

Subjective Assessment of Obturator Functioning in patients with Hemimaxillectomy

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ABSTRACT

Aim: To assess the obturator functioning in patients with hemimaxillectomy using obturator prostheses.

Study design: Cross-sectional survey

Setting: de'Montmorency College of Dentistry / Punjab Dental Hospital, Lahore.

Duration of study: Six months

Methods: 50 hemimaxillectomy patients were included in the study. A questionnaire 'Obturator Functioning Scale' was administered to these patients at least 2 weeks after the insertion of the obturator. The responses to all the questions were recorded on a 5-point Likert scale. The problems encountered by the patients with the use of obturators were presented in the form of frequency and percentages.

Results: The most commonly found difficulty in the patients using obturators was difficulty in chewing foods(92%) followed by dry mouth(66%), leakage while swallowing(64%), numb upper lip(54%), avoidance of family and social events(48%), dissatisfaction with looks(46%), funny looking upper lip(46%), difficulty in inserting the obturator (32%), difficulty in talking in public(30%), noticeable clasps on front teeth(24%), difficulty in pronouncing words(24%), voice different from before surgery(20%), speech difficult to understand(20%), nasal speech(18%) and difficulty in talking on phone(4%).

Conclusion: The results suggest that obturator prosthesis serves the functions of speech and esthetics very well but it is not very efficient in terms of mastication and swallowing.

Keywords: Obturator, Prosthesis, Subjective, Quality of life.

INTRODUCTION

Oral cancer is the second most common type of cancer in Pakistan¹. The gold standard for treatment of oral cancer is its surgical resection². The mortality rate for oral cancer is much higher than the mortality rates for breast cancer, cervical cancer and skin melanoma.³ The annual estimated incidence is around 275,000 and two third of these cases occur in the developing countries. In South Asia the high incidence countries include India, Pakistan and Sri Lanka⁴.

Removal of a tumor from the oral cavity results in a surgical defect which creates several problems for the patient including disruption of normal chewing, swallowing, phonetics and esthetics^{4, 5}. Obturator prosthesis is a useful treatment modality for closing these defects and restoring the normal functions of the oral cavity. Functional and cosmetic rehabilitation of the patient result in psychological and social uplift improving the quality of life of these patients⁶⁻⁹.

Obturator functioning can be assessed both objectively and subjectively. Objective assessment is performed by the operator and requires the use of advanced scientific equipment. Subjective assessment means the evaluation of the function of prosthesis from patient's point of view. The latter is more frequently used because of its simplicity and low cost¹⁰.

Functioning of the obturator can be subjectively assessed by using the Obturator Functioning Scale. This scale consists of 15 questions to measure patient's ability to eat and speak with obturator prosthesis and their satisfaction with the restoration of lip position and its cosmetic effects. All items were rated on a 5-point Likert scale⁹.

There are six different classes of maxillectomy¹¹ previous studies investigating the problems of obturator wearers considered all of these classes as a single entity and recorded results without the demarcation of defect. However, the results are expected to be different in different types of defects. Therefore, the aim of the present study was to subjectively assess obturator functioning in a more homogenous sample including only hemimaxillectomy patients so the results may become more accurate and reliable.

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MATERIALS AND METHODS

This Cross sectional survey was completed in 6 months in de'Montmorency College of Dentistry / Punjab Dental Hospital, Lahore. The sampling technique was non probability purposive sampling. Sample size of 50 cases was calculated with 95% confidence level, 14% margin of error and taking expected percentage of no difficulty in chewing food (least among all) i.e., 45% in patients of hemimaxillectomy using obturators for at least 2 weeks.

The following patients were included with age 35-50 years undergone hemimaxillectomy for maxillary neoplasm, having provision of obturator after 6 months of surgery, dentate lower arch and at least 4-7 standing teeth on the opposite side of the upper arch and questionnaire administered at least 2 weeks after the provision of obturator. Patients with cleft lip and palate, completely edentulous patients and patients having traumatic defects were excluded.

Study sample consisted of 50 patients fulfilling the inclusion and exclusion criteria selected from outdoor department of Punjab Dental Hospital, Lahore. Informed consent was taken from each patient. Subjective assessment of patient based on evaluation of the functioning of obturator using an Obturator Function Scale with patient's responses recorded on a 5-point Likert Scale. Obturator functioning was assessed in terms of no difficulty in 1-15 questions on a 5 point Likert Scale. Points 1 and 2 stood for 'not at all difficult' and 'a little difficult' on the scale and were considered as 'No Difficulty'. Points 3, 4 and 5 stood for 'somewhat difficult', 'very much difficult' and 'extremely difficult' respectively and were considered as 'Difficulty'. The questions included difficulty in chewing, leakage while swallowing, voice different from before surgery, difficulty in talking in public, nasal speech, difficulty in pronouncing words, speech difficult to understand, difficulty in talking on phone, dry mouth, dissatisfaction with looks, noticeable clasps, numb upper lip, avoidance of family and social events, difficulty in inserting the obturator and funny looking upper lip. Two weeks after the delivery of obturator, a questionnaire, Obturator Functioning Scale was used to assess the functioning of the obturator. Patients response from 1-2 were considered as 'No difficulty' and 3-5 were considered as having 'Difficulty'. The scores on the Likert scale were inversely proportional to the functioning of the obturator. Confounding variables like age and remaining dentition had been controlled and addressed in the inclusion / exclusion criteria.

Data analysis procedure: SPSS software version 20 was used to analyze the data. The Demographic variables (age and gender) were analyzed using Simple Descriptive Statistics. Age was presented by calculating Mean \pm S.D. Gender and obturator functioning in terms of difficulty in chewing, leakage while swallowing, voice different from before surgery, difficulty in talking in public, nasal speech, difficult pronunciation, speech difficult to understand, difficulty in talking on phone, dry mouth, dissatisfaction with looks, noticeable clasps, numbness of lips, avoidance of social events, difficulty in inserting the obturator and funny looking upper lip were presented by using frequency and percentages.

RESULTS

Table1: Subjective assessment of obturator functioning in patients with hemimaxillectomy

		n	%age
Difficulty in Chewing	Yes	46	92
	No	4	8
Leakage when swallowing	Yes	32	64
	No	18	36
Voice difference from before surgery	Yes	10	20
	No	20	40
Difficulty in talking in public	Yes	15	30
	No	35	70
Have nasal speech	Yes	9	18
	No	41	82
Difficulty in pronouncing words	Yes	12	24
	No	38	76
Speech difficult to understand	Yes	10	20
	No	40	80
Difficulty in talking on phone	Yes	2	4
	No	48	96
Mouth feels dry	Yes	33	66
	No	17	34
Dissatisfied with looks	Yes	23	46
	No	27	54
Clasps on the front teeth are noticeable	Yes	12	24
	No	38	76
Upper lip feels numb	Yes	27	54
	No	23	46
Avoids family events	Yes	24	48
	No	26	52
Difficulty in inserting obturator	Yes	16	32
	No	34	68
Upper lip looks funny	Yes	23	46
	No	27	54

In this study the mean age of all the patients was 41.70 ± 6.25 . There were 37(74%) male and 13(26%) female patients. There were 46(92%) patients who experienced difficulty in chewing food with their obturator prostheses and 4(8%) of the patients had no difficulty in chewing with their obturator prostheses in place. A total of 32(64%) patients experienced leakage while swallowing food with their obturator prostheses, 10(20%) patients experienced a difference in voice from before surgery with their obturator prostheses in place, 15(30%) had difficulty in talking in public, 9(18%) patients had nasal speech and 12(26%) patients had difficulty in pronouncing words. There were 10(20%) patients who had speech that was difficult to understand, 2(4%) patients had difficulty in talking on phone, 33(66%) patients had dry mouth, 23(46%) patients were dissatisfied with their looks, 12(24%) patients had noticeable clasps on front teeth visible, 27(54%) patients had numb upper lip, 24(48%) patients avoided family, 16(32%) patients had difficulty in inserting the obturator and 23 (46%) patients experienced a funny looking upper lip.

DISCUSSION

The important studies which investigated the functioning of obturators in patients with maxillofacial defects using Obturator Functioning Scale include that by Kornblith et al⁷ in 1996, Rieger et al⁸ in 2003 and Irish et al⁹ in 2009. These studies suggest that better obturator functioning resulted in better quality of life for the patients in terms of their psychological, family and social functioning. The patients who underwent a facial approach reported a lower quality of life than those who underwent a transoral approach⁹. It is also observed that restoration of speech and esthetics was more efficient than eating and swallowing with the prosthesis⁷. Overall well-functioning obturator prosthesis significantly improves the quality of life of maxillectomy patients by fulfilling their needs of mastication, speech and cosmetics.

The present study assessed the functioning of obturator in 50 patients with hemimaxillectomy using obturator prosthesis. In this study the mean age was 41.7 ± 6.25 years, similar findings of different studies regarding age of patients was reported by Kornblith et al⁷ which consisted of 47 patients with mean age 59.9 ± 15.4 years. In another study by Rieger et al⁸ the mean age was 60.7 ± 15.3 years⁸.

We found that there were 37(74%) male and 13(26%) female patients. Moreover the study by Kornblith et al⁷ shows a similar pattern of gender distribution with 66% males in their study sample. Rieger et al⁸ and Irish et al⁹ both show a female predilection in their study samples with 60% and 71% females respectively. The possible reason for male

population dominance in the present study can be the fact that the study was carried out on Pakistani population where males are more predisposed to the causative agents of oral cancers like tobacco, beetle nut and pan chewing etc. Thus more males are affected by oral cancers and they are the ones who seek treatment for their problem more often than the women.

In our study we found that 92% of the patients suffered from difficulty in chewing with their obturators. This percentage is significantly larger than the previous studies. In the study by Kornblith et al⁷ 36% of the patients had difficulty in chewing food. Rieger et al⁸ showed that 25% of their patients had difficulty in chewing and with Irish et al⁹ 55% of patients had difficulty in chewing food. The possible reasons behind this mismatch between the results of previous studies and this study may be the fact that in the present study there is a homogenization of the study sample in terms of defect type and size whereas in the previous studies this wasn't specified. We found that 64% of the patients experienced leakage while swallowing their food. This problem was 3rd most common of all those asked from the patient. Kornblith et al⁷ showed 25% of patients had a leakage while swallowing, 20% of patients in the study by Rieger et al⁸ and 43% of the patients in the study by Irish et al⁹ demonstrated leakage while swallowing. In our study this percentage is also higher than the previous studies. Thus leakage while swallowing is a great concern in the patients with hemimaxillectomy even with their obturators in place.

It was seen that 20% of the patients in the present study experienced some difference in their voice from before surgery. This result was in agreement with the results shown by the previous studies. In the study by Kornblith et al⁷ 26% of the patients had difference in voice from before surgery. Rieger et al⁸ showed that 25% of their patients had this problem. In the study by Irish et al⁹ 29% of the patients had this problem. In present study it was also seen that 30% of all the patients had difficulty in talking in public. This result is in agreement with results produced by the previous studies. 23% of the patients in the study by Kornblith et al⁷ had difficulty in talking in public. 20% of the patients of Rieger et al⁸ had the same problem and 22% of the patients in the study by Irish et al⁹ had this problem. We found that 18% of all the patients complained of having nasal speech. The previous studies show similar results. Kornblith et al⁷ and Rieger et al⁸ both reported nasal speech in 20% of their patients. Irish et al⁹ reported this problem in 22% of their patients. In this study difficulty in pronouncing words was reported by 24% of the patients while Kornblith et al⁷ and Rieger et al⁸ both had 15% of patients who had

difficulty in pronouncing words. In the study by Irish et al⁹ 29% of the patients had this problem.

Speech being difficult to understand was seen in 20% of the patients in the present study which is higher from previous studies i.e., Kornblith et al⁷ showed that 6% of their patients had this problem. Rieger et al⁸ showed that 10% of their patients had this problem and in the study by Irish et al⁹ 7% of the patients had speech which was difficult to understand.

We found that only 4% of the patients had difficulty in talking on phone while previously only Irish et al⁹ included this item in his questionnaire and in their study 14% of the patients had difficulty in talking on phone suggesting that this is not a great concern for most of the patients. 66% of the patients in the present study suffered from dry mouth and this problem ranked the second greatest problem for hemimaxillectomy patients. The possible reason behind this may be the post operative radiotherapy given to these patients for the cure of cancer. In the study by Kornblith et al⁷ 51% of patients had this problem. In the study by Rieger et al⁸ 45% of the patients and 38% of the patients in the study by Irish et al⁹ suffered from dry mouth.

Moreover we found 23(46%) patients were dissatisfied with their looks, 12(24%) patients had noticeable clasps on front teeth, 27(54%) patients had numb upper lip, 24(48%) patients avoided family, 16(32%) patients had difficulty in inserting the obturator and 23(46%) patients experienced a funny looking upper lip. Kornblith et al⁷ showed that 25% of their patients had numbness in upper lip. Rieger et al⁸ showed that 20% of their patients had numb upper lip and in the study by Irish et al⁹. 31% of the patients had this problem. In the previous studies, Kornblith et al⁷ reported 6%, Rieger et al⁸ reported 10% and Irish et al⁹ reported 7% patients who avoided family and social events. There is a significant difference in the result of previous studies and the present one. The greater percentage in the present study may be due to the fact that all the patients in this study were adults to elderly age group. These patients were quite conscious of their disability and psychosocially affected by their disease. Thus they avoided participation in family and social activities around them. Also the concurrent problems of difficulty in chewing, dry mouth, difficulty in talking, funny upper lip precludes them from pursuing different social activities. Hemimaxillectomy can be performed both by extra oral and intraoral surgical approaches. The patients which underwent an extra oral surgical approach had greater scarring and contracture formation over their upper lip. This gave it an

unaesthetic or funny appearance. As all the patients in the present study had hemimaxillectomy defect so this problem came out quite prominently in the results.

CONCLUSION

Subjective assessment by means of obturator functioning scale is a valuable tool in predicting patient response to obturator functioning. It can be concluded from the present study that with the obturators made for hemimaxillectomy patients a considerable number of patients experienced difficulty in mastication and swallowing. Around half of the patient population was satisfied with their esthetic and social needs as met by the obturator. A majority of the subjects were satisfied and did not have difficulty with the phonetic function of their obturator prostheses.

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