Case Report

Platysma Flap for Mandibular Reconstruction: A Case Report

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ABSTRACT

The platysma myocutaneous flap (PMF) is a versatile option for reconstructing small to medium-sized defects in the oral cavity due to its thin, pliable nature and reliable vascularity. This case report illustrates the successful application of a PMF for mandibular reconstruction following marginal mandibulectomy in a 58-year-old patient with acanthomatous ameloblastoma. The flap provided adequate soft tissue coverage with minimal donor site morbidity. While the initial recovery was uneventful, a late complication of screw loosening in the reconstruction plate was managed effectively. At 1-year follow-up, the surgical site demonstrated successful healing with a viable flap and no functional impairment. This case highlights the PMF's utility in oral reconstruction, emphasizing its simplicity and reliability when applied with meticulous surgical technique and vigilant postoperative monitoring.

Key words: Platysma myocutaneous flap, Ameloblastoma, Mandibular Reconstruction

The platysma myocutaneous flap (PMF) was first described in 1887 by Austrian surgeon Robert Gersuny for repairing a cheek defect and was introduced to the English literature in 1978 by Futrell et al (1). It has gained recognition as a valuable reconstructive option with several potential benefits**.** The platysma extends from the lower border of the mandible and the skin of the lower face down to the clavicle and upper chest. It is classified as a musculocutaneous or myocutaneous flap, the platysmal flap can be utilized as either a pedicled or a free flap, depending on the vascular supply and reconstructive requirements. The platysma muscle is located superficial to the muscular fascial sheath. Its primary blood supply comes from the submental branch of the facial artery, while the superior thyroid artery, occipital artery, and posterior auricular artery serve as secondary sources. Venous drainage is primarily through the external jugular vein, with the submental vein acting as a secondary drainage pathway (2). Despite its advantages, the platysma flap is underutilized in contemporary mandibular reconstruction.

This case highlights the effectiveness of PMF in reconstructing soft tissue defects following marginal mandibulectomy for acanthomatous ameloblastoma. The case underscores its ease of harvest, reliable vascularity, and satisfactory long-term outcomes, offering insight into its practical application in select clinical scenarios.

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CASE PRESENTATION

A 58-year-old male presented with a chief complaint of a gradually enlarging, painless swelling in the anterior mandibular region, persisting for the past 3 years. The swelling was insidious in onset and not associated with pain, paresthesia, or discharge. The patient was systemically healthy, with no significant medical, surgical, or familial history. There was no history of trauma or deleterious oral habits.

On extraoral examination, mild facial asymmetry was noted due to a diffuse swelling extending from the right corner of the mouth to the chin, predominantly involving the left mandibular region (Figure 1). No regional lymphadenopathy was detected, and temporomandibular joint movements were within normal limits. Intraorally, a well-demarcated, firm, non-tender swelling was evident, extending from tooth 35 to 46 (Figure 2a). The lesion was non-compressible, non-pulsatile, and covered by slightly erythematous but intact mucosa, with no signs of ulceration, discharge, or surface breach.

An orthopantomogram (OPG) and contrast-enhanced computed tomography (CECT) scan revealed a well-circumscribed, multilocular radiolucent lesion involving the alveolar bone from tooth 35 to 46, with resorption of roots of the teeth involved, suggestive of a benign odontogenic neoplasm (Figure 3). Incisional biopsy was done under local anesthesia and it confirmed the diagnosis of acanthomatous

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ameloblastoma, with evidence of tumor infiltration into the mandibular bone and focal involvement of the overlying mucosa.

The surgical procedure was planned under general anesthesia after obtaining informed surgical consent from the patient. A visor incision was made, followed by supraplatysmal dissection to expose the inferior mandibular border. The lesion, spanning from tooth 35 to 46, was identified. A marginal mandibulectomy was performed, ensuring a 1 cm tumor-free margin on both sides while preserving approximately 1 cm of the inferior border of the mandible. To enhance mandibular stability, a 2.5 mm titanium reconstruction plate was fixed along the preserved inferior border. For soft tissue reconstruction, a platysma flap was harvested through subplatysmal dissection, transposed via the labial tunnel, and secured to reconstruct the defect. The surgical site was closed meticulously to optimize functional and aesthetic outcomes (Figure 4).

