



# Buccal fat pad as an intra oral reconstruction method in a case of oral verrucous carcinoma

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## ABSTRACT

The buccal fat pad is a special type of fat tissue, which is located anterior to the masseter muscle and deep to the buccinator muscle. It provides gliding motion between muscles, protects the neurovascular bundles from injuries and maintains facial convexity. The use of the buccal fat pad is promoted for the reconstruction of postsurgical intraoral defects in verrucous carcinoma because of its easy to harvest and rich in vascular supply.

Here we present a case of 65 years old male with verrucous carcinoma of left buccal mucosa and retro molar trigone came to the Department of Oral & Maxillofacial Surgery, Dhaka Dental College & Hospital, Dhaka, Bangladesh which was successfully managed by surgical excision of lesion and reconstruction with buccal fat pad.

**KEY WORDS** - Buccal fat pad, Verrucous carcinoma, Intra oral reconstruction

## INTRODUCTION

Reconstruction of intraoral postsurgical defect is always challenging because of its anatomical complexity and special type of intraoral tissues. Various surgical procedures have been proposed for the reconstruction of intraoral defects such as primary closure, split thickness skin graft, regional flap and distant flap. The use of the buccal fat pad as a source of reconstructive materials in the closure of intraoral defects has gained popularity in the last quarter of this century because of its easy to harvest, convenient, reliable and rich in vascular supply; its use in oral defects is an attractive concept.<sup>1</sup>

The buccal fat pad lies in the masticatory space between the buccinator muscle medially and the masseter muscle laterally and it is wrapped by a thin fascial envelope. It is divided into 3 lobes - anterior, intermediate and posterior.

The principal artery supply of the buccal fat pad are derived from the buccal and deep temporal branches of the maxillary artery, from the transverse facial artery branch of the superficial temporal artery and from a few branches of the facial artery. The parotid duct, zygomatic and buccal branches of the facial nerve cross the lateral surface of the fat pad.<sup>2</sup>

The buccal extension, which contains about half of the total weight, lies superficially within the cheek and is largely responsible for the contour of the cheek. The buccal extension and main body together constitutes 55% - 70% of total weight.

The pterygoid and temporal extensions are smaller and situated more deeply. It is attached by 6 ligaments to the maxilla, posterior zygoma, inner and outer rims of the infraorbital fissure, temporalis tendon and buccinator membrane.<sup>3</sup>

The mean volume of the buccal fat is 10 ml, although the volume of the buccal fat can change throughout the life. The mean thickness of the buccal fat is 6 mm and an approximate weight of 9.3 gm.<sup>2</sup> The buccal fat pad is closely associated with the muscles of mastication and it plays an important role in masticatory function especially in the infant during suckling. Its size diminishes when the infant grown up with the accompanying growth of the surrounding facial structures.<sup>4</sup> In adult, the buccal fat pad enhances inter-muscular motion and resembles orbital fat in appearance and function.<sup>5</sup>

The physiological functions of buccal fat pad are to fill the masticatory space, acting as cushion for the masticatory muscles, to counteract negative pressure during suction in a newborn and as a rich venous net with valve like structures, possibly involved in the exo endocranial blood flow through the pterygoid plexus.<sup>6</sup>

Oral verrucous carcinoma is a rare variant of oral squamous cell carcinoma involving oral mucous membrane and also known as verrucous carcinoma of Ackermann or Ackermann's tumor. It is most commonly seen in oral cavity apart from other sites including larynx, pyriform fossa, esophagus, nasal cavity, paranasal sinuses. Oral verrucous carcinoma is slow growing with the ability to become locally aggressive if not treated appropriately, however with rare distant metastasis. Local excision is generally the choice of treatment if no lymph nodes are involved.<sup>7</sup>

Here we present a case of 65 year old male with verrucous carcinoma of left buccal mucosa and retromolar trigone came to the Department of Oral & Maxillofacial Surgery, Dhaka Dental College Hospital, Dhaka, Bangladesh which was successfully managed by surgical excision of lesion and reconstruction with buccal fat pad.

