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Original Research

Knowledge and Attitude about Reconstruction Flaps for Head and Neck Onco Surgery amongst post graduate OMFS Students- A Qualitative Study

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***ABSTRACT*:**
Aim: Purpose of the study was to evaluate the knowledge as well as assess the attitude of post-graduate students in oral and maxillofacial specialty about reconstruction flaps used in Head and Neck Onco surgery. **Methodology:** Around 120 post graduate students specializing in oral and maxillofacial surgery were enrolled for this study. The questions were based on choice of flaps in various surgical sites like maxillary, mandibular and combined reconstruction as well as complications and challenges they faced in handling such cases as well as their knowledge about the prognosis of each type of reconstruction flap. **Results:** In our study, it was noted that around 76% of participants preferred fibular flap for maxillary reconstruction. Radial forearm free flap (RFFF) was the option of choice for 88.9% of participants, for reconstruction of oral cavity defects incurred in onco surgery. Around 65.6% of participants are in favor of using fibular osteo-cutaneous free flap (FOFF) is preferred for mandibular reconstruction. **Conclusion:** Much more practice and training is required to equip the post-graduate students for handling the reconstruction area after onco surgery. Knowledge needs to be updated with the latest advances with the help of seminars, continuing dental education program.
Keywords onco surgery, reconstruction flaps, head and neck tumors, RFFF, PMMF.

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INTRODUCTION

The current scope of Oral & Maxillofacial Surgery (OMFS) includes complex cranio-maxillofacial procedures, which has necessitated extensive surgical training. OMFS in India has taken ownership of several procedures such as cleft and craniofacial surgery, oral oncology and microvascular reconstruction.[1] Reconstruction of head and neck defects after tumor resection is still a challenge to reconstructive surgeons. These complex defects have extensive loss of mucosa, bone, soft tissue and skin. Ideal reconstruction should replace all these structures to achieve acceptable cosmetic and functional outcome.[2] The field of head and neck reconstructive surgery is a dynamic one. Advances made in the last decade are mostly secondary to expanded use of microvascular free flaps.[3] Several flaps, including the anterolateral thigh, fibula osteo-cutaneous, and supra-fascial radial forearm fascio-cutaneous free flaps, have emerged as workhorse flaps for reconstructing a wide variety of defects. As the anatomy of these flaps has become more familiar, their reliability and versatility have increased. Reliable wound closure without exposure of vital structures is no longer the only priority. Preserving function, including speech and swallowing, and restoring appearance are the

goals in every reconstruction. Free flap success rates now routinely exceed 95 percent or better at most centres. On top of this, minimizing flap donor site morbidity is an important consideration. Because of the high rate of recurrence as well as long-term complications following major head and neck resections and reconstructions, preservation of recipient vessel options and flap donor sites should also be a consideration.[4] Management of mid-facial defects is among the most complicated and controversial areas of head and neck oncologic reconstruction. Options include use of prosthetic obturators, pedicled flaps, and free flaps, sometimes combined with grafts or alloplasts.[5] Mid-facial reconstructions with various bony and soft tissue free flaps have been described, and the best technique remains a subject of debate. One of the fundamental problems with reconstructing the mid-face is that the defects created by oncologic resection are highly variable. Such defects usually not only involve the maxillary bones, but also may include a number of adjacent facial and cranial bones, as well as soft tissues of the face, palate, and orbit.[6]

Reconstruction should be tailored to the patient's ability to cope with a long operation and the risk of substantial morbidity. The reconstructive ladder starting from skin grafts and ending with free flaps may not always be able to be followed due to anatomical and functional requirements of the defects. A large number of regional flaps have been proposed for soft tissue reconstruction of the oral cavity with varying success. Local flaps such as nasolabial flaps provide thin reliable skin tissue suitable for repairing, only again, in small defects. The pedicled flaps commonly used for oral reconstruction include pectoralis major myo-cutaneous flap, forehead flap and platysma myo-cutaneous flaps and skin flaps like submental artery flap and buccal pad of fat flaps.[7]

In 1979, the Pectoralis Major Myo-cutaneous flap (PMMCF) was well introduced by Ariyan as one of the significant reconstructive options because of its simple technical aspects (PMMCF in either its myo-cutaneous or myofascial forms has been a workhorse flap for intraoral reconstruction) and versatility.[8] In 1993, The Submental artery island flap (SMIF) was first introduced by Martin and was widely accepted by reconstructive surgeons working in the field of maxillofacial or head and neck reconstruction.[9] The radial forearm free flap (RFFF) is very useful flap for soft tissue intra-oral reconstruction. The vascular territory is reliable and offers significant versatility as either a fascio-cutaneous, fascial, or osteo-cutaneous flap.[10] In 1995, Angrigiani et al. were the first to describe the thoracodorsal artery perforator flap (TDAP) in reconstructive surgery (breast, thorax, limbs), which is also suitable for the repair of head and neck defects.[11] Successful outcomes in mid-facial reconstruction involve not only a mastery of a broad range of reconstructive flaps and craniofacial plating techniques, but also an understanding of the requirements for prosthetic rehabilitation, which is used not only in place of reconstruction in some cases, but also often in concert with local and distant tissue transfer procedures.[3]

AIM OF THE STUDY

Purpose of the study was to evaluate the knowledge as well as assess the attitude of post-graduate students in oral and maxillofacial specialty about reconstruction flaps used in Head and Neck onco surgery.

