CASE REPORT

COMPLICATIONS OF PECTORALIS MAJOR MYOCUTANEOUS FLAP IN OROFACIAL RECONSTRUCTION—CASE REPORT WITH REVIEW OF LITERATURE

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ABSTRACT

The goal of reconstruction using Pectoralis major myocutaneous flap (PMMF) and Deltopectoral flaps (DP) is to achieve wound closure in a single stage. Therefore any complications related to the flaps demands an additional second surgery which is termed failure and can be partial or complete. However these complications can be managed conservatively and it heals successfully. The PMMF still remains a workhorse in head and neck reconstruction despite its high rate of complications. In this article we have reported a case of oral cancer reconstructed using PMMF and DP flaps and discussed the complications encountered and also reviewed the same as in literature.

INTRODUCTION:

Following oral oncologic surgery, the goal of immediate reconstruction utilizing myocutaneous flaps is, wound closure using a one stage procedure. The Pectoralis major myocutaneous flap (PMMF) is the most acceptable flap for reconstruction inspite of recent advances in microsurgical techniques. It is a highly versatile flap and can replace the more conventional flaps like Deltopectoral flap. The use of this flap though associated with high complication rate, it has achieved the reparative goals in most of the patients. Therefore, any flap related complications that necessitates a second procedure, and long term impact of these postoperative events must be carefully studied to understand their mechanisms. In this article, we have reported the complications encountered with the use of this flap and the probable causes for the same with this flap.

Case Report:

A 55-year-old female reported to the Department of Oral and Maxillofacial Surgery, M.S. Ramaiah Dental College and Hospital, Bangalore on 1 March 2012 with a complaint of pain in her right cheek region, swelling on the right side of the face and reduced mouth opening since 1 year.

The pain began a year ago after she took treatment from an ENT surgeon for a small swelling on the right buccal mucosa, which was diagnosed as buccal cyst. This was followed by recurrence of the lesion for which the ENT surgeon kept aspirating it few times but the pain and swelling did not subside. She was then referred to an Oral and Maxillofacial surgeon, who performed an excisional biopsy for which the report is not available. The patient received multiple steroid injections intraorally for the fibrosis and restricted mouth opening. However, there was no improvement in her condition. A CT scan was, therefore done and the lesion was reported as a soft tissue lesion in the right cheek.

Subsequently, she was referred to M.S. Ramaiah Dental College for further treatment on March 1, 2012. The dull, aching pain was insidious in onset, continuous in character
and had no aggravating and relieving factors. Her mouth opening was about 1 finger-breadth.

There was no significant medical or dental history. She gave a history of chewing tobacco 5-6 times daily for more than 4 years. She had stopped the habit. On general physical examination, she was a moderately built and nourished female with no systemic ailments. Local extra-oral examination revealed a solitary, diffuse swelling in the right cheek region. Supero-inferiorly, it extended from level of ala tragus line to lower border of the mandible. Antero-posteriorly, it extended from the corner of the mouth to the anterior border of the ramus. The skin over the prominence of the swelling was non-pinchable, with slight induration. Intra-orally, a firm reddish ulcer-proliferative growth, 2x3cm in size, was present in the right buccal vestibule, extending from the mesial aspect of 46 to distal aspect of 48. On palpation, all inspectory findings were confirmed. In addition, a solitary submandibular lymph node was palpable. Clinical impression was carcinoma of the right buccal mucosa and the TNM staging of the lesion was T2N1M0.

Ultrasound of the right cheek was done which revealed an irregular hypoechoic mass, 31x29x21 mm in size, adjacent to the mandible. A small sub-mental and a right sub-mandibular lymph node having a short axis diameter of <10mm was also reported. FNAC of the swelling was done and then an incisional biopsy was performed. Histopathology features were suggestive of moderately differentiated squamous cell carcinoma. A CT scan of the mandible was done which did not show any bony invasion. The final diagnosis of the lesion was carcinoma of the right buccal mucosa. (T1N0M0)

The treatment plan was devised; it included wide local excision of the lesion along with marginal mandibulectomy and supra-omohyoid neck dissection followed by reconstruction. The procedure was performed on March 16, 2012. Modified apron with lip split incision was used.

During the supra-omohyoid neck dissection, lymph nodes up to level III were cleared and sent for frozen section examination. The histopathological examination revealed no evidence of metastasis.

Wide local excision of the lesion, including 4x3cm of the skin in the buccal region and lining from mucosa 3cm posterior to the corner of the mouth up to the retro molar trigone were removed. The margins of the wide local excision were, super inferiorly, maxillary vestibular sulcus downwards up to the marginal gingiva of the mandibular posteriors. Marginal mandibulectomy were performed, extending from the first premolar socket to the retro molar trigone. Maxillary premolars and molars were extracted.

The marginal mandibulectomy was later converted to a segmental mandibulectomy to improve access and avoid pressure on the pectoralis major myocutaneous flap (PMMF) that was raised on the right side to reconstruct the intra-oral defect. A delta-rectoral (DP) flap was raised on the right side to reconstruct the skin defect on the right cheek. A skin graft from the left thigh was taken to cover the under surface of the DP flap.