## Case reports

A 65 years old male patient came to the Department of Oral & Maxillofacial Surgery, Dhaka Dental College Hospital, Dhaka, Bangladesh with a complaint of a painless growth on left buccal mucosa and retromolar trigone last 3 years.

The history of present illness revealed that the growth was initially small in size and had been slowly growing over the period of time. Intraoral examination revealed a firm, leathery in consistency, exophytic and whitish growth present over the left buccal mucosa and retromolar trigone which was approximately 3cm × 3 cm of size its greatest dimensions. (Figure 1&2)

The growth was nontender, nonfriable and well defined with raised margins, with no history of trauma. Oral hygiene was below average. Systemic examination was unremarkable. There was no evidence of cervical lymphadenopathy.

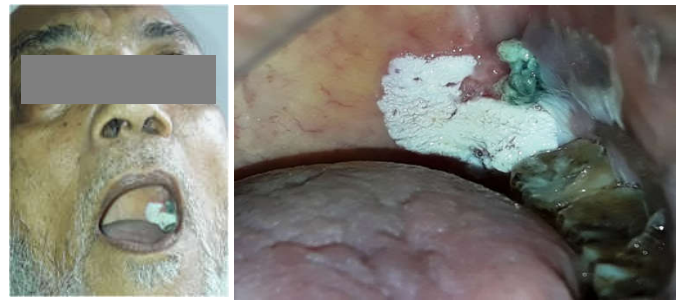
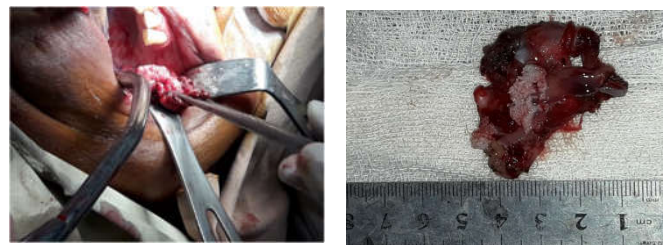


Figure 1 & 2: A whitish proliferative growth on left buccal mucosa and retro Mandibular area.

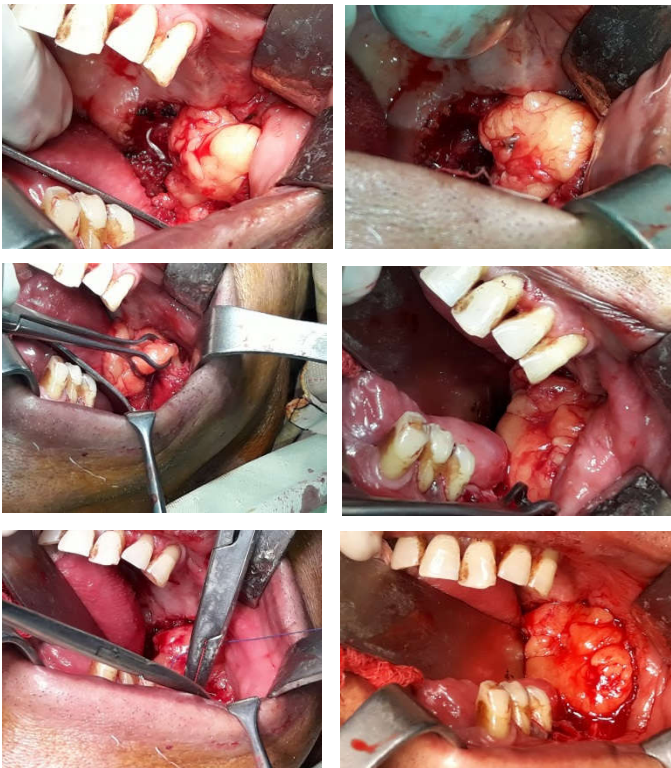
The patient gives a history of smoking cigarettes 1-2 packets per day previous 15 years and chewing tobacco in form of betel quid, 3-4 times a day, previous 10 years. The patient was diabetic but it was controlled. No other significant medical and dental history was seen.