METHODOLOGY

Around 120 post graduate students specializing in oral and maxillofacial surgery were enrolled for this study. Out 120 participants, 78 were female and rest were male students. Around 15 were 1st year Post- Graduate (PG) students, 45 were 2nd year PG students and 60 were final year PG students. They were sent a questionnaire by email which were in English language and in an open-ended format.

The questions were based on choice of flaps in various surgical sites like maxillary, mandibular and combined reconstruction as well as complications and challenges they faced in handling such cases as well as their knowledge about the prognosis of each type of reconstruction flap. (Table 1) The responses of the participants received were entered in a Microsoft Excel spreadsheet and subjected to descriptive statistical analysis.

RESULTS

Only 67.8% of participants were confident to handle cases of reconstruction but they needed much more practice. In our study it was noted that around 76% of participants preferred fibular flap for maxillary reconstruction, as sufficient bone length allows multiple osteotomies to be made, if needed. This is a major advantage when separate bone segments are needed for alveolus and orbital floor. For small and medium sized palatal defects, temporalis muscle flaps were also preferred. Around 65.6% of participants are in favor of using fibular osteo-cutaneous free flap (FOFF) is preferred as a workhorse donor site for mandibular reconstruction. Vascularized bone containing flaps are generally preferred. (Table 2)

86.7% of participants were in preference for usage of osteo-cutaneous flap which they think is appropriate for skeletal reconstruction and surface realignment and bulk of soft tissue loss. These flaps have its own blood supply to augment skeletal, mucosal and cutaneous defects of Head and Neck.

Radial forearm free flap (RFFF) was the option of choice for 88.9% of participants, for reconstruction of oral cavity defects incurred in onco surgery. Pectoralis major myo-cutaneous flap (PMMF) is preferred for soft tissue reconstruction in head and neck area defects by almost 75.4% participants. Whereas around 59% of participants thought that venous thrombosis is the major complication that is encountered in reconstruction flaps, apart from other complications like bleeding, fistula, wound infection etc.

Table 1- Survey questionnaire utilized in the present study

S.NO.	Questionnaire
1	Which flap is preferred for maxillary reconstruction?
2	Which flap is preferred for mandibular reconstruction?
3	Which type of flap of used for hard tissue reconstruction?
4	Which type of flap of used for soft tissue reconstruction?
5	For oral cavity reconstruction, which site of the body is generally preferred for taking flaps?
6	Most common complication faced with the reconstruction flaps?
7	Are you confident enough to handle cases of reconstruction?

Table 2- Data extracted from survey participants.

Questions	Reply of survey participants	Percentage of participants having this preferred option
Confident to handle reconstruction flap cases	Yes	67.8%
Option for maxillary reconstruction	Fibular flap	76%
Option for mandibular reconstruction	fibular osteo-cutaneous free flap (FOFF)	65.6%
Option for hard tissue reconstruction in Head and Neck area	osteo-cutaneous flap	86.7%
Reconstruction of oral cavity defects	Radial forearm free flap (RFFF)	88.9%
Option for soft tissue reconstruction in Head and Neck area	Pectoralis major myocutaneous flap (PMMF)	75.4%
Commonest complication associated with reconstruction flaps	Venous thrombosis	59%

DISCUSSION

Surgical intervention for head and neck tumours may cause significant soft tissue, bony and skin defects. This may produce functional impairment such as swallowing and speech deficits. Thus, the principle objective of reconstructive surgery after oral cancer ablation is maintaining the functional integrity of the different areas in the oral cavity with restoration of acceptable cosmesis (aesthetic look) using local and loco-regional flaps or even free flaps.[7]

TDAP flap shares the benefits of long pedicle length and broad large surface area, yet has the additional advantages of reduced thickness and decreased morbidity when comparison is made to the LD flap.[12] According to postoperative complications, the largest volume of blood loss occurred in drain with PMMCF, longest stay time at hospital occurred with TDAP, the longest period of ICU stays occurred with RFFF.[7]

The author favours the use of osteo-cutaneous free flaps for hemi-palatomaxillectomy defects in highly functional patients with a reasonable oncologic prognosis. Besides providing better anterior projection, osteo-cutaneous free flaps offer the possibility of osseo-integrated implants for dental restoration. In terms of bony free flap selection, many donor sites have been suggested, including the fibula, scapula, radius, rib, and iliac crest.[13] The author favours the fibula because of its high-quality bone stock that easily accommodates osseo-integrated implants and tolerates the multiple osteotomies necessary to shape the bone so that it resembles the mid-facial form.[14]

Dental restoration with osseo-integrated implants is performed three to six months after fibula free flap reconstruction. In patients with significant subcutaneous adipose tissue in their fibula free flap skin paddle, thinning of the fat is usually performed simultaneous with placement of the implants. Partial or total hardware removal is sometimes necessary in order to place the osseo-integrated dental implants. Mandibular reconstruction with vascularized bone flaps transferred by microsurgical anastomosis should be considered the gold standard in oncologic reconstruction. Use of vascularized bone flaps is associated with early bony union, generally within six weeks. Vascularized bone flaps demonstrate very little bony resorption.[3]

In our study, RFFF was the choice for reconstruction of oral cavity defects after onco-surgical removal of tumor portion but many preferred PMMF for reconstruction of soft tissue in oral cavity area also. It was noted that most of the Post-Graduate students

were confident to handle cases for reconstruction, however, they also felt the need for more practice and training in this field to increase their exposure to onco surgery and reconstruction.

CONCLUSION

Much more practice and training is required to equip the post-graduate students for handling the reconstruction area after onco surgery. Knowledge needs to be updated with the latest advances with the help of seminars, continuing dental education program.

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