The histopathology examination of the excised specimen reported it as poorly differentiated squamous cell carcinoma with a staging of T1N0Mx and stage grouping I. There was no metastasis in the lymph nodes and all surgical margins were free from tumor invasion.

Post-operatively, the patient was given care in the intensive care unit for 3 days. She was extubated on the 1st post-operative day.

The extra-oral dressings were regularly changed and the oral hygiene was closely monitored. However, after 15 days, inflammation of the extra-oral suture line on the face, submental region and on the sites of the PMMF and DP flaps was observed. Additionally, there was wound dehiscence intra-orally at the superior border of the PMMF where it was sutured to the oral mucosa in the maxillary sulcus. The defect was regularly irrigated and dressed with gauze till it got covered with healthy granulation tissue. Wound dehiscence in the sub-mental suture line was observed and on the 18th post-operative day, a culture and sensitivity swab was taken from the site. The report revealed the presence of Acinetobacter species, which was susceptible to Ceftapirzone with Sulbactum. Necrosis of the upper margin of the DP flap was also seen.

On the 20th post-operative day, the patient was taken up for debridement and re-suturing of the DP flap and the neck suture line. The distal DP flap margin was trimmed and it was inserted in the sub-mental region and raw area on the cheek was allowed to heal secondarily. On the 33rd post-operative day, the patient complained of an oro-cutaneous fistula in the submental region along with discharge from the undersurface of the DP flap. The DP flap was again debrided and reinserted in the submental region on the 35th post-operative day. The raw areas in the cheek and in the region of the DP flap donor site (right shoulder region) were covered with a skin graft taken from the left thigh.

There were no further complications and the DP flap was divided on the 49th post-operative day. The patient was discharged on the 52nd post-operative day. During her stay in the hospital, the patient underwent a psychiatric evaluation in view of clinical depression. She was given counselling and prescribed anti-depressant drugs. In view of prolonged naso-endogastric feeds, a gastroenterology opinion was sought and she was prescribed antacids.

**Discussion:**

The goal of immediate reconstruction utilizing myocutaneous flaps is wound closure using a one stage procedure. Therefore, any flap related complications that necessitates a second procedure, the morbidity and long term impact of these postoperative events must be carefully studied to understand their mechanisms.

Shah et al reported 56 patients (26%) developed dehiscence of the PMMF suture line. Significant risk factors for wound dehiscence include female gender, major resections for oral tumors, mandible resection, the presence of other systemic diseases, and use of the flap for mucosal lining. Mehta et al observed suture line dehiscence in 32 patients (14.5%) and reported that 21 of these progressed to develop other flap...
related complications. They also observed significant risk factors for wound dehiscence, which included the female gender, serum albumin less than 3gm/dl, flap disposition (bipedicled), and prior chemotherapy. Patients with wound dehiscence alone also had a longer duration of hospitalization. In our patient, wound dehiscence was observed intraorally at the supero posterior border of the inset of the PMMC flap which was allowed to granulate and heal by secondary intention. This could be attributed to the inadequate length of the PMMC flap/Defect extending into the maxillary vestibule which caused tension at the suture line. However, the patient did not have underlying systemic diseases.

Ueda et al observed wound dehiscence which led to development of an oro cutaneous fistula in a 53 yr. old male with squamous cell carcinoma extending from the alveolar ridge to the floor of the mouth. After hemimandibulectomy and upper neck dissection, the PMMF was transferred for the reconstruction of the floor of the mouth. The blood supply of the flap was good and complete survival was observed. However, the healing of the end of the resected mandible and the flap was not good and a fistula developed. The authors reported that one of the causes of the formation a fistula is the breakdown of the suture line between the mandible and flap. The lateral margin of the skin paddle is often in contact with the mandible and adhesion is difficult. Our patient also developed an oro cutaneous fistula in the submental region. Ueda et al recommended an oblique resection of the mandible where the flap margin touched and inserting the flap to overlap the mandibular part.

The literature reports that the complication with these flaps ranges between 16 to 62% though total flap necrosis is rare and these partial flap loss can be managed conservatively. Shah et al in their study however reported that majority of the cases were treated conservatively while 26% required additional surgical procedures and only 2 patients needed revision flap.

Based on reviewing the literature, we conclude that although the overall complication rates are high, these complications can be managed conservatively and complete healing can be achieved. However, the post-operative care is prolonged; with regular wound dressings, extended RT feeds duration, additional courses of antibiotics and lengthy hospital stay.

Hence despite the recent advances in reconstruction like the free flaps, these conservative pedicled flaps still remains a choice for immediate reconstruction and are the workhorse in the head and neck reconstruction. There are various studies reporting excellent results with versatility in using these flaps to reconstruct various defects of the oral cavity. In the present case also, we encountered partial loss which was managed conservatively.

It can be concluded that the flap related complications can be minimized by proper planning with regard to the length of the PMMC flap, the defect location and the type of mandibular osteotomy. Harvesting PMMC flap of adequate length, its use in defects which are located in the mandibular region and a oblique mandibular osteotomy can reduce complication rates.

References:


