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# Outcomes of Pectoralis Major Myocutaneous Flap for Reconstruction of Cheek Defects in Female Oral Squamous Cell Carcinoma Patients

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## ABSTRACT

General objective of this study is to evaluate the outcome of Pectoralis Major Myo cutaneous flap in female OSCC patients for reconstruction of cheek defects in a tertiary care hospital of Bangladesh. Specific objectives were to assess the success and failure rate of Pectoralis Major Myo-cutaneous flaps (PMMFs) reconstruction of cheek defects developed due to surgical resection of female oral squamous cell carcinoma patients in a tertiary care hospital. Also to analyze the causes of failure and their association with complications and the association of complications with functional and aesthetic outcome. This prospective observational study carried out in department of OMFS of DDCH from January 2018 to September 2019 (19 months). Total 30 cases were selected and underwent operative treatment follow up was done at 1 month, 2 months and 3 months interval for evaluation of outcome. All the patients carried out composite resection with SOND or MRND and reconstruction by PMMC flap, failure rate of reconstruction was 26.7% which are defined by presence of major complications. Minor complications in 13(43.3%) which are managed conservatively. Major complications develop in 8(26.7%) cases like Partial flap necrosis in 3(37.5%) patients, wound infection in 1(12.5%), partial flap necrosis with intra-oral flap dehiscence in one (12.5%) patient and in 1 (12.5%) cases develop complete flap necrosis. Here major complications are significantly associated with increased age, presence of comorbidity, habit and increased flap size significantly. Also, rough surface texture, ugly scarring, speech impairment, dysphagia, restricted neck mobility also significantly associated with major complications.

***Keywords:*** *Pectoralis Major Myocutaneous Flap, Oral Squamous Cell Carcinoma, Cheek Reconstruction.*

## INTRODUCTION

Oral cancer is very disastrous disease that affects many people each year all over the world and it is the eleventh most dominant cancer in the world according to the World Health Organization (WHO). Oral cancer mostly affects in the area of lips, tongue, mouth, salivary glands and oropharynx. In Bangladesh more than 7000 people are newly diagnosed each year and among them 6.6% people are died. There are 13, 00,000 cancer patients in Bangladesh, with about 200,000 patients newly diagnosed with cancer each year. Among these all-cancer patients, 7120 were affected in lip, oral cavity and pharynx. The cancer registry reported that the 25 percent were males and similar number were reported for female [1]. Oral cancer is currently a major global health issue. In developing countries it's estimated to be the 3rd most common malignancy after cancer of Cervix & Stomach. Surgical excision plays a major role in the Treatment Of oral cancer therefore reconstruction is required to promote wound healing and optimize function along with cosmetic appearance [2]. Resource constrains remain a major factor in treatment selection in developing countries. Out of pocket expenditure is significantly higher for patients undergoing free flap reconstruction [3]. Sometimes after surgical excision of tumor depending on the depth and size of the lesion reconstruction of oro-facial defect is required. Reconstruction options varies from local pedicaled and micro vascular free flaps depending on defect size, site, preferred vascular anatomy, color, texture etc. Though free flap reconstruction is

the standard of care for an oral cavity defect arising from tumor excision, the pectoralis major myocutaneous flap is still considered the workhorse for reconstruction in the majority of cancer centers in developing countries like our Bangladesh. Reliability, versatility, and ease of harvest have been the hallmarks of the PMMC flap. Despite the advent of vascularized free tissue grafts, the PMMC flap remains a widely used pedicled flap for reconstruction of soft tissue defects in the oro-facial region [4]. At first, Riyan reported the use of the PMMC flaps in head and neck reconstruction in 1979. The success of this flap has been recognized and surgeons began to use the PMMC flap more routinely in head and neck reconstruction [4]. The PMMC flap is still considered as ‘‘workhorse’’ flap for soft tissue reconstruction of the head, face, and neck (HFN) region, particularly in developing and underdeveloped countries [5]. It’s one stage reconstruction there is no need to change the patient’s position, the cutaneous island is large enough to cover most defects and it can be used for defects involving two epithelial surfaces. The flap with its tissue bulk corrects the neck and face contour [6]. Advantages of this flap include its easy harvest, abundant soft tissue volume, large skin paddle, relative versatility, considerable reliability, and short operating time. The disadvantages of the PMMF include excessive bulk in some situations, deformity of the thoracic wall, function impairment of the neck and shoulder, high incidence of complications and partial necrosis of its skin paddle, and possibly poor function outcome of the recipient site [7]. Another advantage is that a large size flap can be harvested because in female breasts, more redundant skin is present [8]. Although in many centers, free flap reconstruction has superseded use of the PMMC flap, it still has a very important role as a salvage flap. In many regions in which economic or infrastructural facilities limit the use of microsurgery, the PMMC flap is still a primary reconstructive option. The amount of coverage and the reach of the flap will be dependent on the individual anatomy and elevation techniques used [9]. The disadvantages of pedicle flap can include a reduced neck mobility and the need to rotate the vascular pedicle of the flap 180° when using the skin paddle. Another disadvantage can be the thickness of the flap, which is determined by the amount of subcutaneous fat between the pectoralis muscle and the overlying skin paddle, leading to possible reduced swallowing or speech function [10]. There are lot of studies worldwide regarding the outcome of pectoralis major my cutaneous flaps (PMMFs), hardly any studies are available that mentions the outcome of PMMFs in female patients. It has been presumed that complication rates after PMMF reconstruction in female patients are higher because of the presence of more adipose tissue in the flap [11]. Pectoralis major myocutaneous (PMMC) flap Maya in India head and neck cancer patients usually present in the advanced stage making PMMC flap a viable option for reconstruction. Although free flap using microvascular technique is the standard of care, its use is limited by PMMC flap is a versatile flap with an excellent reach to face oral cavity and neck region. With limited expertise and resources, owing to its robust vascularity and easy learning curve for surgeons, is still a workhorse at centers with limited resources and heavy patient load. Forty years after its first description by Ariyan and with literature reporting a complication rate of 17–63% it still holds an unmatched acceptance in head and neck reconstruction [12]. At our center head and neck, malignancies constitute a major chunk of cancers in the adult population with most patients presenting in advanced stages. PMMC flap is the principal mode of reconstruction following composite resections. It provides required bulk for a composite defect with acceptable cosmetic outcomes. The complications which r developed in PMMF reconstruction mainly are necrosis and wound infection. Necrosis is due to aging, comorbidity, increased flap size which causes impairment of vascularity. Wound infection caused by invasion of wound by microorganism. These complications greatly influence the outcome of flap.

**OBJECTIVES:**

**General Objectives:**

- To evaluate the outcome of Pectoralis Major Myocutaneous flap in female OSCC patients for reconstruction of cheek defects in a tertiary care hospital of Bangladesh.

**Specific Objectives:**

- To assess the success rate of Pectoralis Major Myo-cutaneous flaps (PMMFs) reconstruction of cheek defects developed due to surgical resection of female oral squamous cell carcinoma patients in a tertiary care hospital.
- To estimate the failure rate of this reconstruction.
- To analyze the causes of failure and their association with complications.
- To analyze the association of complications with functional and aesthetic outcome.

**METHODS**

**Study Design:** Prospective observational study.
**Place of study:** Department of Oral and Maxillofacial Surgery Dhaka Dental College Hospital, Mirpur-14, Dhaka.
**Period of study:** January 2018 to September 2019.
**Study population:** Female patients with operable oral squamous cell carcinoma involving bucco-gingival sulcus, buccal mucosa, that may or may not involving skin attending in the Oral and Maxillofacial surgery department of Dhaka Dental college and Hospital, during this study period reconstructed by PMMF.

**Selection criteria:**
Female patients with operable oral squamous cell carcinoma involving buccal mucosa, and angle of mouth that involving skin attending in the Oral and Maxillofacial surgery department of Dhaka Dental College and Hospital, during this study period. The patients were selected on the basis of certain preset inclusion and exclusion criteria.

**Inclusion criteria:**
- Female patients with respectable oral squamous cell carcinoma involving buccal mu that may or may not involving skin whose cheek defect reconstructed by PMMF.
- Female patients with diagnosed case of squamous cell carcinoma (stage III and IV).
- Age of patients range (36-65 years)
- Patients those with medical co-morbidities precluding the option of free tissue transfer to be done safely.

**Exclusion criteria:**
- Psychotic patients.
- Uncontrolled diabetes mellitus, chronic renal failure, unstable ischemic heart disease Patients.
- Patients who does not give consent.

**Sample Size:**
30 patients were taken as sample in this study. A total of 30 consecutive female oral squamous cell carcinoma of buccal mucosa may extend to BGS angle of mouth patients who were operated with wide excision of the lesion with ipsilateral mandibular resection (hemi/partial) with disarticulation followed by SOND or MRND with preservation of spinal accessory nerve and internal jugular vein. Patients age ranges from 36 -65 years were included here. Purposive sampling was followed as per inclusion and exclusion criteria. Sampling technique: Convenient purposive sampling

**Data analysis:**
In each case, the parameters final outcome from the reconstruction, presence or absence of major and minor complications were analyzed compared in relation to the following variables: age, co-morbidity, habit, flap size were evaluated by means of chi-square test. This statistical test was also used to evaluate the relationships between the presence of major and minor complications and the outcome. The age variable was defined in relation to the mean age, i.e. $< 50$ years or $\geq 50$ years. Associations presented by the final result from the reconstruction and the presence of major and minor complications in relation to disease stage and area reconstructed were evaluated by means of the chi-square test. Findings were taken to be statistically significant when $P \leq 0.05$. The SPSS (Statistical Package for the Social Sciences) statistical software, version 13.0 for Windows (SPSS version 22 Inc; Illinois, USA), was used for all the statistical analyses. Analyzed data were presented in the form of tables and charts with appropriate interpretations.

**Ethical Issue addressed:**
Ethical clearance was obtained from the authority prior to commencement of the study. Keeping compliance with Helsinki Declaration of Research Activities Involving Human Subjects 964, all potential subjects were informed about the purpose of the study and that the information generated from the study would be utilized for the interest of the patients and research. They were also informed about their rights to withdraw themselves from the study at any time for any reason what so ever. The subjects who voluntarily consented to participate in the study were included in the sample.

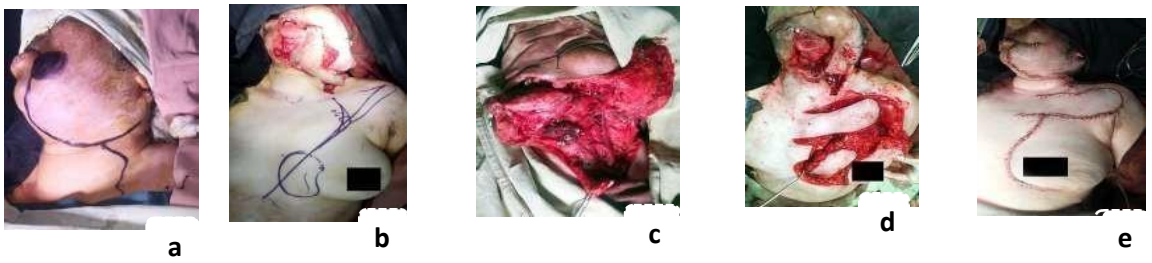
**Surgical management:**
For all the cases we did wide local excision with partial or hemimandibulectomy with ipsilateral SOND or MRND and reconstruction by PMMC flap intraorally or extra orally under general anesthesia. Main surgical procedure was same with some slight modification which varies case by case. Below labelled pictures showing pre operative to post operative outcome of one case.


Extraoral view


Intraoral view


OPG shows marginal bone loss in the left side of mandible


CT scan of maxillofacial region



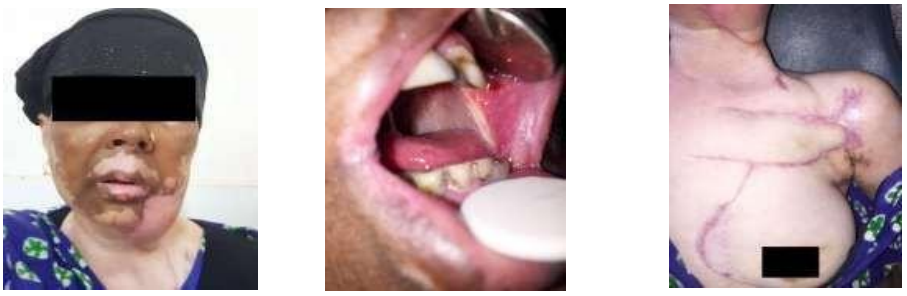

**Photograph 1:** Per-operative images (a, b – surface marking, c- primary side, d- DP preserving PMMC flap harvesting, e- after closure)

Extra oral view Donor site

**Photograph 2:** 14th POD

Extra oral view Donor site

**Photograph 3:** Post-operative follow-up: after one month (healing wound) post-operative follow-up: after two month



Extra oral view Intra oral view Donor site

**Photograph 4:** Post-operative follow-up: after two month


Extra oral view


Intra oral view (color not matched


IIO 20-30 mm


Donor site (ugly scar)

**Photograph 5:** Post-operative follow-up: after three month

**RESULTS:**

The present study was carried out between January 2018 to September 2019 at DDCH. Total 30 female patients suffering from OSCC in the buccal mucosa, BGS were operated. After proper resuscitation and investigation, they treated by wide excision of the lesion with ipsilateral hemi or partial mandibulectomy with SOND or MRND followed by reconstruction of cheek defects by PMMC flap. All the patients were followed up for 3 months. After 3 months follow-up the following findings were compiled. All the relevant findings obtained from data analysis are presented in tables and figures.

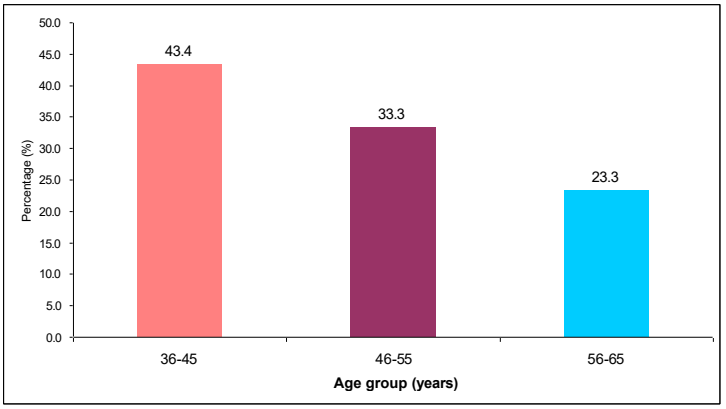



**Figure 1: Bar diagram shows distribution of age of the study patients. (n=30)**

Bar diagram shows in this study highest 13 patients (43.34%) observed in 36-45 years, 10 patients (16.67%) observed in 46-55 years and 7 patients observed in 56-65 years. Mean age was 50.4±7.70 years which ranges from 36 to 65 years.

**Table 1: Distribution of habits of the study patients (n=30).**

| Habit | Frequency | Percentage (%) |
|---|---|---|
| Betel nut chewing | 13 | 43.3 |
| Betel nut chewing and betel quid | 3 | 10.0 |
| Betel quid | 7 | 23.3 |
| Betel quid and tobacco | 1 | 3.3 |
| Betel nut chewing and tobacco | 1 | 3.3 |
| No | 5 | 16.7 |
| **Total** | **30** | **100.0** |

Table 1: Shows maximum 13 (43.3%) patients' habit was betel nut chewing and 7(23.3%) patients with betel quid chewing and 5(16.7%) patients with no habit.

**Table 2: Distribution of comorbidity of the study patients (n=30).**

| Comorbidity | Frequency | Percentage (%) |
|---|---|---|
| Hypertension | 3 | 10.0 |

| | | |
|---|---|---|
| Diabetes Mellitus | 4 | 13.33 |
| Respiratory Disease | 1 | 3.33 |
| Renal Disease | 1 | 3.33 |
| Recurrent Disease | 1 | 3.33 |
| No | 20 | 66.67 |
| **Total** | **30** | **100** |

Table 2: Shows maximum 4 (13.33%) patients with Diabetes Mellitus ,3(10%) Hypertension ,1(3.33%) individually with Respiratory Disease, Renal Disease, Recurrent Disease and 20(66.67%) patients with no co-morbidity.

**Table3: Distribution of flap size of the study patients (n=30).**

| Flap size (cm) | Frequency | Percentage (%) |
|---|---|---|
| 6.0-6.9 | 17 | 56.67 |
| 7.0-7.9 | 13 | 43.33 |
| **Total** | **30** | **100** |

Table 3: Shows flap size 6-6.9 cm in 17 (56.67%) patients and 7-7.9 cm in 13(43.33%) patients.

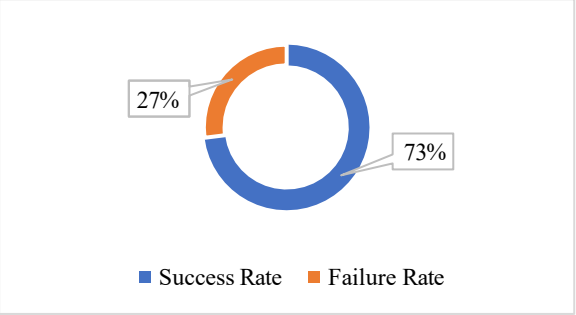



**Figure 2: Pie chart shows success rate of PMMF reconstruction is (73.3%) and failure rate (26.7%).**

**Table 4: Distribution of post-operative major complications of study patients (n=30).**

| Complications | Frequency | Percentage (%) |
|---|---|---|
| Major complication | | |
| No | 22 | 73.3 |
| Yes | 8 | 26.7 |
| Partial flap necrosis | 3 | 37.5 |
| Partial flap necrosis, intraoral flap dehiscence, donor site dehiscence | 1 | 12.5 |
| Complete flap necrosis | 1 | 12.5 |
| Oro cutaneous fistula | 1 | 12.5 |
| Intraoral flap dehiscence | 1 | 12.5 |
| Partial flap necrosis and wound infection | 1 | 12.5 |

Table 4 shows 8 (26.7%) patients develop major complications of which maximum 3 patients (10%) develop partial flap necrosis,1 (3.3%) patients individually develop partial flap necrosis with wound infection, intra-oral flap dehiscence, oro-cutaneous fistula, complete flap necrosis.

**Table 5: Distribution of post-operative minor complications of study patients (n=30).**

| Minor complications | Frequency | Percentage (%) |
|---|---|---|
| No | 17 | 56.7 |
| Yes | 13 | 43.3 |
| Marginal flap necrosis | 4 | 30.7 |
| Donor site dehiscence | 2 | 15.38 |
| Donor site dehiscence, wound infection | 2 | 15.38 |
| Donar site hematoma | 1 | 7.69 |
| Oro cutaneous fistula | 2 | 15.38 |
| Partial flap necrosis | 1 | 7.69 |
| Neck skin dehiscence | 1 | 7.69 |

Table 5: hows in this series 17 (56.7%) patients develop complications among them maximum 4(30.7%) patients develop marginal flap necrosis.2 (15.38%) patients develop donar site dehiscence, DSD with wound infection, oro cutaneous fistula. And also 1 (7.69%) individually develop donor site hematoma, partial flap necrosis, neck skin dehiscence.

**Table 6: Association of major complications with cause. The values that showed statistical significance are depicted in bold (n=30)**

| Cause | Major complications | | | | p-value |
|---|---|---|---|---|---|
| | No (n=22) | | Yes (n=8) | | |
| | N | % | N | % | |
| **Age** | | | | | |
| < 50 | 9 | 40.9 | 0 | 0.0 | 0.033* |
| > 50 | 13 | 59.1 | 8 | 100.0 | |
| Total | 22 | 100 | 8 | 100 | |
| **Comorbidity** | | | | | |
| Yes | 5 | 22.7 | 5 | 62.5 | 0.044* |
| No | 17 | 77.3 | 3 | 37.5 | |
| Total | 22 | 100 | 8 | 100 | |
| **Habit** | | | | | |
| Yes | 4 | 18.2 | 7 | 87.5 | 0.001* |
| No | 18 | 81.8 | 1 | 12.5 | |
| Total | 22 | 100 | 8 | 100 | |
| **Flap size** | | | | | |
| 6.0-6.9cm | 15 | 68.2 | 2 | 25.0 | 0.034* |
| 7.0-7.9cm | 7 | 31.8 | 6 | 75.0 | |
| Total | 22 | 100 | 8 | 100 | |

Chi-square test was done, *significant,

Table 6: Shows occurrence of major complications are significantly associated with age above 50 yrs, presence of comorbidity, increased flap size.

**Table 7: Association of aesthetic outcome after three months with major complications. The values that showed statistical significance are depicted in bold (n=30).**

| Aesthetic outcome | Major complications | | | | p-value |
|---|---|---|---|---|---|
| | No (n=22) | | Yes (n=8) | | |
| | N | % | N | % | |
| **Color match** | | | | | |
| Yes | 13 | 59.1 | 3 | 37.5 | $0.498^{ns}$ |
| No | 9 | 40.9 | 4 | 50.0 | |
| Total | 22 | 100 | 8 | 100 | |
| **Surface texture** | | | | | |
| Smooth | 18 | 81.8 | 0 | 0.0 | <0.001* |
| Rough | 4 | 18.2 | 7 | 87.5 | |
| Total | 22 | 100 | 8 | 100 | |
| **Donor site condition** | | | | | |
| Scar | 20 | 90.9 | 1 | 12.5 | <0.001* |
| Ugly scar | 2 | 9.1 | 7 | 87.5 | |
| Total | 22 | 100 | 8 | 100 | |

Chi-square test was done, *significant, ns=not significant

Table 7: Shows aesthetic outcome rough surface texture, ugly scarring is significantly associated with major complications as among 8 patients of patients with major complications after three month follow up (87.5%) develop rough surface texture of the flap and ugly scar in the donor site. Association of major complications with color matching is non-significant

**Table 8: Association of functional outcome with major complication (n=30)**

| Functional outcome | Major complications | | | | p-value |
|---|---|---|---|---|---|
| | No (n=22) | | Yes (n=8) | | |
| | N | % | N | % | |
| **Inter-incisal opening (IIO)** | | | | | |
| 30-40mm | 19 | 86.4 | 5 | 62.5 | 0.155$^{ns}$ |
| 20-30mm | 3 | 13.6 | 3 | 37.5 | |
| Total | 22 | 100 | 8 | 100 | |
| **Speech impairment** | | | | | |
| Yes | 3 | 13.6 | 7 | 87.5 | 0.002* |
| No | 19 | 86.4 | 1 | 12.5 | |
| Total | 22 | 100 | 8 | 100 | |
| **Dysphagia** | | | | | |
| Yes | 2 | 9.1 | 6 | 75.0 | 0.004* |
| No | 20 | 90.9 | 2 | 25.0 | |
| Total | 22 | 100 | 8 | 100 | |
| **Neck mobility restriction** | | | | | |
| Yes | 4 | 18.2 | 8 | 100.0 | <0.001* |
| No | 18 | 81.8 | 0 | 0.0 | |
| Total | 22 | 100 | 8 | 100 | |

Chi-square test was done, *significant, ns=not significant

Table 8: shows in this study speech mobility, dysphagia, neck mobility restriction significantly associated with major complications. Among the 8 (26.7%) patients who developed major complications 7(87.5%) develop speech impairment, 6(75%) dysphagia and all of them develop neck mobility restriction. Here after 3 month follow up 10(33.3%) patients' speech is impaired, 8(26.67%) patients develop dysphagia and 12(40%) patients develop neck mobility restriction. After 3 months follow up 24(60%) patients IIO became 30-40 mm and in 6 cases (20%) IIO become 20-30 mm. Its association with major complications was not significant as among the patients having major complications 5 (62.5%) cases with IIO 30-40 mm and 3(32.5%) cases with IIO 20-30 mm. of these patients IIO increase to 21-30 mm.

## DISCUSSION

Here in our study 30 female OSCC patients' post-surgical cheek defect reconstructed by PMMC flap. Success rate of PMMF reconstruction was (73.3%) d failure rate (26.7%). The complications were classified as flap-related complications if they were directly associated with the flap, the repaired area or the donor site. The flap-related complications were categorized as major complications or minor complications. Major complications were those that required reoperation in a surgical theater, or resulted in failure to attain the reconstruction goal. Minor complications were those that were treated successfully by means of conservative management, i.e. without reoperation in the surgical theater, and from which the result was successful reconstruction. So, the major complications denote the failure of this reconstruction and have the main effect on aesthetic and functional outcome. Thats why we have analyzed the association between outcome and major complications also tried to find out the cause of occurrence of major complications. Here in our study 8 cases develop major complications like flap necrosis and wound infection among 30 cases. In this series Major complications like Partial Flap Necrosis in 12 (40%) patients, Partial Flap Necrosis with Wound Infection in 4 (13.33%) patients and in 1 (6.67%) case develop complete flap necrosis. In our series reconstruction success was in 29 cases and one case was failed. We found the cause of failure that was anatomical variation of thoracoscopies artery. Among the complications 8 (26.7%) patients develop major complications of which maximum 3 patients (10%) develop partial flap necrosis,1 (3.3%) patients individually develop partial flap necrosis with wound infection, intra-oral flap dehiscence, orocutaneous fistula, complete flap necrosis. 17 (56.7%) patients develop minor complications among them maximum 4(13.3%) patients develop marginal flap necrosis.2 (6.7%) patients develop donar site dehiscence, DSD with wound infection, oro cutaneous fistula. And also 1 (3.3%) individually develop donor site hematoma, partial flap necrosis, neck skin dehiscence. In a study by Milenovic et al.,2006 [6] it is noted that primary healing took place in 338 flaps used (67%) and complications occurred in 168 (33%) flaps. Total flap necrosis only occurred in 10 (2%) patients. Other complications were more commonly seen. Flap skin necrosis was categorized into total skin necrosis or partial skin necrosis. Total skin necrosis occurred in 19 flaps (4%) while partial skin necrosis occurred in 3 flaps (6.5%). Oro cutaneous fistulae occurred in 28 cases (5.5%). Dehiscence occurred intra orally in 31 flaps (6%) and in the neck in 22 patients (4%). Due to fistula formation or plate exposure, plate removal was necessary in seven patients i.e. 39% of patients in whom reconstruction plates were used. Donor site complications such as dehiscence, hematoma, seroma were infrequent. The incidence of donor side complication was 4% (18 cases). Amitabh Jain et al.,2014 [11] conducted one study performed by where outcome of PMMF in female patients for oral cavity defect reconstruction were reported. Complications were classified in major and minor. Minor complications encountered were wound infection in 8 patients (5.7%) and orocutaneous fistula in 6 patients (4.3%). Major complications noted were total flap failure in 2 patients (1.4%), partial flap necrosis in 11 patients (7.9%), and combined partial flap necrosis with wound infection in 3 patients (2.1%). In our study 21 patients are above 50 years of age and 9 patients are below 50 years of age. All the patients having major complications are aged above