A provisional diagnosis was verrucous carcinoma and for confirmatory diagnosis a biopsy was performed and sent for histopathological examination. The histopathological examination revealed epithelial proliferation with growth of epithelium into connective tissue showing bulbous blunt rete pegs. In the epithelium, cleft like spaces lined by a thick layer of parakeratin extend from the surface deep into the lesion, chronic inflammatory cells were present. Based on these findings a final diagnosis of verrucous carcinoma was confirmed.



(From left to right) Figure 3: Per operative photographs – During surgical excision of the lesion. Figure 4: Excised lesion with free margins of healthy tissue.

A surgical procedures were performed under general anesthesia after taking informed written consent from patient. The buccal fat pad was exposed into the defect after excision of the lesion. The buccal fat pad was approached through the excision field and an incision was made through the buccal vestibule near the molar tooth. Blunt dissection was performed through the buccinator muscle and surrounding fascia allowed the fat pad to herniate into the mouth. Special care was taken not to disrupt the delicate structures and vascular plexus. After the exposure of fat pad, suction was strictly prohibited to prevent the aspiration of fat. The necessary amount of fat pad was then gently grasped by using a tissue holding forceps and then mobilized, brought and spread over the defect area. The fat was sutured ideally and gently to the margins of the defects by 3/0 vicryl. Special care was taken not to be given any stretch with in the tissue. After that the buccal fat was left uncovered for healing process and epithelization. (Figure 3,4,5,6,7,8,9,10)

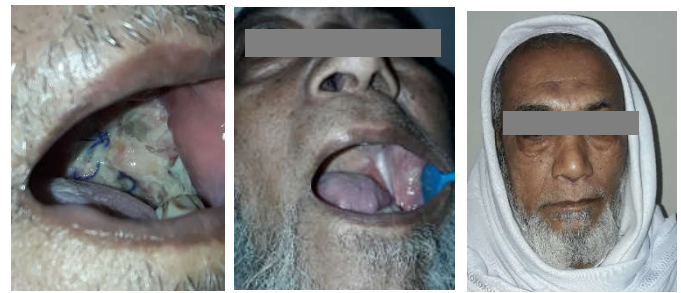


From upper to lower and left to right; Figure 5: Expose of the buccal fat pad  
Figure 6: The Buccal fat pad, Figure 7: The buccal fat pad exposed & harvested.  
Figure 8: Spreading buccal pad fat over the defect and entire surgical defect  
reconstructed with buccal pad fat. Figure 9: Buccal pad of fat sutured to the  
defect Figure 10: Final suture completed and entire surgical defect  
reconstructed with buccal pad fat.

Post operatively the patient was put on nasogastric feeding tube for 2 weeks and instructed to avoid brushing and trauma to the operated area. Antibiotics and analgesics were prescribed 3 times daily for 7 days. The patient was assessed postoperatively every day until discharged from the hospital.

The postoperative histopathological examination of the specimen revealed same reports when incisional biopsy was done and final diagnosed was verrucous carcinoma.

The patient was followed up for 4 weeks postoperatively and were advised for final assessment after 3 months. Signs of epithelialization of buccal fat pad was started by the end of the first week and it was completely epithelialized at the end of the first month. Adequate epithelisation of the fat was observed in the first month (Figure 11) and complete healing was observed after 6 weeks. After 3 months following the operation, status of the defect, complete healing of the wound and presenting complains were assessed. Patient satisfaction was also evaluated with special regards to their adequate mouth opening, satisfactory speech, masticatory function and acceptable facial aesthetic. After 3 month follow up of the patient showed excellent healing and complete epithelization of the grafted area. No signs of recurrence were evident at 12 months post operatively and the buccal mucosa was found to heal well and there was no change in the facial contour or in cheek fullness. (Figure 12, 13).



