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## Quality of life and assessment of functioning of obturator utilizing obturator function scale after maxillectomy

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### Abstract

**Objective:** To assess the obturator functioning in maxillofacial patients with obturator prostheses after the surgical treatment of the maxilla (maxillectomy) for the treatment of oral cancer.

**Setting:** Dr Ziauddin Ahmad Dental College and Hospital.

**Methods:** 30 patients were taken for the study. A questionnaire 'Obturator Functioning Scale' developed at "Memorial Sloan Kettering Cancer Centre New York, USA", consists of 15 questions was given to these patients after the insertion of the obturator used by them for at least 3 weeks. 5-point Likert scale was used for recording the responses for all the questions. The problems experienced with the frequent use of obturator prosthesis by the patients were presented in the form of percentage and frequency.

**Result:** The patients face different problems by using the obturators, but the commonly faced problem is difficulty in chewing food which is followed by xerostomia (dry mouth). Other problems encountered during the use of obturators are leakage during swallowing food, numbness in the upper lip, patients avoid going in family and social events and functions, face difficulties while inserting obturator, during talking in public, pronouncing different words, talking on the phone, nasal speech. Patients also complain about change of voice before and after the surgery, a noticeable clasp of obturator on front teeth, weird look or dissatisfaction with a look while using the obturator.

**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:** obturators, maxillectomy, obturator functioning scale

### Introduction

Oral cancer is the most prevalent cancer in India and its subcontinental area. If diagnosed early its survival rate is 81% however the rate decreases to 45% when diagnosed in late stage. The treatment of oral cancer may involve radiation therapy, chemotherapy, surgical resection, or its combination. Still, the surgery is the gold standard treatment for oral cancer as the lesion is usually diagnosed in later stages whereas chemotherapy and radiotherapy are the adjuvant treatment to surgical resection. Surgical resection of tumour from the oral cavity which creates a surgical defect results in several problems to the patient including difficulty in speech, swallowing, mastication, poor esthetics. Obturator prosthesis is commonly used in treatment for such defects. Obturator helps in closing these types of defects and restore the normal form and functions of the oral cavity. Obturator functions can be assessed by subjective and objective means. Objective assessment of obturator is performed by the operator by using advanced scientific equipment whereas subjectively the form and function of the prosthesis are evaluated from a patient's point of view. Subjective functioning of the obturator can be assessed by using the Obturator Functioning Scale. There are 15 questions in the questionnaire which measures the patient's ability to mastication and phonetics, which are rehabilitated with obturator prosthesis. All questions were rated on a 5-point Likert scale. The maxillectomy is classified into different types by a different scientist like Brown classification, Santamaria and Cordeiro classification etc., but this study considered maxillectomy as a single entity for the subjective assessment of obturators. However, the result and recording will be affected by considering the different defects.

The aim of the study to assess the functioning of obturator while considering the defects as a single entity.

### Materials and Methods

The cross-sectional study was done in two years in Dr Ziauddin Ahmad Dental College and Hospital AMU Aligarh. The sampling technique used was non-probability purposive based sampling. The sample size consists of 50 patients and calculated with 90% confidence level, 12% margin of error and patient have the least complaint of difficulty in chewing, nearly all patient used obturators for at least 3 weeks before commencement of study.

The patients were in the age group 35-60 years undergone maxillary resection (maxillectomy) for maxillary malignant neoplasm, using the obturator after 4-6 months of surgery, with edentulous mandible and having at least 4-7 teeth on the opposite side of the upper arch and the response of the questionnaire was recorded after at least 3 weeks use of obturator. Patient with congenital abnormality like cleft lip and palate using obturators were excluded.

Therefore, the sample size of 30 patients within inclusion criteria and excluded the patient based on study patients selected from OPD Department of Prosthodontics and Crown and Bridge, Dr Z.A Dental College and Hospital, AMU, Aligarh. Informed consent was taken from each patient. Subjectively functioning of the obturator is assessed by using the Obturator Functioning Scale. Obturator functioning scale was assessed in 1-15 questions in terms of no difficulty on a 5-point Likert Scale. Points 1 represent "not at all difficult" and point 2 stood for "a little difficult". Point 1 and 2 were considered as "No Difficulty" on the scale. Points 3, stood for 'somewhat difficult', point 4 for 'very much difficult' and point 5 for 'extremely difficult' and point 3, 4, and 5 were considered as 'Difficulty'. The questions included in the questionnaire

Q1-difficulty in chewing,

Q-2 Xerostomia (Dry Mouth),

Q-3 leakage while swallowing of food,

Q-4 numbness of the upper lip,

Q-5 patient avoids going in family and social events and functions.

Q-6 difficulty in inserting the obturator

Q-7 difficulty in pronouncing words,

Q-8 difficulty in talking in public,

Q-9 speech difficult to understand,

Q-10 difficulty in talking on the phone

Q-11 nasal speech

Q-12 voice different from before and after the surgery noticeable clasps,

Q-13 funny looking upper lip.

Q-14 dissatisfaction with looks, and

Q-15 noticeable clasp of obturator on front teeth.

At least 3 weeks after the use of obturator prosthesis, the functioning of the obturator is assessed through Obturator functioning Scale. Patient responses are recorded in 1-5 point were 1-2 and 3, 4, 5 were considered not difficult and difficult respectively. The scores on the Likert scale as 1- 5 points were inversely proportional to the functioning of the obturator, therefore greater the score poorer the functioning of the obturator as evaluated by the patient.

### Data analysis procedure:

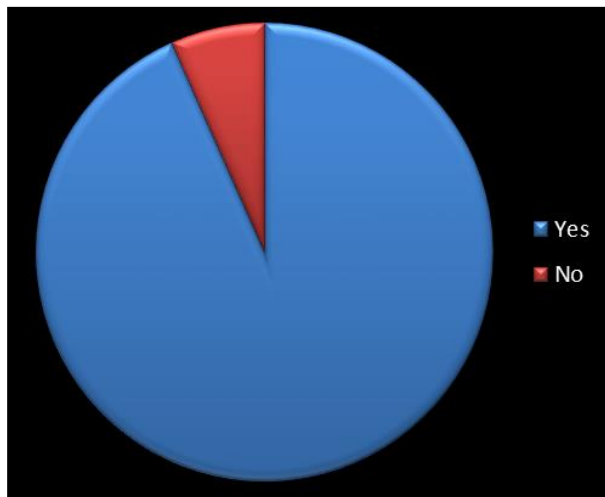
SAS software was used to analyse the recorded data obtained after the administration of the questionnaire. The Demographic data which include age and gender of the patient were analysed using Simple Descriptive Statistics. Age was presented by calculating Mean  $\pm$  Standard deviation. Gender and obturator functioning in terms of difficulty in chewing food, xerostomia (dry mouth), leakage during swallowing food, numbness in the upper lip, patients avoid going in family and social events and functions face difficulties while inserting obturator, difficulty during talking in public, difficulty in pronouncing different words, speech difficult to understand, difficulty in talking on the phone, nasal speech, change of voice before and after the surgery, a noticeable clasp of obturator on front teeth, funny looking of the upper lip, weird look or dissatisfaction with look were presented by using frequency and percentages.

### Result

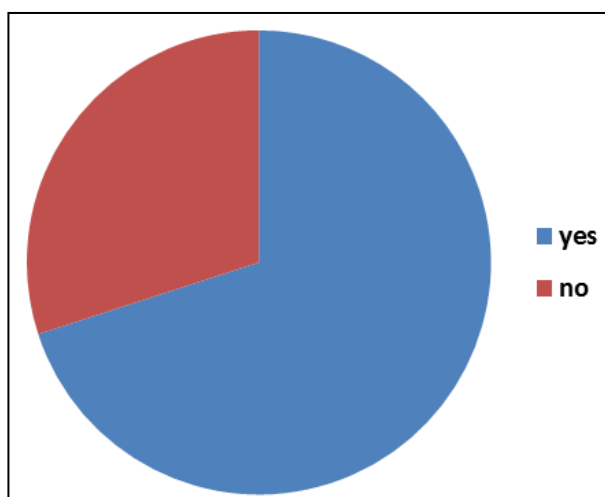
**Table 1:** The questions included in the questionnaire

	Question (?)	Yes	N	Percentage (%)
		No		
1	Difficulty in chewing food	Yes	28	93.3
		No	02	6.7
2	Xerostomia (dry mouth)	Yes	21	70
		No	09	30
3	Leakage during swallowing food	Yes	20	66.7
		No	10	33.3
4	Numbness in the upper lip	Yes	18	60
		No	12	40
5	Patients avoid going in family and social events and functions	Yes	19	63.3
		No	11	36.7
6	Faces difficulties while inserting an obturator	Yes	10	33
		No	20	67
7	Difficulty during talking in public	Yes	10	33.3
		No	20	66.7
8	Difficulty in pronouncing different words	Yes	08	26.7
		No	22	73.3
9	Speech difficult to understand,	Yes	06	20
		No	24	80
10	Difficulty in talking on the phone	Yes	02	6.7
		No	28	93.3
11	Nasal speech	Yes	06	20

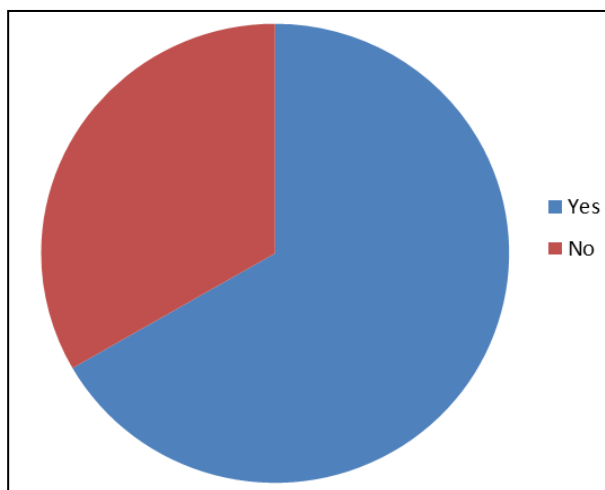
		No	24	80
12	Change of voice before and after the surgery	Yes	09	30
		No	21	70
13	Funny looking of the upper lip	Yes	14	46.7
		No	16	53.3
14	Weird look or dissatisfaction with look	Yes	08	26.7
		No	22	73.3
15	The noticeable clasp of obturator on front teeth	Yes	07	23.3
		No	23	76.7



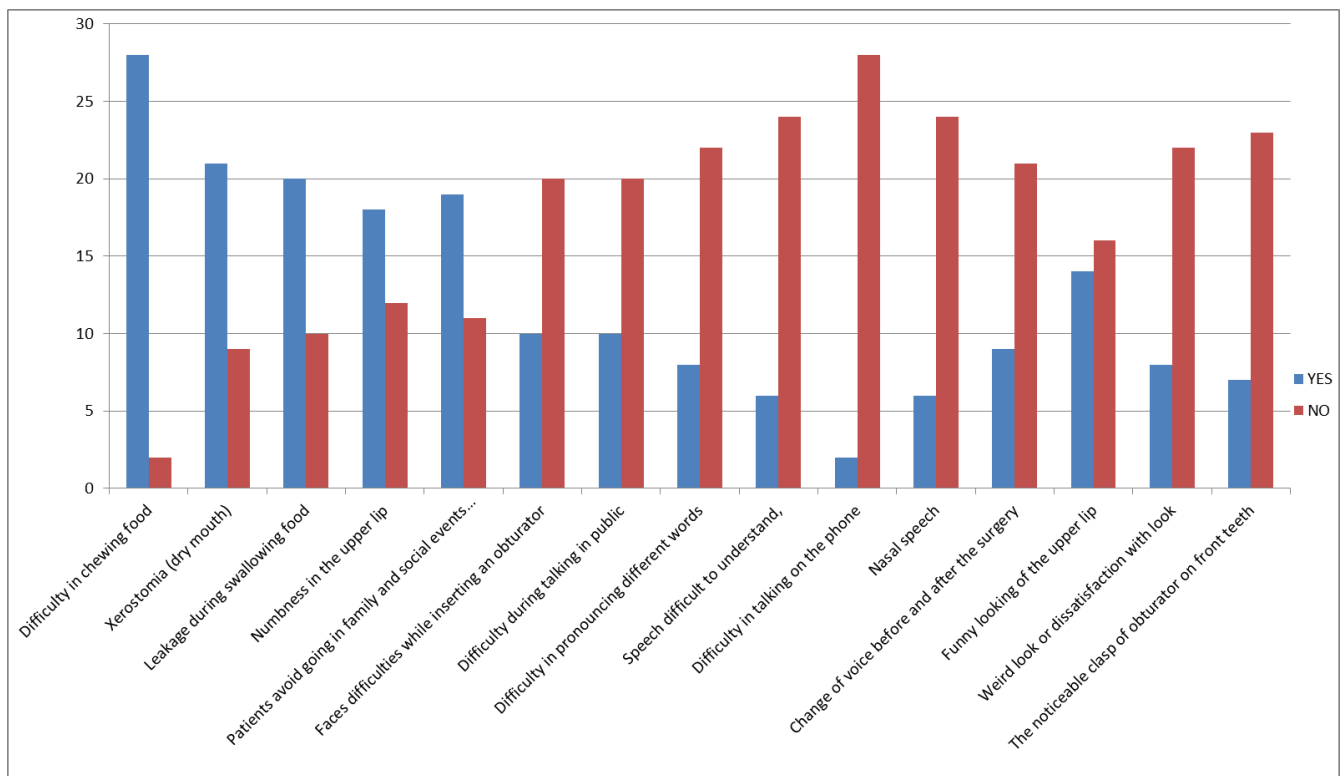
**Fig 1:** Difficulty in chewing food



**Fig 2:** Xerostomia



**Fig 3:** Leakage during swallowing food



**Fig 4:** The questions included in the questionnaire

In this study, the mean age calculated of all the patients was  $46.70 \pm 5.25$ . There were 23(77%) male and 07(23%) female patients. There was 93% patient experienced difficulty in chewing food while using obturator while 07% didn't complain of the difficulty of chewing. There are total 70% of the patient feels dry mouth (xerostomia), 66% of patient experienced leakage during swallowing food, 60% of the patient feels numbness in upper lip, 62% patients avoid going in family and social events and functions, 33% encounter difficulty while inserting obturator, 33% experienced difficulty during talking in public, 26% found difficulty while pronouncing different words, 20% thinks their speech difficult to understand, only 6% found difficulty in talking on the phone, 20% have nasal speech. 28% of patients also complain of change of voice before and after the surgery, 23% had noticeable clasp of obturator on front teeth, 48% experienced funny looking of the upper lip while 26% feels weird to look or dissatisfaction with a look while using the obturators prosthesis.

## Discussion

The important studies which investigated the functioning of obturators in patients with maxillofacial defects developed after maxillary resection or maxillectomy using Obturator Functioning Scale developed at Memorial Sloan Kettering Cancer Centre New York, USA include that by Kornblith *et al.* [7] in 1996, Rieger *et al.* [8] in 2003 and Irish *et al.* in 2009. These studies proposed that better functioning of obturator will result in a better quality of lifestyle for the patients, that is better their psychological, family and social functioning. The patient went through facial approach for maxillectomy reported lower or poor quality of life rather than the transoral approach. It is also observed that the phonetics and esthetics are more efficiently restored than the eating and swallowing of food with the use of obturator, whereas overall well-functioning obturator improves the quality of life of the patient undergone to maxillectomy by restoring the mastication, phonetics and esthetics.

This study with the mean age calculated of all the patients was  $46.70 \pm 5.25$  years of 30 patients using obturator prostheses after the maxillectomy, assessed the functioning of the obturator found similar to other studies conducted for the assessment of the functioning of obturators like Kornblith *et al.* whose study consisted of 27 patients with mean age  $59.9 \pm 15.4$  years and other studies by Rieger *et al.* with the mean age of  $60.7 \pm 15.3$  years. We found there were 77% male and 23% female patients out of total 30 patients, have an almost similar pattern of distribution of gender with the study of Kornblith *et al.* shows 66% males, 34% female whereas and *et al.* and Irish *et al.* shows a predilection towards female with sample consist 60% female 40 males and 71% females 29% males respectively. The male predilection in this study because study being conducted in India where male usually a habit of tobacco chewing which is the most common etiological factor for oral cancer, which later undergoes through maxillectomy as a treatment for oral cancer. These patients used obturator prosthesis to restore their function.

In our study there was 93% patient experienced difficulty in chewing food while using obturator, the percentage is significantly increasing as compare to the studies conducted by Kornblith *et al.* showed that 36% of the patients while Rieger *et al.* showed that 25% of their patients and Irish *et al.* 55% of patients have difficulty in chewing food. 70% of the patients in our study reported for the dry mouth (xerostomia) and this problem which is 2<sup>nd</sup> most common concern for the patients after difficulty in chewing. This problem is basically due to the post-operative radiotherapy given to these patients as an adjuvant treatment to the surgery for treatment of oral cancer, while Kornblith *et al.* reported 51% of patients, Rieger *et al.* reported 45% of the patients and Irish *et al.* reported 38% of the patients had suffered from xerostomia (dry mouth).

We found that 66% of patient experienced leakage during swallowing food while another study Kornblith *et al.* showed 25% of patients while 20% of patients in the study by Rieger *et al.* and 43% of the total patients in the study by Irish *et al.*

have leakage while swallowing food, the percentage is higher which means leakage during swallowing food is the basic concern of the patients as per all the studies conducted while using obturator. Through this study, it was found that 34% of all the patients had difficulty in talking in public which approximately similar to the results produced by studies like, 23% of the patients in the study by Kornblith *et al.*, 20% of the patients and 22% of the patients in the study by Irish *et al.* had face difficulty in talking in public.

We found that 20% of the patients complained of having nasal speech result exactly similar to the studies by Kornblith *et al.* and Rieger *et al.* whereas Irish *et al.* concluded that 22% of their patients having complained of nasal speech. According to our study difficulty in pronouncing different words was reported by 26% of the patients while other studies by Kornblith *et al.* and Rieger *et al.* both had reported that 15% of patients for this problem while 29% of the patients had difficulty in pronouncing different words by Irish *et al.* study. In our study, 18% of the patients found their speech is difficult to understand whereas other studies by Kornblith *et al.* reported that 6%, Rieger *et al.* reported that 10% of their patients and Irish *et al.* 7% of the patients had this problem.

In our study difficulty in talking on the phone were reported by only 6% of the patients while only Irish *et al.* asked this question in his questionnaire which concluded 14% of the patients had this problem which is not a big concern for the patient is not as compare to other problem. In our study, 28% of the patients experienced some difference in their voice from before and after surgery, which is agreed with the results shown by different studies like a study by Kornblith *et al.* 26% of the patients and Rieger *et al.* 8 showed that 25% of their patients and study by Irish *et al.* 29% of the patients had noticed the difference in their voice from before and after surgery.

Moreover, 26% of patients have complained of weird look or dissatisfied with their looks, 24% of the patients had noticeable clasps on front teeth, 60% of the patients had numbness of the upper lip, while Kornblith *et al.* reported that 25% of their patients, Rieger *et al.* reported for 20% of their patient and Irish *et al.* 31% of the patients had the numbness of upper lip while using obturator. 62% of the patients avoid going in family and social events and functions. the previously conducted studies by Kornblith *et al.* showed that 6% of patients, Rieger *et al.* showed 10% of patients and Irish *et al.* showed that 7% of patients avoided family and social events. While 32% of the patients of our study reported for the difficulty in inserting the obturator and 48% of the patients complained of funny looking of the upper lip.

Which shows a significant difference with the result of the previous studies and this study. The increasing percentage in this study because the patients in this study were younger than the age group of previous studies. These younger age group patients were quite conscious psychosocially affected and consequences by disease. That's why the patients avoid going in family and social events and functions around them. Also, the concurrent problems of difficulty in chewing, dry mouth, difficulty in talking, funny upper lip preclude them from pursuing different social activities. maxillectomy can be performed both by extra-oral that is through facial approach and the intraoral approaches. The patients which undergone maxillectomy through an extraoral approach had greater scarring, un-esthetics to the patient.

## Conclusion

The subjective assessment of the obturator with the help of

obturator functioning scale which is a valuable mean in evaluating the patients' response to the functioning of the obturator. this can conclude from this study that the patients using the obturators after the maxillectomy have a considerable number of patients experienced different problems like difficulty in mastication swallowing of food leakage while swallowing etc while using obturator. About half of the patients get satisfied with their esthetics and social needs as met by the obturator. The obturator has significantly improved the quality of life and has a greater impact on patient psychology after the maxillectomy.

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