



BUCCAL FAT PAD: WORK HORSE IN RECONSTRUCTION OF SMALL INTRA-ORAL DEFECTS

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ABSTRACT **PURPOSE-** The aim of the study was to evaluate and review the use of buccal fat pad (BFP) in reconstruction of intraoral defect following resection of buccal mucosa, upper & lower posterior alveolus and retromolar trigone.
MATERIALS & METHODS- Total of 22 patients who underwent resection of buccal mucosa, upper & lower alveolus and retromolar trigone and were reconstructed with BFP. Each patient was evaluated on following parameters merits, demerits, size of defect, mouth opening and site of reconstruction.
RESULTS- All patients recovered within a short period of time. The yellow transposed fat turned into reddish color within a week. Patient recovered with near normal mucosa in 4 weeks. The fat graft was sufficient to cover the defect up to 4-5 cm.
DISCUSSION- BFP reconstruction was considered as a quick and easy method for intra-oral reconstruction. Rapid healing without any complications added additional advantage. High blood supply and easy access make it as a first choice for reconstruction.
CONCLUSION- BFP is an effective method for the reconstruction of defects up to 5 cm in diameter.

KEYWORDS :

Introduction

Buccal fat pad in present time has become a well-accepted choice for reconstruction of intraoral defects. It is a mass of specialized adipose tissue able to enhance inter-muscular motion of cheek, thus termed "syssarcosis" and is important in facial contour. Its appearance is distinct from subcutaneous fat and resembles orbital fat in both form and function. The aim of the study was to evaluate and review the use of buccal fat pad (BFP) in reconstruction of intraoral defect following resection of buccal mucosa, upper & lower posterior alveolus and retromolar trigone caner.

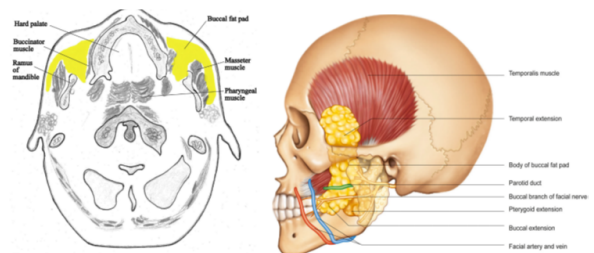
History:

The first description was made by Heister in 1732 and later in 1802 by a French anatomist Xavier Bichat and referred to in medical literature as the "boule de Bichat". Scammon and Goughran described the detail anatomy of BFP first.^[2] Then over two centuries the application of BFP was not highlighted. Later in 1977 Egyedi was the first to report the successful clinical use of the buccal fat pad.^[1] They used BFP as a pedicle graft, lined with a split thickness skin graft, for the closure of persistent oroantral and oronasal defects in four patients after resection of tumors. In 1983, Neder^[2] reported the use of the BFP as a free graft for intra-oral defects. In 1995, the pedicled fat pad graft was used in four cases of palatal reconstruction of cleft patients by Hudson et al^[3]. In separate articles in 2000, Rapidis et al.^[4] and Hao^[5] used pedicled buccal fat pad flaps for reconstruction of medium sized post-surgical oral defects most of which were malignant lesions.

Anatomy:

The buccal fat pad appears at 3 months in utero and continuously grows until birth^[14]. It protrudes at the anterior border of the masseter muscle and extends to the parotid duct, where it rests on the buccopharyngeal fascia, which covers the buccinator muscle^[16]. There is little change in the volume of buccal fat during aging, and it is approximately 10 mL^[14]. The buccal fat pad is composed of lobes and highly mobile structures (Fig.1). It has a main body and four extensions: temporal, buccal, pterygoid, and pterygopalatine^[15]. The main body is surrounded by the buccinator muscle, masseter muscle, and zygomatic arch. The main body is positioned along the posterior maxilla and covered with a thin capsule. The parotid duct pierces the buccinator at the anterior border of the buccal fat pad^[16]. The average volume of the fat pad is 9.6 mL (range, 8.3–11.9 mL). The average weight of the fat pad is 9.3 g (range, 8–11.5 g). When properly dissected, the buccal fat pad provides a 6 × 5 × 3 cm graft. The average thickness is 6 mm, and this can cover an area of 10 cm²^[16,17]. The buccal fat pad has abundant blood supplies from the maxillary artery and the superficial and deep temporal artery. There are rich capillary networks

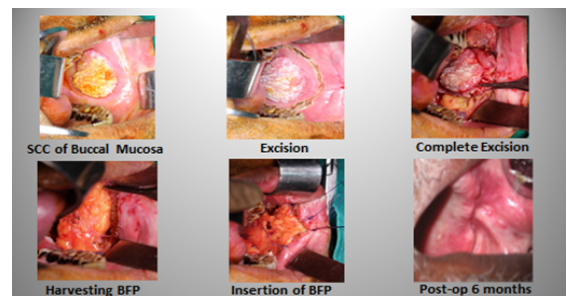
within the capsules that cover the fat pad. Arterioles enter the capsule from several directions and break up into capillary plexuses. Most of the blood from the fat pad drains into the facial vein^[16]. Stensen's duct is an adjacent anatomic structure, so it is easily encountered when extracting the buccal fat pad. Thus, surgeons should take care not to damage this apparatus.



