



Case Report

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Quality of Life Assessment in Oral Cavity Cancer Patients Treated With Resection and PMMC Flap Cover

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Abstract

Background: The patients' outcome following primary surgery for oral cancer and the long-term effects need to be evaluated and kept in mind before advising them of a particular treatment decision. The modern day onco-surgical therapy aims at overall Quality of life of the cancer survivor.

Aim: This study aims to assess the quality of life after Pectoralis Major Myocutaneous (PMMC) flap reconstruction using University of Washington Quality of life version 4 Questionnaire (UW-QOL).

Materials and Methods: Designed as a Prospective observational study in patients with oral malignancy undergoing resection of the tumour along with neck dissection and reconstruction with PMMC in the primary setting. 30 patients were included in the study. Quality of life assessment was carried out by means of personal interviews with the patients at six months following the primary surgery, when the patients report for regular follow up.

Results: 31.25% of the total study population belonged to the 40-50 age group. 28 patients were males and 2 females. Recreation, Pain and activity domains scored more. In the most important concerned domain section, patients chose appearance (79.2%), chewing, shoulder and saliva (each 25%) domains.

Conclusion: To conclude, patients with oral cavity cancers who underwent major ablation followed by reconstruction with PMMC flap, Quality of life score after the procedure was comparable to other studies conducted worldwide.

Keywords

Quality of life, Head and Neck malignancy, Pectoralis Major Myocutaneous (PMMC) Flap, UW- QOL

Abbreviations

PMMC Flap: Pectoralis Major Myocutaneous Flap; UW-QOL: University of Washington Quality of life Questionnaire; WHO: World Health Organization

Introduction

Oral malignancies are one of the most common malignancies affecting Indian population. The patients' outcome following primary surgery for oral cancer and the long-term effects need to be evaluated and kept in mind before advising them of a particular treatment decision. The modern day onco-surgical therapy also aims at overall Quality of life of the cancer survivor. Reconstruction must achieve wound closure as a delay in primary wound healing may delay adjuvant therapy. The donor defect made during reconstruction and complications at the donor site must be minimal. Functional restoration should be the aim of reconstruction.

The use of pectoralis major myocutaneous (PMMC) flap for head and neck reconstruction was introduced by Ariyan in 1979 [1,2]. Since then, Pectoralis major flap has been the standard one that is commonly used for head and neck reconstruction. During the 1990s, while free flaps were strongly gaining momentum and direct comparisons between free and

pedicled flaps were starting to appear in the literature, the main indications for pectoralis major flaps partially changed in favour of salvage operations.

The advantages of PMMC included shorter operating time, ease of harvest and favourable early and late morbidity profile. The protective and trophic effect of pectoralis muscle on neck vessels and tissues is an advantage in all cases

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after radiotherapy and neck dissection. For all these reasons, the PMMC flap became the most widely used reconstructive procedure in the head and neck region to date, the so-called "workhorse of head and neck reconstruction" [2,3].

This study aims to assess the quality of life after PMMC flap reconstruction. The World Health Organization (WHO) defines QOL as an "individual's perception of his or her position in life in the context of the culture and value systems in which the patient lives and in relation to his or her goals, expectations, standards, and concerns".

Materials and Methods

Designed as a Prospective observational study in patients with oral malignancy undergoing resection of the tumour along with neck dissection and reconstruction with PMMC in the primary setting. 30 patients were included in the study. Patients with any previous history of injury to the neck, Stage 4 disease and who had a flap failure in the post-operative period were excluded from the study. The study was conducted in a tertiary care centre in New Delhi after obtaining written informed consent from the patient and the study was cleared by the institutional ethical committee. The standard technique for PMMC reconstruction was followed [1,4]. Quality of life assessment was carried out by means of personal interviews with the patients at six months following the primary surgery, when the patients report for regular follow up. They were interviewed using the University of Washington Quality of life version 4 questionnaire after translating to the local language. The score of each domain in UW-QoL was expressed in mean and standard deviation and a total composite score was calculated.

UW-QOL (version 4), a well validated questionnaire was used to analyse the physical, functional and emotional quality of life of patients.

This study evaluated various aspects related to patient comfort and quality of life under the following domains namely: Pain, appearance, activity, recreation, swallowing, chewing, speech, shoulder function, taste, saliva, mood and anxiety during the preceding 7 days. The questionnaire also included a separate section where the same domains could be graded as important issues over preceding 7 days and upto 3 fields could be chosen.

Scoring of UW-QOL domains

The UW-QOL has domains based on discrete ordinal responses. The scoring is scaled in such a way that a score of 0 represents the worst possible response, and a score of 100 represents the best possible response. Scoring is scaled in equal stages from 0 to 100 to reflect the number of possible responses. The pain domain has 5 possible responses which are scored as 0, 25, 50, 75 and 100. Similarly, all other domains are scored.

Results

Total of 30 patients were taken in the study. 31.25% of the total study population belonged to the 40-50 age group. 28 patients were males and 2 female. 40.6% of the study popula-

tion had Carcinoma of Gingivobuccal sulcus (GBS), 37.5% had Carcinoma of Buccal mucosa. 15.6% of patients had carcinoma of Retromolar trigone.

On analysis of pain, the mean score obtained was 81.25 with a standard deviation of 18.43. The maximum score obtained was 100 and minimum was 50. Mean score obtained for appearance domain was 61.46 with a standard deviation of 19.48. Maximum and minimum scores were 75 and 0 respectively. For activity, the mean score obtained was 78.13 with a standard deviation of 15.3. The maximum score obtained was 100 and minimum score was 50.

The maximum score obtained for recreation was 100 with a mean value of 83.3 and standard deviation 14.12. The minimum score obtained was 50. For swallowing, the mean score obtained was 71.67 with standard deviation of 17.1. The maximum score obtained was 100 and minimum was 30. Mean score obtained for chewing was 62.5 with standard deviation of 30.396. Minimum score obtained was 50 and maximum was 100. For speech, the maximum score obtained was 100 and minimum was 70 with a mean value of 72.5 and standard deviation of 8.5.

On analysis of shoulder function, the mean score obtained was 77.92 with a standard deviation of 20.637. The minimum and maximum scores were 30 and 100 respectively. For taste, the mean score was 76.67 with standard deviation of 20.14. The maximum score was 100 and minimum score obtained was 30. Mean score obtained for saliva was 70.42 with a standard deviation of 24.93. The maximum and minimum scores were 100 and 30 respectively. For mood, the mean score was 72.92 with standard deviation of 23.22. The maximum score was 100 and minimum score obtained was 25. Maximum and minimum score obtained for anxiety were 100 and 30 respectively. The mean score was 74.17 with a standard deviation of 18.86 (Table 1).

Mean quality of life score of our study sample was 72.76 with a standard deviation of 9.36. Patients scored well in recreation (83.33 ± 14.12), pain (81.25 ± 18.43) and activity (78.13 ± 15.3) domains. Patients scored poorly in domains of appearance (61.46 ± 14.48) and chewing (62.5 ± 30.4).

Discussion

The oral and maxillofacial region plays a vital role as it serves both aesthetic and functional purposes. It serves as the primary identification of a person and is also associated with important functions such as breathing, mastication, speech, etc. The surgical resection of oral cancer usually results in disfigurement of face, decreased ability of mastication, alteration in speech, change in taste, etc. Post surgical radiation therapy has got adverse effects of reduced salivation and increased fibrosis with resultant reduction in mouth opening. Thus assessment of Quality of life becomes an important issue for obvious reasons [3].

The goal of primary reconstruction using pectoralis major myocutaneous flap is wound closure in one stage and early wound healing so as to get the patient ready for further treatment like radiotherapy. Even though versatility of the free flap armamentarium gives the opportunity to suit the defect

Table 1: Mean domain scores and composite scores.