The patient experienced an uneventful initial recovery with no evidence of infection, hematoma, or flap compromise. The surgical site remained intact, and the platysma flap demonstrated excellent perfusion. Close monitoring revealed no signs of dehiscence, necrosis, or functional deficits in the early postoperative period (Figure 2b).

On 6-month follow-up, screw loosening was detected in the titanium reconstruction plate, identified through routine imaging and clinical assessment. This complication was promptly managed by removing two loosened screws under local anesthesia, ensuring no compromise to mandibular stability or flap integrity. No further hardware-related issues were observed (Figure 5). At subsequent follow-ups, with the most recent at 1 year, the surgical site demonstrated successful healing. The platysma flap remained viable, with no signs of ischemia, infection, or significant edema. Soft tissue coverage was adequate, and the patient reported no pain, discomfort, or functional impairment. The aesthetic and functional outcomes were maintained, with no additional complications noted (Figure 2c).

Figure 1: Depicting extraoral diffuse mandibular swelling and mild facial asymmetry

Figure 2: (a) Depicting the intraoral extent of swelling from 35 to 46; (b) Depicting the flap at 1 month follow-up; (c) Depicting adequate healing at 1 year follow-up.

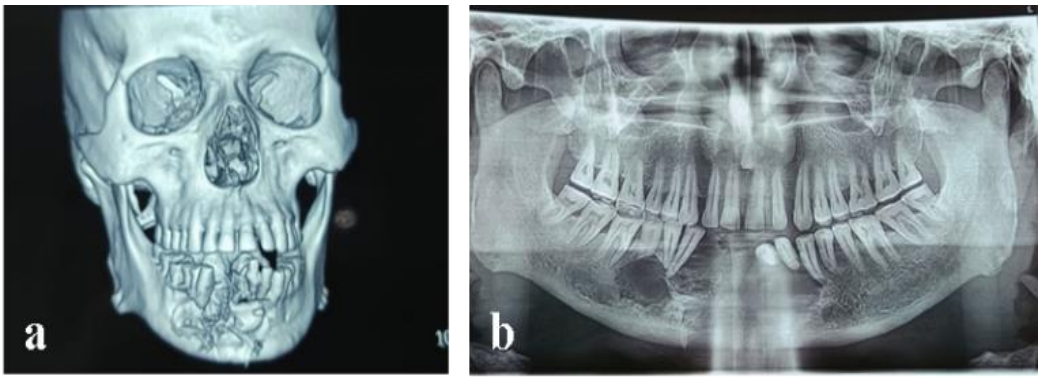

Figure 3: Depicting radiographic finding of multilocular appearance with resorption of 45,32,33,34.

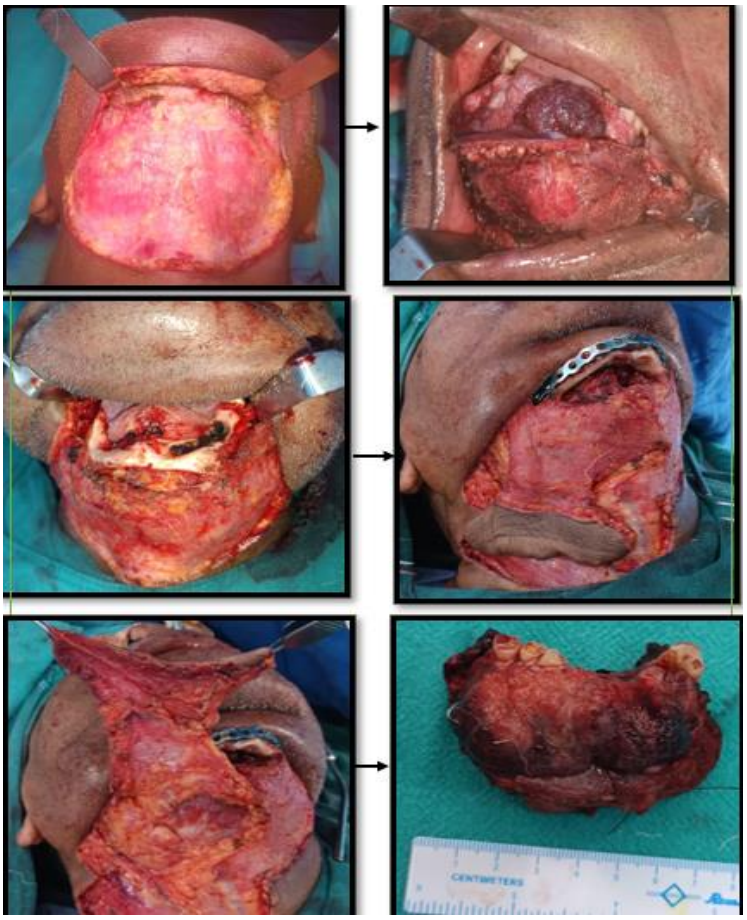

Figure 4: Illustrating key intraoperative stages: Exposure of the mandibular lesion, Resection of the ameloblastoma, and harvesting of the platysma myocutaneous flap

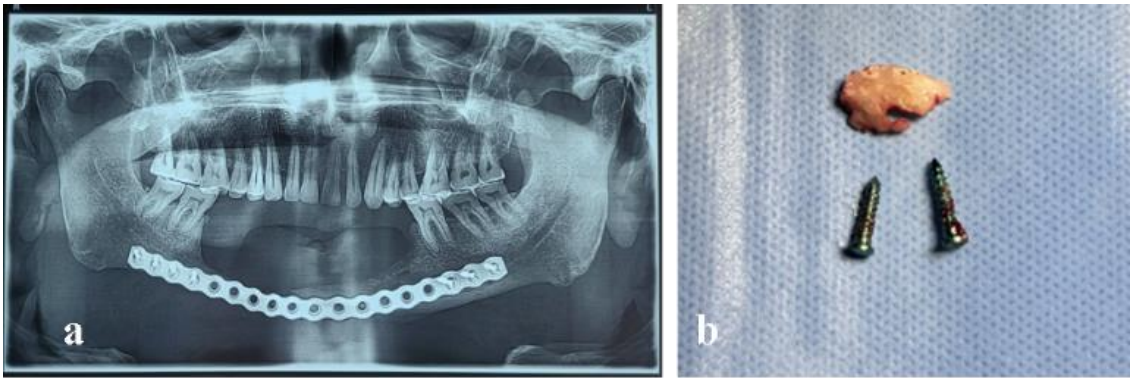

Figure 5: Depicting postoperative radiograph after debridement and removal of 2 screws along with infected cortical plate

DISCUSSION

Platysma myocutaneous flap is a reliable option for reconstructing small to medium-sized defects in the oral cavity, lower face, and pharynx, as demonstrated in the discussed patient undergoing mandibular reconstruction following marginal mandibulectomy for acanthomatous ameloblastoma (3). Its thin, pliable nature facilitated precise soft tissue coverage over the mandibular defect, preserving functional and aesthetic outcomes. The flap's harvest within the operative field minimized operative time and donor site morbidity, a key advantage over free flaps (4). The PMF's vascular supply, derived primarily from the submental branch of the facial artery with collateral contributions from the occipital and superior thyroid arteries, ensures viability, even when facial vessels are sacrificed, as supported by Joseph I. Helman et al. (5). However, its limited bulk restricts its use to defects up to 5–7 cm, and contraindications like prior neck irradiation or sternocleidomastoid excision require careful patient selection to prevent complications such as flap necrosis or dehiscence, which occur in 5–10% of cases (6). In the case report, preoperative planning and tension-free flap inset contributed to an initially uneventful recovery.

Complications, though rare, include flap ischemia, wound dehiscence, and hardware-related issues, as observed in the

case report where screw loosening in the titanium reconstruction plate was managed by removing two screws under local anesthesia, preserving mandibular stability. This aligns with Bede et al (2019), who reported a 7% incidence of plate-related complications in mandibular reconstructions (7). Flap necrosis, linked to vascular compromise or excessive tension, can be mitigated using intraoperative indocyanine green fluorescence angiography to confirm perfusion, while Doppler ultrasound aids preoperative vascular assessment. Minor dehiscence is managed conservatively with wound care, and infections require culture-guided antibiotics (8). The case report's success, with no evidence of flap compromise, infection, or functional deficits at follow-up, underscores the PMF's utility in resource-limited settings or for patients unsuitable for complex reconstructions. Its adaptability and low morbidity make it a valuable option, provided surgeons address its limitations through meticulous technique and vigilant postoperative monitoring.