Material & Methods

This is a retrospective study on 22 patients who underwent intraoral resection of malignancy at BSES MG Hospital, Mumbai from 1st January 2014 to 1st January 2017. Patients who underwent resection of buccal mucosa, upper & lower alveolus and retromolar trigone and were reconstructed with BFP were considered for the study. Each patient was evaluated on following parameters merits, demerits, distance between host and donor site, size of defect, mouth opening and site of reconstruction. All the patients were followed up for minimum period of 1 year post-operative. All patients were advised vigorous jaw stretching exercises for minimum period of 6 months post-operative. Neck dissection was done for those patients in whom it was indicated.

Case Report



A 42 year old male patient reported to Department of Head & Neck

Oncology, BSES MG Hospital, Mumbai with complaint of proliferative growth in left buccal mucosa. The lesion gradually increased in size over the period of 4 months. He had no known medical history or drug allergy. He is a tobacco chewer since past 15 years and consumes about 5 packets of tobacco per day. He underwent wide local excision with laser and cautery with Buccal Fat Pad reconstruction.

Results

The mean age of patient was 67.41 years. Out of 22 patients 17 were male and 5 were female. All the patients had resection defect in Upper and lower posterior alveolus, Buccal mucosa and Retromolar trigone. The average size of graft available to harvest was approx. 6x4x3cm. The recovery period was short. It took about 1 week for yellow fat tissues to turn into reddish color. Almost normal mucosa was form before 4th week. The graft was sufficient for the defect of size up to 4-5 cm. The minimum period of follow up was 6 months. Most common post-operative Complication was contracture of the mucosa. (Table.1)

Table. 1

No.	Age	Gender	Site of defect	Diagnosis	Size of graft	Follow up
1	72	Male	Upper right buccal mucosa	Squamous cell carcinoma	42mm x 35mm	7 months
2	92	Male	Upper left buccal mucosa	Squamous cell carcinoma	30mm x 35mm	9 months
3	75	Male	Upper right buccal mucosa	Squamous cell carcinoma	24mm x 20mm	8 months
4	84	Female	Upper right gingiva	Squamous cell carcinoma	12mm x 18mm	6 months
5	37	Male	Upper right molar region	Verrucous Carcinoma	30mm x 30mm	More than 1 year
6	76	Female	Upper left buccal mucosa	Squamous Cell Carcinoma	25mm x 15mm	10 months
7	66	male	Upper left molar region	Verrucous Carcinoma	20mm x 25mm	More than 1 year
8	76	Male	Left lower molar region	Squamous Cell Carcinoma	12mm x 10mm	8 months
9	66	Female	Left lower buccal mucosa	Squamous Cell Carcinoma	30mm x 40mm	More than 2 years
10	75	Male	Upper right molar region	Squamous cell carcinoma	44mm x 30mm	6 months
11	65	Male	Upper left molar region	Squamous cell carcinoma	55mm x 40mm	More than 1 year
12	77	Female	Upper left molar region	Verrucous carcinoma	30mm x 35mm	More than 2 years
13	58	Male	Upper right alveolus region	Squamous cell carcinoma	25mm x 30mm	More than 4 years
14	62	male	Lower right buccal mucosa with RMT	Squamous cell carcinoma	18mm x 20mm	9 months
15	72	Male	Lower left Posterior alveolus region	Verrucous carcinoma	25mm x 30mm	10 months
16	57	Male	Upper right molar region	Squamous cell carcinoma	40mm x 30mm	More than 5 years
17	69	Female	lower left gingival region	Squamous cell carcinoma	25mm x 30mm	More than 3 years
18	67	Male	Lower left buccal mucosa with RMT	Squamous cell carcinoma	40mm x 50mm	11 months
19	59	Male	Upper right buccal mucosa	Squamous cell carcinoma	30mm x 35mm	More than 2 years
20	62	Male	Lower left buccal mucosa	Verrucous carcinoma	20mm x 30mm	8 months
21	53	male	Upper left molar region	Verrucous Carcinoma	12mm x 20mm	More than 3 years
22	63	male	Lower left buccal mucosa	Squamous cell carcinoma	35mm x 40mm	More than 1 year

Discussion

Intra -oral defects may be obturated with prosthesis or closed with local flaps such as a buccal advancement flap, a palatal pedicled flap, or double layered closure flaps using buccal and palatal tissues^[9,10,11,12] However the aforementioned procedures produce large denuded areas ; result in decrease of vestibular sulcus and cannot be used to close large defects^[13]. Regional flaps (tongue, temporalis muscle or nasolabial flaps etc. have also been successfully used for intraoral reconstruction but , they are generally preferred for defects of much larger dimensions. In recent years, the use of BFP has gained popularity in the closure of oro-antral communications reconstruction of secondary to maxillary cyst defects and intra-oral tumor resections^[9-11].

The important advantages of using the BFP include a lower incidence of infection, absorption after reconstruction, good vascularity and it can be used in association with other flaps as a second layer.^[16] On the other hand the main disadvantage is contraction. This may result in limited mouth opening. The use of the BFP in patients with prior local radiotherapy, malar hypoplasia, thin cheeks or Down's syndrome is contraindicated^[14,16,17].

Horatiu Rotaru et al however; most cases were within 50 mm x 40 mm defect. [20,21] Our study reported reconstruction of defect of about 4-5cm. The available size for graft as reported by K. Hasibul et al. is up to 50 x 40 mm. Our study stated the average size of graft as 6x4x3cm. [22]

Conclusion

BFP graft is a safe, effective, versatile, convenient, and reliable method for the reconstruction of intra-oral defects up to 5 cm in diameter. The postoperative contracture of mucosa can be prevented by active jaw stretching physiotherapy for minimum period of 6 months.

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The largest defect reconstructed was 62 mm x 18 mm as reported by