Domains	0	25	30	50	70	75	100	Mean	SD	Rank
Pain	-	-	*	4	*	10	10	81.25	18.43	2
Appearance	1	1	*	8	*	14	-	61.46	19.48	12
Activity	-	-	*	3	*	15	6	78.13	15.3	3
Recreation	-	-	*	1	*	14	9	83.33	14.12	1
Swallowing	-	*	2	*	18	*	4	71.67	17.11	9
Chewing	2	*	*	14	*	*	8	62.5	30.39	11
Speech	-	*	-	*	22	*	2	72.5	8.47	8
Shoulder	-	*	2	*	13	*	9	77.92	20.64	4
Taste	-	*	2	*	14	*	8	76.67	20.14	5
Saliva	-	*	5	*	12	*	7	70.42	24.93	10
Mood	-	3	*	2	*	13	6	72.92	23.22	7
Anxiety	-	*	2	*	16	*	6	74.17	18.86	6
Total composite score								72.76	9.36	

* denotes values do not exist for that domain

In the most important domain section, patients chose appearance (79.2%), chewing, shoulder and saliva (each 25%) domains.

deriving from virtually every ablative head and neck surgery with a tailored reconstruction, pectoralis major is still the “workhorse” for head and neck reconstruction owing to its ease of harvest, and minimal requirements in term of instrumentation. Furthermore, certain number of pectoralis major flaps are still raised every year even in centers with a high volume reconstruction of free flaps.

This study followed the UW-QoL version 4 questionnaire and the mean composite score was 72.76 ± 9.36. According to the study by Bhanja, et al. the mean composite score was 69.9 ± 16.6 [4]. Study was conducted in 65 patients who underwent pectoralis major myocutaneous flap reconstruction for oral cancer. Patients scored well in speech, taste and pain domains. In their study, in the ‘most important’ domain section of UW-QOL, patients chose saliva, chewing, shoulder and activity domains. In the study patients scored well in recreation, pain and activity. In the most important domain section, patients chose appearance, neck, chewing, shoulder and saliva domains. This reflects the importance to the daily functions of mastication and those related to the capacity to return to their occupation as manual labourers.

In 2011, Hsing, et al. conducted a study on the comparison between free flap and pectoralis major pedicled flap in reconstruction of oral cavity cancer patients [5]. They compared the quality of life of both groups using UW-QoL version 4 questionnaire. Study population was 100 in which 42 were in the free flap group and 58 in the Pectoralis major flap group. The mean composite score obtained by the free flap group was 66.0 ± 18.5 whereas the mean composite score of pectoralis major flap group was 57.8 ± 18.2. In the free flap group, patients scored well in pain, mood and anxiety. In the pectoralis major flap group, patients scored well in saliva, appearance and anxiety. In both groups patients scored poor in chewing, taste and swallowing. There were also no significant differences between the two groups in the pain, appearance, activity, recreation, swallowing, chewing, taste,

saliva, and anxiety domains. However, there were significant differences between the free flap and pectoralis major flap groups in the speech, shoulder and mood domains. With the importance rating of domains, chewing was considered the most important issue over the past 7 days followed by swallowing, speech, and pain after allowing for patients to choose up to three domains. Anxiety about cancer was considered least important to patients.

Compared with current study, their study population was more. But, the UW-QoL composite score was low for both their groups. Chewing was one of the lowest scoring domains in both studies. In this study, appearance was considered the most important issue over the past 7 days. Recreation followed by taste and anxiety were considered least important to patients.

In this study the pain score was 81.25 and was ranked 2, whereas in the study by Bhanja, et al. it was 81.5 and was ranked 3. In the comparative study by Hsing, et al. PMMC group scored 68.1 and free flap group scored 76.8, both being low when compared to current study. For appearance Hsing, et al. obtained 69.8 for the PMMC group and 67.3 for free flap group. In the study by Bhanja, et al. it was 70.4 and it was ranked 6. In this study, the score for appearance was 61.46 and was ranked 12.

For activity the score obtained in the study by Hsing, et al. for the PMMC group was 66.8 and for the free flap group was 67.9. In the study by Bhanja, et al. it was 69.2 and was ranked 7 and in this study the score was 78.13 and was ranked 3.

