3, N1, M0]

[Figure 2] soft tissue density arising from retromolar with erosion of mandibular buccal cortex



Because of the involvement of mandibular bone and regional lymph nodes Hemimandiblectomy with radical neck dissection up to level I- III lymph nodes

was decided as the treatment of choice [figure 3] on the day of surgery harvesting for Fibula osteoseptocutaneous flap was marked in left leg [figure 4] and perforators were identified using Doppler and marked. Layer by layer dissection was done on left leg. Subperiosteal dissection was done. Fibula bone was exposed. Osteotomy of 13 cm length of fibula bone was marked and osteotomy was done. Peroneal vessels were identified, dissected and included in fibula graft with skin paddle of 5x2cm. This was incised and removed as osteomyocutaneous free flap. Free fibula graft was osteotomised and shaped as ascending segment and horizontal segment, which were fixed with 2 hole plate and screws between ascending and horizontal segment. Four hole plate and screws between fibula bone and right mandibular segment [figure5] Soft tissue defect was closed with skin paddle from fibula bone and primary closure of the defect was done. Microvascular anastomosis was achieved between neck

vessels and osteomyocutaneous graft vessels. Vitality of flap was checked and No 12 drain placed was in the neck before closure. From right thigh, split skin graft was harvested and it was used to cover the donor site in the left leg. No post-surgical complication were reported and sutures were removed after 15 days. The patient is put under radiotherapy for a period of one month. Now Patient is currently under observation for period of one year without any complication are recurrence. [Figure 6]

[Figure 3] Hemimandiblectomy



[Figure 4] Fibula osteoseptocutaneous flap marked in left leg



[Figure 5] Four hole plate and screws between fibula bone and right side mandible



[Figure 6] After 1 year follow up



Discussion

Perhaps most significant contribution to the management of mandibular defect in the past 3 decades is the development of microsurgical free tissue transfer^{1, 2}. The fibula has become the flap of choice for reconstruction of most segmental mandibular defects. The main advantage of fibula osteoseptocutaneous is that provide excellent quality of bone for osseointegration it can use for both lateral segment and anterior arch reconstruction³. Use of reconstruction plate is avoided because the soft tissue flap gradually shrinks, local continuous movement of mandible distorts the plate. Boyd et al⁴ and Blackwell et al⁵ proposed the intraoral and extraoral plate exposure mechanism, inevitable pressure necrosis of the skin is due to pressure produced by the plate with in a period of time⁶, so reconstruction plate are avoided in these case. Fibula osteoseptocutaneous flap provides excellent bone width for placement of osseointegrated implants in majority of

cases than any other flap⁷. dental rehabilitation can be done either immediately or delayed⁸, immediate placement of implants may cause compromised bone viability which results in implant malposition. Placement of implant in irradiated bone may results in failure to osseointegrate or fracture of reconstruction⁸. Particularly in the patients with malignancy immediate implant placement is not an option. 5 to 6 month follow up is required for safe placement of implants⁹. Microvasuclar reconstruction provides excellent functional replacement of head and neck cancer in recent days. Fibula osteoseptocutaneous is a first three dimensional flap serve as a work horse for reconstruction of mandibular defect with several advantage¹⁰. Case selection is key factor to determine Osseo integration of immediate implants during surgery. Further study and long term follow up is necessary to achieve prosthetic rehabilitation of microvascular

reconstruction with fibula osteoseptocutaneous flap.

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