From left to right; Figure11: Epithelisation of buccal fat pad at the surgical site. 1 month postoperative. Figure 12: Twelve months after postoperative period shows no sign of recurrence. Figure 13: Facial contour or cheek fullness was not changed after 12 months later.

## DISCUSSION

The buccal fat pad was mentioned for the first time by Heister in 1732 and after that it was better described by Bichat in 1802. A pedicled buccal fat pad flap was first described by Egyedi<sup>8</sup> in 1977 for the closure of oroantral communications after oncological resections. In 1983, Neder<sup>9</sup> utilized the buccal fat pad as a free grafting materials in the oral cavity. Rapidis<sup>10</sup> Hao<sup>11</sup> used pedicled buccal fat pad flaps for reconstruction of medium sized post-surgical oral defects for malignant lesions. Many literature reviewed that the buccal fat pad can be used as an intraoral reconstructive materials for the various reconstructive purpose of oral cavity. More recently the buccal fat pad has achieved a great importance in the field of aesthetic facial surgery with special regards to the modification of facial contours and the malar prominence.<sup>12,13</sup> A pedicled buccal fat pad has been employed in the closure of surgical defects following tumor excision<sup>14</sup> excision of leukoplakia and oral submucous fibrosis.<sup>15,16</sup>

Rapidis et al.<sup>10</sup> stated that in maxillary defects measuring more than 4 X 4 X 3 cm, the possibility of partial dehiscence of the flap is high due to the impaired vascularity of the stretched ends of the flap. In case of buccal or retro molar area defects up to 7 X 5 X 2 cm, reconstruction is achieved due to the underlying rich vascular bed which was comparable to our case reports.

The epithelization of the buccal fat pad started within first week of the reconstruction and ended within sixth weeks. Samman et al.<sup>5</sup> was first reported about the histological nature of the healing process of the buccal pad fat. He stated that no fat cells were seen in sections taken from healed sites, indicating at least partial fibrosis of the fat tissue. Histologically epithelization with surrounding tissues is completed after 4-6 weeks.<sup>5,10</sup> The case reported here simulates with the epithelization period which mentioned here.

The success rate of buccal fat pad in the reconstruction of oral defects is quite high in all the previous articles.<sup>5,11,14</sup> The technique is so simple that it has been performed by different surgeons in a very highly successful way.<sup>15</sup> The only disadvantage is that it can be used for once.



However, it is important to ensure that correct incision, careful manipulation of the flap, exact knowledge of its size limitations, complete coverage of the surgical defect, tensionless suture and strict postoperative instructions to patients for proper epithelization and reduced minimum postoperative complications.

## CONCLUSION

The buccal fat pad is a simple, convenient and reliable reconstructive method for the reconstruction of intraoral defects. It is an excellent way to achieve the desired outcome. In conclusion we consider the buccal fat pad as a suitable method for the closure of intra oral defects especially in oral verrucous carcinoma because of good vascularization, easy to harvest, minimal donor site morbidity and minimal complications.

