

ORIGINAL RESEARCH

Assessment of effect of complete denture wear on the flow rate of saliva in both medicated and apparently healthy patients

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ABSTRACT

Background: Systemic disorders and xerogenic medications are common causes of salivary gland hypofunction. The present study was conducted to assess the effect of complete denture wear on the flow rate of saliva in both medicated and apparently healthy patients. **Materials & Methods:** 50 patients requiring complete denture of both genders were divided into 2 groups of 25 each. Group I was medicated group and group II was unmedicated group. Unstimulated whole saliva was collected and was then determined volumetrically and the flow rate was calculated before denture insertion, 24 hours after denture insertion, and 3 months after denture insertion based on the sample collection time and was expressed in ml/minute. **Results:** Group I had 14 males and 11 females and group II had 12 males and 13 females. The mean salivary flow rate before denture insertion in group I was 0.24 ml/min, 24 hours after denture insertion was 0.36 ml/min and 3 months after denture insertion was 0.27 ml/min. In group II, mean salivary flow rate before denture insertion was 0.29 ml/min, 24 hours after denture insertion was 0.38 ml/min and 3 months after denture insertion was 0.28 ml/min. The difference was significant ($P < 0.05$). **Conclusion:** There was no difference in salivary flow rate in both medicated and apparently healthy patients before and after insertion of denture.

Key words: salivary flow, medicated, denture

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INTRODUCTION

Saliva is an aqueous, hypotonic solution which protects all the tissues of the oral cavity. It is secreted by the major salivary glands - the parotid, submandibular or submaxillary, and sublingual.¹ In the oral cavity there are also a large number of minor salivary glands found on the surfaces of the buccal, palatine, and labial mucosa, as in the tongue, sublingual area, and in the retromolar region. The salivary gland structure is made up of acinar cells, accessory ducts (intercalated and intralobular), striated ducts, and the principal duct (Stensen, Wharton, Bartholin, and Rivinus).² Both afferent and efferent stimuli modulate neural control of salivation. Apart from taste and mastication, which play a key role, the former also include smell, sight, and thought. Input to the solitary nucleus from afferent stimuli is integrated via the facial (VII) and glossopharyngeal (IX) nerves. Saliva plays a significant role in oral homeostasis.³

Systemic disorders and xerogenic medications are common causes of salivary gland hypofunction. More than 400 medications have been reported to induce xerostomia or salivary gland hypofunction as potential side effects.⁴ Antidepressants, antipsychotics, antihistamines, antihypertensives, and sedatives are the drug categories most commonly associated with salivary gland hypofunction or xerostomia. There are various factors, including saliva, that aid in the proper functioning of removable complete denture and increase their longevity, which may be influenced by a number of variables.⁵ The present study was conducted to assess the effect of complete denture wear on the flow rate of saliva in both medicated and apparently healthy patients.

MATERIALS & METHODS

The present study consisted of 50 patients requiring complete denture of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 25 each. Group I was medicated group and group II was unmedicated group. Unstimulated whole saliva was collected under standardized conditions between 9–11 AM using the spitting method. The amount of saliva collected was then determined volumetrically and the flow rate was

calculated before denture insertion, 24 hours after denture insertion, and 3 months after denture insertion based on the sample collection time and was expressed in ml/minute. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Groups	Group I	Group II
Status	medicated	unmedicated
M:F	14:11	12:13