50 years which is significant.30 cases of female OSCC patients having cheek defects which were reconstructed by PMMC flap, in this study highest 13 patients (43.34%) observed in 36-45 years, 10 patients (16.67%) observed in 46-55 years and 7 patients observed in 56-65 years. Mean age was 50.4±7.70 years which ranges from 36 to 65 years. Here maximum 13 (43.3%) patients habit was betel nut chewing and 7(23.3%) patients with betel quid chewing and 5(16.7%) patients with no habit. 8 patients develop major complications among which 7(87.5%) having habits of betel-nut chewing, betel quid chewing, tobacco chewing etc. So, presence of habit in personal history is significantly associated with major complications due to compromission of vascularity. In this current series it is also noted that patients with comorbidity 5 (62.5%) develop major complications like flap necrosis and wound infection. Comorbidity refers to immune-compromised patient whom are prone to infection. Hypertension also may be caused by atherosclerosis which may develop reduced blood supply resulting in flap necrosis. This study also showed that presence of comorbidity significantly associated with major complications. According to a retrospective study among 496 patients in whom the PMMC flap was used, complications developed in 84 patients. The complications included complete flap failure in 12, partial skin paddle loss in 24, wound infection in 12, peripheral wound dehiscence in 16, plate exposure in 12, and donor site morbidity such as infection and a decrease in function in 8. Various major and minor complications have been associated with the use of this flap [13]. According to Tripathi, M.,2015 [12], results were not similar in all series with some reports describing that complication rates were not associated with age, sex, smoking, preoperative radiotherapy, diabetes, or obesity. Flap size has an important role developing complications. Here in our study, we have seen that 8 patients develop major complications among which in 6 (75%) cases flap size was 7-7.9 cm. So, we can tell that increase in size is associated with developing major complications as for Bangladeshi population pectoralis major muscle length is shorter than the other developed countries. So, there is chance of incorporation of rectus abdominis in the flap which is supplied by superior epigastric artery. Thats why there may be development of complications like flap necrosis. In females the use of an inframammary incision is recommended for aesthetic reasons positioning the skin island just medially to the nipple, over the fourth, fifth and sixth intercostal spaces, is essential for encompassing the skin perforator vessels that arise from the intercostal branches of the internal thoracic artery. These cutaneous vessels are supplied by the pectoralis branch of the thoraco-acromial artery. Below the seventh rib, the vascular supply for the skin comes from the cutaneous branches of the superior epigastric artery, and therefore, when portions of skin beyond this limit are included in the flap, this creates an axial flap with a distal random portion, thereby increasing the risk of partial loss. In females there is intervening extra fatty tissue in breasts as compared to males. In these two female patients, the skin island extended below the seventh rib and the skin paddle was small in one patient that probably did not encompass a sufficient number of skin perforator vessels, thus resulting in unstable blood circulation [10]. Flap-related complications developed in 18 (60%) of the patients with 3 experiencing major complications [14]. The reconstruction was a success in 54 cases (93.1%) and a failure in the remaining four cases. There were seven cases of partial flap necrosis (12%), although most of them were limited to less than 25% of the cutaneous component of the flap. In all of these cases, the final outcome was successful. There were no cases of total flap loss. Among the seven flaps that developed partial loss, we were able to identify a possible technical basis that could explain the necrosis observed, in five of them (F. R. Pinto et al.,2010) [15] In our study we have seen occurance of major complications are significantly associated with age above 50 yrs, presence of comorbidity, habit, increased flap size. In a study no perioperative deaths occurred. Major complications developed in 2 patients with hematoma in the neck that needed surgical intervention, one with fistula that needed another PMMF from the contralateral side, and 1 with marginal necrosis that resulted in wound dehiscence and need for a delayed closure. Minor complications included marginal flap necrosis (n= 3), pharyngo-cutaneous fistula (n= 3), oro-cutaneous fistula (n=3), and hematoma in the chest wall (n=1), all of which were cured after conservative care. The major and minor complication rate were 3.5% (4/114) and 8.8% (10/114), respectively, with a total complication rate of 12.3%. All complications occurred in the primary reconstruction group. No total or partial flap necrosis and donor site dehiscence or infection occurred [7]. In a study that all the 28 patients' patients with PMMF reconstruction finally achieved acceptable functional and cosmetic results except one female patient [10]. After 3-month surface texture of the flap was smooth in 18 (60%) patients and rough 11(36.67%) patients which is significantly associated with major complications as all the patients with major complications flap surface texture turns to rough after 3 month follow up shows minor complications are significantly associated with ugly scarring in the donor site after three month follow up. Here among 13 cases with minor complications 5 cases (38.5%) are in the donor site which causes ugly scarring. Color of the flap matches in 16 (53.33%) cases and not matched in 13 (43.33%) don't match with the surrounding structures. In this study we have seen after 3 months follow-up in spite of the recognized functional advantages of fascio-cuatneous flap in reconstruction of the oral cavity (deglutition, speech and mastication), the use of the PMMC flap in our series was satisfactory in the majority of cases. In spite of the reported superior functional results; we believe that our less satisfactory functional results were due to the fact that the majority of our cases were primarily oral cavity reconstruction [16]. In this study speech, dysphagia, neck mobility restriction significantly associated with major complications. Among the 8 (26.7%) patients who developed major complications 7(87.5%) develop speech impairment,6(75%) dysphagia and all of them develop neck mobility restriction. Here after 3 month follow up 10 (33.3%) patients' speech is impaired,8(26.67%) patients develop dysphagia and 12 (40%) patients develop neck mobility restriction. In our study after 3 months follow up 24 (60%) patients IIO became 30-40 mm and in 6 cases (20%) IIO become 20-30 mm. Its association with major complications was not significant as among the patients having major complications 5 (62.5%) cases with IIO 30-40 mm and 3(32.5%) cases with IIO 20-30 mm. of these patients IIO increase to 21-30 mm. Over the years, the PMMF has still retained its significance