## REFERENCES:

- Alkana A, Dolanmaz D, Uzuna E, Erdemc E. The reconstruction of oral defects with buccal fat pad. SWISS MED WKLY 2003; 133: 465-470
- Mohan S, Kankariya H, Harjani B. The Use of the Buccal Fat Pad for Reconstruction of Oral Defects: Review of the Literature and Report of Cases. J. Maxillofac. Oral Surg. (Apr-June 2012) 11(2):128-131  
<https://doi.org/10.1007/s12663-011-0217-x>  
PMid:23730057 PMCID:PMC3386420
- Hasibul K, Nakai F, Nakai Y, Jinzenji A, Iwasaki A, Ogawa T, Ohbayashi Y, Miyake M. Intra oral reconstruction with buccal fat pad: Recent applications of autologous tissue transplantation as a local flap. JPRAS Open 10 (2016) 33e39
- Stuzin JM, Wagstrom L, Kawamoto HK, Baker TJ, Wolfe SA. The anatomy and clinical applications of the buccal fat pad. Plast Reconstr Surg. 1990; 85:29-37  
<https://doi.org/10.1097/00006534-199001000-00006>, PMid:2293733
- Samman N, Cheung LK, Tideman H. The buccal fat pad in oral reconstruction. Int J Oral Maxillofac Surg 1993; 22: 2-6.  
[https://doi.org/10.1016/S0901-5027\(05\)80346-7](https://doi.org/10.1016/S0901-5027(05)80346-7)
- Racz L, Maros TN, Seres-Sturm L (1989) Structural characteristics and functional significance of the buccal fat pad (corpus adiposum buccae). Morphol Embryol (Bucur) 35:73-77
- Sidana S, Ahuja SA, Bhagat T. Buccal Fat Pad as Pedicled Graft in a Case of Oral Verrucous Carcinoma. Int J Oral Health Med Res 2017; 3(6):117-120.
- Egyedi P. Utilization of the buccal fat pad for closure of oroantral communication. J Maxillofac Surg.1977; 5:241-244  
[https://doi.org/10.1016/S0301-0503\(77\)80117-3](https://doi.org/10.1016/S0301-0503(77)80117-3)
- Neder A. Use of buccal fat pad for grafts. Oral Surg Oral Med Oral Pathol.1983; 55:349-350  
[https://doi.org/10.1016/0030-4220\(83\)90187-1](https://doi.org/10.1016/0030-4220(83)90187-1)
- Rapidis AD, Alexandridis CA, Eleftheriadis E. Angelopoulos: the use of the buccal fat pad for reconstruction of oral defects: review of the literature and report of 15 cases. Oral Maxillofac Surg.2000; 58:158-163  
[https://doi.org/10.1016/S0278-2391\(00\)90330-6](https://doi.org/10.1016/S0278-2391(00)90330-6)
- Hao SP. Reconstruction of oral defects with the pedicled buccal fat pad ap. Otolaryngo Head Neck Surg. 2000; 122:863-867  
[https://doi.org/10.1016/S0194-5998\(00\)70015-5](https://doi.org/10.1016/S0194-5998(00)70015-5)
- Jackson IT. Anatomy of the buccal fat pad and its clinical significance. Plast Reconstructive Surg. 1999; 103:2059-60.  
<https://doi.org/10.1097/00006534-199906000-00042>
- Ramirez OM. Buccal fat pad pedicle flap for midface augmentation. Ann Plast Surg.1999; 43:109-18.  
<https://doi.org/10.1097/0000637-199943020-00001>  
PMid:10454314
- Baumann A, Ewers R. Application of the buccal fat pad in oral reconstruction. J Oral Maxillofac Surg. 2000; 58:389-92.  
[https://doi.org/10.1016/S0278-2391\(00\)90919-4](https://doi.org/10.1016/S0278-2391(00)90919-4)
- Ho KH. Excision of cheek leukoplakia and lining the defect with pedicled fat pad graft. Br Dent J 1989; 166(12):455-6.  
<https://doi.org/10.1038/sj.bdj.4806884>
- Yeh CJ. Application of the buccal fat pad to the surgical treatment of oral submucous fibrosis. Int J Oral Maxillofac Surg 1996; 25(2):130-3.  
[https://doi.org/10.1016/S0901-5027\(96\)80058-0](https://doi.org/10.1016/S0901-5027(96)80058-0)
- Pandolfi PJ, Yavuzer R, Jackson IT. Three layer closure of an oroantralcutaneous defect. Int J Oral Maxillofac Surg 2000; 29(1): 24-6.  
<https://doi.org/10.1034/j.1399-0020.2000.290105.x>  
[https://doi.org/10.1016/S0901-5027\(00\)80118-6](https://doi.org/10.1016/S0901-5027(00)80118-6)