Pectoralis major myocutaneous flap is regarded as the workhorse for reconstruction in many head and neck surgeries and was first described by Ariyan in late 1970s. McGregor and Reed in 1970 described the blood supply to skin flaps as axial or random. PMMC has both axial blood supply (distinct arteriovenous circulation along its long axis) in its proximal part as well as random supply (communicating vessels in dermal subdermal plexus) in the distal part beyond the pectoral branches of thoracoacromial artery when skin and underlying rectus fascia are included.

Pectoralis major being a thick fan shaped muscle has origins from medial half of clavicle, sternocostal from manubrium and body of sternum with second to sixth costal cartilage and from rectus fascia. It is inserted into the crest of greater tuberosity of humerus. The fibers are directed from horizontal to oblique. The nerve supply is from lateral pectoral nerve which arises from the lateral cord of brachial plexus and is located medially and from medial pectoral nerve which is located laterally and originates from medial cord of brachial plexus. Lateral pectoral nerve is closely related to pectoral branch of the thoracoacromian artery and forms the neurovascular bundle. The arterial supply is from the pectoral branch of thoracoacromian artery, the lateral thoracic artery from axillary artery and from superior thoracic artery to a lesser extent. The pectoral branch of thoracoacromian artery is the main supply and it lies between pectoralis major and minor muscle, engulfed in the fascia running inferiorly along the oblique fibers of pectoralis major muscle up to the fifth or sixth rib being medial to the nipple.

Salient points in operative steps to harvest PMMC flap:

Outline the course of thoracoacromian artery (it lies medial to the line joining the acromian process to the xiphoid process and a perpendicular to it drawn from the midportion of clavicle) and the size and configuration of skin paddle (it should lie between lateral edge of sternum medially and nipple laterally) and muscle required to cover the defect. If deltotrapezius flap is additionally required it has to be elevated first from its distal portion on the medial aspect of the thoracoacromian artery. Lateral thoracic artery can be preserved by dividing the humeral head of pectoralis major muscle. The initial incision for the flap is along the lateral border of the outlined skin for the pectoralis major flap and it is carried down up to the muscle. After identification of the vascular pedicle the elevation is done deep to the fascia above the pectoralis minor muscle. The required skin and the subcutaneous tissue is incised and sutured with the superficial fibers of the underlying muscle. The rest of the skin and the subcutaneous tissue are dissected free from the superficial fibers of the underlying muscle. The rest of the skin and the subcutaneous tissue is incised and sutured with the superficial fibers of the underlying muscle. The rest of the skin and the subcutaneous tissue is incised and sutured with the superficial fibers of the underlying muscle. The rest of the skin and the subcutaneous tissue is incised and sutured with the superficial fibers of the underlying muscle.

The lateral dissection is done as per mobilization required but the vascular pedicle must be intact. Excessive twisting of PMMC is avoided and the skin margins are sutured to the defect site. Two separate suction drains are given, in the neck and in the anterior chest wall. The chest wall may be closed by suture after mobilization of the surrounding skin or a split skin graft may be used in large defect. Clindamycin is preferred in post operative period as it binds to leucocytes and reaches to the demarcated end of the flap as compared to cephalosporins.
Complications: Loss of the flap in the distal aspect, infection, obscuring early recurrence of disease, limited use of ipsilateral upper extremity when used in cases where spinal accessory nerve has been sacrificed and hair growth over the flap are the most common reported complications. PMMC flap can be used as a single paddle, double paddle, side by side paddle, large skin paddle and inframammary paddle and it can be combined with deltopectoral flap as per requirement.

Buccal carcinoma is the most common site of oral carcinoma in south East Asia with betel quid consumption, smoking and alcohol being strong associating factors for carcinoma development.

Study Period, Area
The study was conducted in Medical College and Hospital, Kolkata from June 2009 to September 2012. The cases were selected from the patients attending the out patients department of ENT during this period. There were 14 patients all male, mean age of presentation being 46 years (36-58 years) with squamous cell carcinoma of cheek involving the buccal mucosa. Of the 8 patients who had external skin involvement, 3 had margins <1cm from mandible and 3 had mandibular involvement. In the remaining 6 patients there was no skin involvement but 2 of them had mandibular invasion by the tumour, the rest had a margin >1cm from the mandible. 10 patients were T4a while the rest 4 were in T3. 10 of them had N2b and the rest 4 had N1 nodal status. 4 had diabetes and 5 had hypertension as co morbidity. Histopathologically they were in moderately to poorly differentiated infiltrating squamous cell carcinomas.

Bipaddle PMMC flap was done in 1 patient, 4 had PMMC with Deltopectoral flap where 2 was diabetic and rest had single paddle PMMC with skin grafting on inner aspect where 2 were diabetic.

Segmental mandibulectomy was done in 3 patients, 3 had marginal mandibulectomy and hemimandibulectomy was done in 2 cases. In all the cases during neck dissection sternocleidomastoid was deliberately cut to accommodate the PMMC flap and for 3 cases we had to cut the spinal accessory nerve as it was not possible to save it during resection. IJV was preserved in all the cases. The neck dissection was done with the help of monopolar diathermy except the facial vessels which were ligated. Post operative radiotherapy was given in all cases after discharge.

Follow up
There was one incidence of necrosis of PMMC and DP flap in a diabetic patient and gaping in PMMC flap in two diabetic patients. Rest of the cases had good post operative outcome in a follow up of an average of 3 years. Restricted mobility of ipsilateral upper limb was noted in cases where the spinal accessory nerve was sacrificed.

Conclusion: PMMC is an excellent distal flap for closure of defects in neck and lower face. It doesn’t give way easily even in post radiotherapy period. Diabetics have a tendency for flap necrosis.

References