J Oral Med Oral Surg 2025;31:4
https://doi.org/10.1051/mbcb/2024044

https://www.jomos.org

JOMOS
Journal of Oral Medicine and Oral Surgery

Case Report

Abdominal dermal fat pad as interposition graft for closing fibrotomy defect in advanced oral submucous fibrosis (OSMF): a case series

Varsha Sunil Manekar[1], Priyanka Shetty[1,*], Ashlesha Ghormode[2], Aneizo Khruomo[1], Pooja Umathe[1], Mehak Kataria[1], Shrampurna Karemore[3]

[1] Oral & Maxillofacial Surgery, Government Dental College & Hospital, Nagpur 4400003, Maharashtra, India
[2] Government Dental College & Hospital, Aurangabad, Maharashtra, India
[3] Darekar Dental Clinic, Pune, India

(Received: 29 June 2024, accepted: 27 November 2024)

Keywords: Oral submucous fibrosis / fibrotomy / abdominal dermal fat pad graft / oral screen

Abstract – Fibrotomy and interposition of the graft in surgical defects followed by intense physiotherapy is the accepted surgical management for OSMF. The use of Abdominal Dermal Fat Pad (ADFP) as an inter-positional graft has proven successful in advanced OSMF cases. Ease of harvest with abundant volume, minimal morbidity, and ease of contouring to fit any defect, healing without complication. Additional benefits were marked improvement in mouth opening, and excellent healing of intraoral defect by re-epithelisation, with minimal donor site morbidity even after one year of follow-up, proving more beneficial as compared to other grafts.

Introduction

Oral submucous fibrosis (OSMF), a chronic precancerous condition, was 1st described by Schwartz in 1952, its prevalence in South East Asia ranges from 0.04% to 24.4% [1]. Fibrotomy and interposition graft (IPG) in surgical defects followed by intense physiotherapy is the management of choice in advanced cases when mouth opening is less than 25 mm.

Materials advocated in literature are buccal fat pad (BFP), bilateral tongue flaps (BTF), nasolabial flap (NLF) and radial forearm free flap (RFFF). Abdominal dermal fat pad (ADFP) graft is used in the reconstruction of various intraoral defects, but its effectiveness in OSMF is still in its primitive steps.

The aim of the study is to report the use of ADFP as an IPG following fibrotomy in surgical management of OSMF.

Case presentation

3 patients in the age range of 21–35 years were diagnosed with advanced Oral Submucous Fibrosis, as confirmed by two expert clinicians, independently.

Initially, as per protocol, conservative treatment was prescribed; later, with the patient's consent, a comprehensive treatment plan of surgical management involving fibrotomy followed by interposition with ADFP.

Surgical procedure

The fibreoptic-assisted nasotracheal intubation was performed.

Intraoral incisions were given from the corner of the mouth to the retromolar region bilaterally while avoiding Stenson's duct. Resection of fibrous bands was performed and the interincisal opening of 20 mm and above were recorded. A bilateral coronoidectomy was performed and Extraction of bilateral maxillary and mandibular third molars was done. The forceful intraoperative mouth opening of an average of 40 mm was achieved in the 3 cases.

The ADFP graft was harvested by a transverse elliptical incision of 8 cm in length in a curvilinear fashion 3 cm below the umbilicus on either side. This size graft was used for two surgical sites left and right. The incision was placed 3 cm below the umbilicus to avoid the belt line and prevent visible scars. The skin flap was carefully separated removing the epidermis and leaving the dermis intact onto the graft (Figs. 1–3).

* Correspondence: shettypriyanka424@gmail.com

Fig. 1. Incision marking.

Fig. 2. Donor site after graft harvesting.

Fig. 3. Harvested abdominal dermal fat pad.

The ADFP graft of 5–6 mm, consisting of 2 mm of the dermal layer and 3–4 mm of fat tissue, was cautiously separated from underlying fatty tissue. With the help of surgical blade no. 15, the entire graft was then completely detached and divided into two halves. Utmost care was taken to prevent herniation of the peritoneal cavity by limiting the dissection superficial to Scarpa's Fascia.

The harvested ADFP was then gently adapted over the intraoral defects bilaterally and supported by bolster dressing (Fig. 4). The graft was sutured to the oral mucosae with 3-0 Vicryl. Haemostasis was achieved.

All patients were given an oral screen postoperatively made of silicone sheet bilaterally to act as an oral splint preventing dislodgement of graft and act as a guide for interference in occlusion.

Aggressive oral physiotherapy

To prevent contractures and relapse patients were instructed and trained with:

- Ballooning exercise – blow the balloons 15–20 times a day for 1 month.
- Wooden stick exercises.
- Physiotherapy with Heister's jaw exerciser – after a latent period of 10 days.

Follow-ups of one week, 1 month, 6 months, and 1 year were noted and readings were recorded in a tabulated manner (Tab. I).

The donor site showed excellent healing with minimal scarring in all the patients.

Discussion

The rationale of surgical intervention in OSMF is the physical division of fibrosed tissue with postoperative maintenance of the gap created by muscle release [2]. With wide array of surgical techniques, each having its advantages and limitations, Nonetheless, the choice of treatment largely depends on the site and size of defect, donor site availability, and morbidity, postoperative vigorous physiotherapy to prevent recurrence.

BFP, being relatively simple, provided successful coverage of the fibrotomy defects. Limited anterior reach of harvested buccal fat followed by healing with secondary intention resulted in subsequent fibrosis and gradual relapse [2,3].

The main disadvantage of extended NLF was an unpleasant extra oral scar, intraoral hair growth, broadening of commissure, and pinched appearance of the lips [3,4].

Distant flaps were widely accepted but intraoral flap debulking and need for microvascular expertise were challenges encountered [2,5].

Superficial temporal fascia flap along with split skin graft provided good results; however increased operating time and risk of damage to facial nerve made its use debatable [6]. Superiorly based platysma myocutaneous flap provided adequate thickness, good viability and vascularity but was associated with risk of neck contracture [6].

Borle *et al.* [7] suggested Inter-incisal opening is better after a follow up of 1 month with BFP and of 2 years with non-BFP flaps.

The success of using fat as a reconstructive material owes to its excellent biocompatibility, flexibility, and resistance to infection.

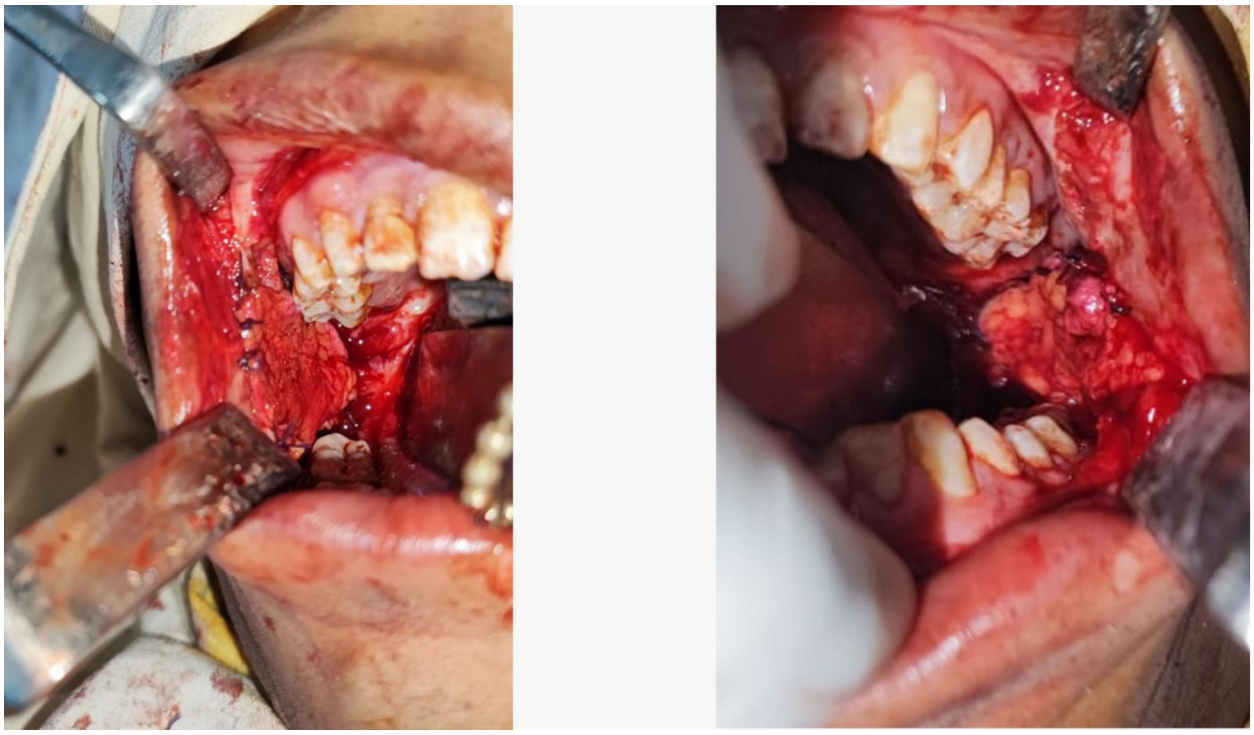

Fig. 4. Graft in place on the recipient side.

Table I. Mouth opening recorded in millimeters with vernier calipers.

Cases	Pre-op	Intra-op	1 week	1 month	6 months	1 year
Case 1	5	44	15	35	28.5	30
Case 2	7.9	40	13.7	32	26.3	28
Case 3	10.8	45	15.6	39	31.8	35

Girish *et al.* reported the use of ADFP in OSMF, and reported improvement in mouth opening from 9.2 to 30 mm after 18 months [8].

Kania *et al.* compared ADFP with NLF and reported improvement in mouth opening by 22.4 and 36 mm after six months in ADFP and NLF respectively [9]. The average reduction of 25–70% of the implanted volume of adipose tissue was reported [10].

The final volume retained depends on droplet size. The small droplets undergo complete resorption in 3 months whereas large lipid droplets undergo atrophy [11].

The ADFP, a non-vascularized graft, can be easily harvested with abundant volume, and minimal morbidity and can be readily contoured to fit any defect, complete healing without any complication. Marked improvement in mouth opening, excellent healing of intraoral defect by re-epithelisation, minimal donor site morbidity after one year of follow-up were the positive findings and were the highlights of ADFP graft on comparison with other grafts.

ADFP contains stem cells, and have relative resistance to resorption [12].

The volume of fat trumps the vascularity when used as interpositional material. In the early phase, the graft undergoes ischemia and resorption (mean 40%). The remaining graft absorbs fat and undergoes adipogenesis, and dynamic remodelling by the end of six months [13].

This has been considered while deciding the thickness as fat globules disintegrate rapidly and a sufficient amount is desired for uptake at the recipient site. The fat layer adjacent to the recipient side persists, whereas the dermis with a superficial fat layer gets necrosed and discarded in 8–15 days. Normal mucosa can be seen underlying this necrosed graft, which matures with time.

Conclusion

The novel technique of ADFP harboured appreciable results in terms of excellent uptake and gain in mouth opening. With minimum number of adverse effects, ADFP is steadily gaining momentum in the field of OSMF as well. Further large-scale studies are recommended for the use of ADFP to its full-scale effect.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Conflicts of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data availability statement

All the data will be made available upon request to the corresponding author. The references of the data have been added in the references list of this article.

References

1. Coronoidectomy, masticatory myotomy and buccal fat pad graft in management of advanced oral submucous fibrosis Kothari 2012
2. Bande C, Dawane P, Gupta MK, Gawande M, Rode V. Immediate versus delayed aggressive physical therapy following buccal fat pad interposition in oral submucous fibrosis – a prospective study in Central India. Oral Maxillofac Surg 2016;20:397–403.
3. Arakeri G, Boraks G, Patil SG, Aljabab AS, Merkx MAW, Carrozzo M, Brennan PA. Current protocols in the management of oral submucous fibrosis: an update. J Oral Pathol Med 2017;46:418–423.
4. Balaji SM. Versatility of nasolabial flaps for the management of severe trismus in oral submucous fibrosis. Indian J Dent Res 2016;27:492–497.
5. Shivanand NB, Chavre S, Chandrashekar NH, Chauhan S. Bi-paddled radial forearm free flap in the reconstruction of bilateral buccal mucosal defects – a case series. Oral Surg Oral Med Oral Pathol Oral Radiol 2016;122:e107–e109.
6. Rajkumar K, Roy Chowdhury SK, Saxena V, Sinha R. Superiorly based platysma myocutaneous flap for reconstruction of intra oral defect following fibrotomy in oral submucous fibrosis: report of a case. J Oral Maxillofac Surg Med Pathol 2018;30:138–141.
7. Borle R, Nimonkar P, Hingnikar P, Khatib MN, Gaidhane AM, Zahiruddin QS. Efficacy and safety of different interpositional flaps and grafts for closing fibrotomy wound in patients of oral submucosal fibrosis: a systematic review with meta-analysis. Med Sci 2019;23 (100): 1031–1048.
8. Kumar NG, Thapliyal GK. Free dermal fat graft for restoration of soft tissue defects in maxillofacial surgery. J Maxillofac Oral Surg 2012;11:319–322.
9. Kania J, Dhuvad J, Anchlia S, Bhatt U, Dholabhai P, Nakrani A. Abdominal dermal fat graft versus nasolabial flap in oral submucous fibrosis: a randomized clinical trial. J Maxillofac Oral Surg 2022 1–9.
10. Bellini E, Grieco MP, Raposio E. The science behind autologous fat grafting. Ann Med Surg (Lond) 2017;24:65–73.
11. Mashiko T, Yoshimura K. How does fat survive and remodel after grafting? ClinPlast Surg 2015;42:181–190.
12. Wolford LM, Karras SC: Autologous fat transplantation around temporomandibular joint total joint prostheses: preliminary treatment outcomes. J Oral Maxillofac Surg 55:245.
13. Roy Choudhury A, Acharya S, Bhutia O, Bhalla AS, Manchanda S, Pandey RM. Is there a difference in volumetric change and effectiveness comparing pedicled buccal fat pad and abdominal fat when used as interpositional arthroplasty in the treatment of temporomandibular joint ankylosis? J Oral Maxillofac Surg 2020;78:1100–1110.

Cite this article as: Manekar VS, Shetty P, Ghormode A, Khruomo A, Umathe P, Kataria M, Karemore S. 2025. Abdominal dermal fat pad as interposition graft for closing fibrotomy defect in advanced oral submucous fibrosis (OSMF): a case series. *J Oral Med Oral Surg*. 31, 4: https://doi.org/10.1051/mbcb/2024044.