The thin and pliable nature of the muscle and skin paddle makes the platysmal flap an excellent choice for reconstructing oral subsites such as the tongue, floor of the mouth, buccal mucosa, and soft palate, where minimizing bulk is essential for optimal functional and aesthetic outcomes. It causes minimal functional impairment in swallowing, speech, and denture fitting, while also providing an excellent color match with facial skin (9). The cosmetic outcome is enhanced by the primary closure of the neck incision. Additionally, the flap can be harvested quickly without the need for new dissection fields. The platysma myocutaneous flap enables extensive tumor resection while reducing the need for advanced microsurgical expertise (10).

The platysmal flap offers several advantages for both the donor and recipient sites, making it a valuable reconstructive option in head and neck surgery. The recipient site advantages are (a) Thin and Pliable: Ideal for reconstructing oral subsites such as the tongue, floor of the mouth, buccal mucosa, and soft palate, where minimal bulk is essential for function and aesthetics (11). (b)Good Vascularity: Ensures reliable healing and enhances graft survival, especially in compromised tissues (12). (c) Versatile Design: Can be used as a musculocutaneous or myocutaneous flap, with the option for a pedicled or free flap transfer (12). (d) Minimal Donor Site Morbidity: Due to its superficial location and redundancy, it does not cause significant morbidity when harvested. While, the donor site advantages are (a) Easily Accessible: The platysma is located in the anterior neck, allowing for a straightforward and rapid harvest (13). (b) Primary Closure Possible: In most cases, the donor site can be closed primarily without the need for a skin graft, reducing morbidity. (c) Hidden Scar: The incision is typically within natural neck creases, making postoperative scarring less conspicuous. (d) Minimal Functional Loss: Since the platysma is primarily involved in facial expression rather than essential functions, its harvest does not significantly impact movement or strength (14)

The application of the PMF in oral reconstructions is subject to specific contraindications and limitations, primarily influenced by its vascular reliability and patient-related factors. Historically, the survival of the platysma flap was thought to depend on an intact facial artery. However, recent evidence suggests that flap viability can be maintained through alternative arterial contributions, such as the occipital or superior thyroid arteries, even when the facial artery is sacrificed (15). Despite this, caution is advised in cases involving submandibular lymph node metastasis, and it is recommended avoiding the flap when facial artery and vein preservation is not feasible due to oncologic concerns (16).

The following conditions are considered contraindications for the use of the platysma flap. (a) Prior Neck Dissection: Disruption of regional vascular and lymphatic structures may compromise flap viability (7). (b) Facial Artery Ligation: Although not strictly essential, ligation may increase reliance on less predictable collateral vessels (16). (c) Preoperative Radiation Therapy: Radiation-induced arteritis and skin changes, such as fibrosis or atrophy, elevate the risk of flap failure (17). (d) Ipsilateral Facial Nerve Paralysis: This may affect flap dynamics and vascular integrity. (e) Sternocleidomastoid Muscle Excision: Removal of the sternocleidomastoid muscle, either previously performed or planned, leaves neck vessels inadequately protected, increasing the risk of complications as the flap and skin alone provide insufficient coverage (18).

In patients with a history of neck irradiation, the platysma flap should be used judiciously due to the potential for post-radiation vascular damage and compromised skin integrity (19). Additionally, the flap's reliability appears comparable whether the facial vessels are preserved or sacrificed, provided alternative vascular supplies are adequate. The use of cervical flaps for immediate reconstruction after operation in twenty-one patients in whom the neck received 4,000 to 6,000 Rad six weeks prior to operation is reported (20). Successful repair was achieved in a majority of these patients. Careful preoperative assessment, including imaging and vascular mapping, is essential to evaluate the flap's feasibility in complex cases (10). These considerations highlight the need for individualized treatment planning to optimize outcomes when employing the platysma flap in oral reconstructions.

CONCLUSION

Platysma flap, as exemplified in the case report, is an effective reconstructive tool for small to midsize head and neck defects, balancing simplicity, reliability, and functional preservation. Its successful application in the reported mandibular reconstruction highlights its role in achieving favorable outcomes when tailored to appropriate indications. By integrating preoperative imaging, intraoperative vascular assessment, and evidence-based complication management, surgeons can optimize the PMF's efficacy, ensuring robust soft tissue coverage and minimal morbidity in selected cases.

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