in reconstruction after head and neck cancer surgery. It is still recognized as a workhorse in head and neck reconstruction though its complication rate is higher. There are very few studies to analyze outcomes of PMMF reconstruction in female patients. Contrary to our presumption, the outcomes of PMMF reconstruction in female patients were not different from those in male patients. Because of its simplicity, ease of technique, versatility, and reliability, reconstruction with the PMMF appears to be safe and effective with acceptable complications in female patients.

## CONCLUSION

In this study we have seen successful reconstruction in three-fourth of cases which denotes absence of one or more major complications but there may be presence of minor complication which were managed conservatively. Then we have tried to find out the cause and analyzed the association of them with major complications which are aging, co-morbidity, unhealthy habit, increase in flap size. As here in current series flap necrosis is more in 75% cases and infection in 12.5% cases among the major complications. The present study was carried out to assess the functional, aesthetic outcomes of the use of PMMF in female SCC patients for reconstruction of the cheek defects as well. Here in this study flap necrosis rate is higher than the infection rate which is comparable with only one study performed in female patients in the developing countries also results flap necrosis in 13.3 % cases and wound infection in 2.1%So we have to give greater attention to the factors which are the reason behind this. Also try to manage the causes to reduce this complication rates which should be followed by our hospital which is a tertiary care hospital.

### Limitations Of the Study

There are some limitations of this study: The study and follow up period was short in comparison to other series. Small sample size was taken in this study.

### Recommendations:

As the outcome is evaluated up to 3 months of operation, so changes in outcome beyond 3 months could not be ascertained. So, further study taking long term evaluation into consideration. Large sample size can be taken for further prospective study. This study can be performed different treatment centers in Bangladesh with a larger sample and long-term follow-up for better evaluation of outcome of pectoralis major myocutaneous flap in reconstruction of cheek defects of female SCC patients. It will help to compare the results specific cause of complications like flap necrosis and wound infection and according to that we can give a message to the health care provider, medical professionals and hospital management.

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