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Case Report

# Salvage of Mandibular Hardware with the Facial Artery Musculomucosal (FAMM) Flap

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## Abstract

The Facial Artery Musculomucosal (FAMM) flap first described by Julian Pribaz in 1992 has been proven effective for the reconstruction of numerous intraoral defects, lip, and nasal lining defects. The usage of hardware such as dentures and dental prostheses in conjunction with a FAMM flap reconstruction has been shown to provide a competent environment for functional rehabilitation and aesthetics that allow patients to return to their preoperative quality of life. To our knowledge, there are no reports describing the applicability of the FAMM flap in mandibular hardware coverage and salvage. In this case report, a 76-year-old nonsmoker female with history of several chronic medical conditions and previous resection of a symphysial mandibular ameloblastoma reconstructed with plate fixation and no bony reconstruction experienced multiple instances of mandibular hardware exposure and oral incompetence. Her mandibular hardware was ultimately successfully covered with a FAMM flap, and after subsequent revisions the patient regained oral competence and her oral functional status was improved. This case demonstrates that the FAMM flap is a viable local reconstructive option for exposed mandibular hardware in patients who are otherwise poor candidates for free flap reconstruction.

**Keywords:** Facial Artery Musculomucosal Flap; FAMM Flap; Mandibular Plate; Symphysial Mandibular Ameloblastoma; Case Report

## Abbreviations

FAMM: Facial Artery Musculomucosal

## Introduction

The Facial Artery Musculomucosal (FAMM) flap first described by Julian Pribaz in 1992 has been proven effective for the reconstruction of numerous intraoral, lip, and nasal lining defects [1]. The flap's pliability, robust axial pedicled design, presence of superficial mucosa, and excellent texture and color match renders it one of the most effective and a versatile option for local closure of hard and soft palate, alveolus, tonsillar fossa, nasal floor, cheek, tongue, floor of mouth, and upper and lower lip defects, while still allowing for primary closure of the donor site [1-5]. Techniques with various modifications including "islanding" and "tunneling" have been described which amplify the flap's range of application [2,6,7]. Complications such as partial or complete necrosis, venous congestion, wound infection, functional facial mimetics, cosmesis, and oncologic recurrence have been reported at acceptable rates [2,8-11]. The usage of hardware such as dentures and dental prostheses in conjunction with FAMM flap reconstruction has been shown to provide a competent environment for functional rehabilitation and aesthetics that allow patients to return to their preoperative quality of life [9,12,13]. To our knowledge, there are no reports describing the applicability of the FAMM flap in mandibular hardware coverage and salvage.

## Case Report

Patient is a 76-year-old nonsmoker female with history of diabetes, hypertension, cardiomyopathy, morbid obesity, dyslipidemia, and Meniere's disease who underwent resection of a symphysial mandibular ameloblastoma that was reconstructed with a spanning plate fixation and no bony reconstruction. The procedure was complicated with repeated plate exposure in the vestibule and poor oral competence despite surgical revision, replacement

of the reconstruction plate, and multiple inferior gingivobuccal local flaps. In addition, her course was complicated by a DVT/PE for which she was treated with 6 months of anticoagulation, and by poor oral intake requiring a PEG tube and transfer to a rehabilitation facility. Due to the patient not being a candidate for a free flap reconstruction, and the morbidity associated with a pedicled pectoralis major flap the decision was made to utilize a FAMM propeller flap based on the right facial artery for initial adequate coverage of the plate. A Dingman retractor was placed, the course of the facial artery was Dopplered and marked, then an axial flap was elevated as previously described in the literature containing mucosal, orbicularis oris, and pedicled on the facial artery [Figure 1A-1E]. Consequently, the patient was discharged from rehabilitation facility and underwent dental rehabilitation with placement of permanent osseointegrated dental implants along with the placement of a secured temporary dental bridge which resulted in a new lateral sub-centimeter exposure of the plate.

**Figure 1:** Patient photographs showing the intraoperative markings for the FAMM flap figure 1. (A), elevation of the flap (B), rotation of the flap for adequate coverage of the mandibular plate hardware (C), s/p placement of the flap over desired site and primary donor site closure (D), and postoperative result (E).

**Figure 2:** Pre-operative and post-operative results after revision at 1 month.

To address her partial lateral oral incompetence the patient subsequently underwent revisional operations consisting of pedicled myocutaneous lower lip rotation advancement flap based on the labial artery, and local adjacent tissue transfer to deepen the right gingival buccal sulcus (vestibuloplasty) and allow for placement of the permanent bridge of the dental implants. For coverage of the newly exposed hardware site, the prior FAMM flap was raised, rotated, and advanced over the exposed plate (part of this flap in combination with the local flaps and muscular release was used to line the deepened gingivobuccal sulcus resulting in significant deepening of the sulcus and tensions free coverage of the plate). Additionally, the patient underwent adjacent tissue transfers with floor of the mouth turndown flap and a sliding gingival musculomucosal quadrangular flap for a 2-layer closure of the of the exposure. Following these procedures, the patient achieved adequate persistent coverage of her mandibular plate and overall improvement in her oral competence.

## Discussion

The FAMM flap is an excellent autologous reconstructive option for local closure of intra-oral tissue defects. With regards to its utility in conjunction with intra-oral hardware, there have been previous reports of success with application of the FAMM flap to

improve oral cavity structure and function after oncologic resection and placement of dental implants [9]. Previous studies have also shown successful application of the FAMM flap for closure of soft tissue defects of the mandibular vestibule [13]. However, data is still lacking with regards to application of the FAMM flap for coverage of exposed mandibular plates. To the best of our knowledge, no previous study has detailed the application of the FAMM flap in this context.

Our case represents one example where the FAMM flap was successfully employed to improve a patient's oral functional status after multiple instances of mandibular hardware exposure. It is important to note that this patient was not a good candidate for a free flap due to her chronic medical conditions, thus the pedicled FAMM flap provided a viable alternative. Two revisions were necessary given the extensiveness of the defect, but ultimately the goal was achieved in facilitating adequate hardware coverage and improvement in oral functional status. Close follow up was maintained for greater than 6 months and the patient was pleased with the final result as she showed significant improvement in oral competence.

## Conclusions

The Facial Artery Musculomucosal (FAMM) flap is a viable autologous reconstructive option for patients with exposed mandibular hardware who are otherwise poor candidates for free flap reconstruction and is an alternative to pectoralis based or supraclavicular based pedicled flaps. To the best of our knowledge, no previous study has demonstrated successful application of the FAMM flap in this context. In our present case, a 76-year-old patient with multiple chronic medical conditions and several instances of exposed mandibular hardware causing oral incompetence benefitted from reconstruction with a FAMM flap and post-operative revisions. Follow up was maintained for over 6 months and ultimately the patient showed improvement in her oral functional status after recovery from the procedure.

## Acknowledgements

None.

## Conflict of Interest

None of the authors or any member of his or her immediate family has funding or commercial associations (e.g., consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted article.

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