The score obtained for recreation in this study was 83.33 and was ranked 1. For recreation the scores obtained in other studies were 65.14 and 62.5 for the PMMC group and 69.1 for the free flap group.

For swallowing the score obtained in this study was 71.67. Scores obtained for the same in other studies were 48.6 and

Table 2: Comparison of QoL Scores after PMMC in various studies.

Domains	Mean Score			
	Our Study	Bhanja, et al.	Hsing, et al.	Efunkoya, et al.
Pain	81.25	81.5	68.1	30.2
Appearance	61.46	70.4	69.8	46.88
Activity	78.13	69.2	66.8	72.92
Recreation	83.33	65.4	62.5	77.08
Swallowing	71.67	76.0	48.6	95.00
Chewing	62.5	62.3	33.6	58.33
Speech	72.5	91.7	44.7	85.42
Shoulder	77.92	72.2	50.5	100
Taste	76.67	87.4	45.9	93.75
Saliva	70.42	59.5	73.8	100
Mood	72.92	46.5	60.8	76.04
Anxiety	74.17	56.6	68.9	81.67
Total comp score	72.76	69.9	57.8	76.44

76 for the PMMC group and 49.3 for the free flap group.

For chewing, this study had a score of 62.5 and was comparable with the study by Bhanja, et al. [6] where it was 62.5. Score obtained for speech in this study was 72.5 and in a similar study was 91.7.

For shoulder, the score obtained in this study was 77.92 and in similar studies were 72.2 and 50.5 for the PMMC group and 81.4 for the free flap group. The score obtained for taste in this study was 76.67 and was lower when compared to similar study where the score was 87.4.

The score obtained for saliva in this study was 70.42 and in similar studies were 59.5 and 73.8. For mood and anxiety, the scores obtained in this study were 72.92 and 74.17 respectively. In the study done by Bhanja, et al. the scores were 46.5 and 56.6 respectively and in the study conducted by Hsing, et al. [7] for the PMMC group scores were 60.8 and 68.9 respectively. For the free flap group, the scores were 76.2 and 75.9 respectively. Free flap scores were more compared to that obtained for PMMC.

To summarize, domains like pain, chewing, shoulder were comparable to similar studies. Speech, taste, swallowing and appearance domains scored less and activity, recreation, saliva, mood and anxiety domains scored more when compared to similar studies.

Efunkoya, et al. conducted a study in 2015 to assess the quality of life following surgical treatment of oral cancers [8]. They evaluated the preoperative and postoperative QoL of patients treated for oral cancer in a Nigerian tertiary hospital. 24 patients were included in the study. Preoperative QoL, postoperative QoL after 1 week, 1 month, 3 months and 6 months were assessed. 'Appearance, 'chewing' and 'recreation' were identified as the most important determinants of postoperative QoL in patients with oral cancer in their study. Following surgical treatment for patients with oral cancer an improvement in QoL was observed. Summary of the above is

provided in Table 2.

To improve the quality of life, both the physical and emotional aspects of the patients' needs to be improved. For improving the physical and functional domains, the technically correct surgery, physiotherapy and constant follow-ups visits must be conducted and reviewed. Surgical audit will help in reviewing the quality of reconstruction provided and the result obtained. Secondary procedures may be needed to improve the functional outcome of the patients.

To improve the emotional subset, patients need to be counselled preoperatively and postoperatively. This should address the queries of patients regarding the malignancy, multi-modality treatment options and their efficacies. The postoperative counselling sessions should be conducted frequently and the queries of the patients cleared. Patients must be motivated and made to resume their normal activities and participate in social gatherings, thus reducing their burden due to the disease and the treatment process involved. The team should include a physiotherapist who helps in improving the functional outcome.

There were some limitations in this study. First, the study includes various subsets of oral cavity tumours, which may have different characteristics. Second, the quality of life results may be affected by radiotherapy or chemotherapy treatment.

Conclusion

To conclude, in patients with oral cavity cancers who underwent resection followed by reconstruction with PMMC flap, the postoperative Quality of life score was comparable to other studies conducted worldwide.

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