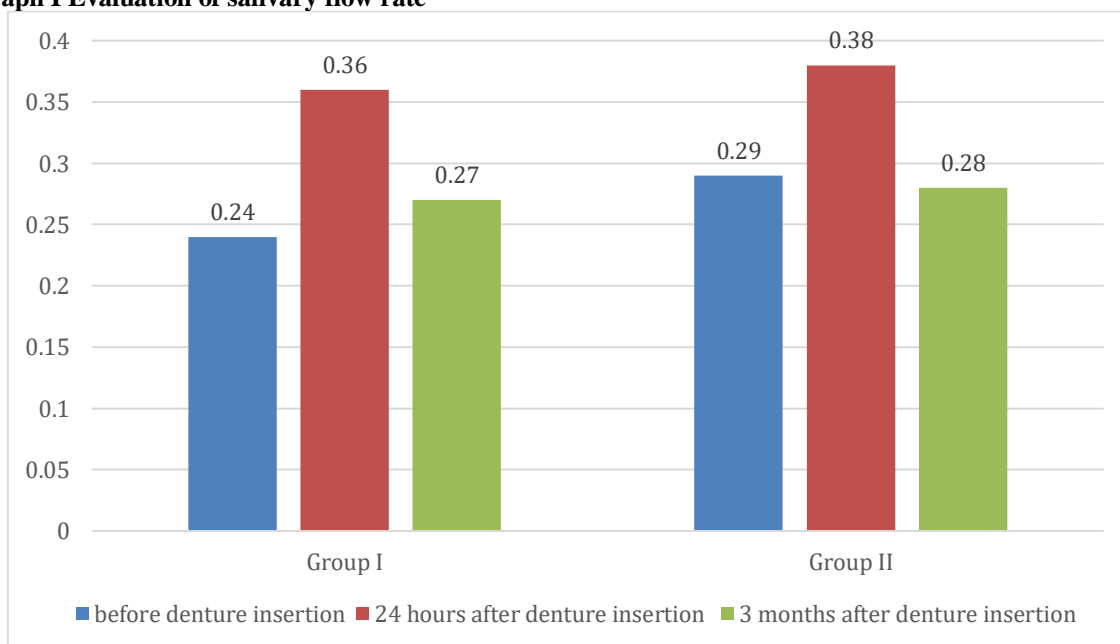
Table I shows that group I had 14 males and 11 females and group II had 12 males and 13 females.

Table II Evaluation of salivary flow rate

Groups	before denture insertion	24 hours after denture insertion	3 months after denture insertion	P value
Group I	0.24	0.36	0.27	0.05
Group II	0.29	0.38	0.28	0.04

Table II, graph I shows that the mean salivary flow rate before denture insertion in group I was 0.24 ml/min, 24 hours after denture insertion was 0.36 ml/min and 3 months after denture insertion was 0.27 ml/min. In group II, mean salivary flow rate before denture insertion was 0.29 ml/min, 24 hours after denture insertion was 0.38 ml/min and 3 months after denture insertion was 0.28 ml/min. The difference was significant (P< 0.05).

Graph I Evaluation of salivary flow rate



DISCUSSION

Wearing complete dentures can lead to a decrease in saliva flow compared to individuals with their natural teeth. This reduction in saliva flow is often attributed to the absence of natural tooth roots, which can affect the stimulation of salivary glands. When individuals start wearing complete dentures, they may experience a temporary increase in saliva flow.⁶ This is known as "denture hyper-salivation" and is a common reaction as the mouth adjusts to the presence of the dentures. However, this excessive saliva flow usually resolves as the individual gets accustomed to wearing the

dentures.⁷ Some individuals may experience dry mouth while wearing complete dentures. The fit and retention of dentures can affect the natural flow of saliva. Dry mouth can lead to discomfort, difficulty in speaking and swallowing, and an increased risk of dental problems such as tooth decay and gum disease.⁸ The present study was conducted to assess the effect of complete denture wear on the flow rate of saliva in both medicated and apparently healthy patients.

We found that group I had 14 males and 11 females and group II had 12 males and 13 females. Sonthalia

et al⁹ evaluated the effect of complete denture wear on the flow rate of saliva in both medicated and apparently healthy patients. The participants were 42 edentulous individuals aged 35–70 years requiring complete denture prostheses. The participants were divided into two groups of medicated and unmedicated. Unstimulated whole saliva was collected at 24 h and 3 months after the insertion of new complete dentures in both the groups. In the unmedicated group, the mean salivary flow rate was high at 24 h after denture insertion when compared to before denture insertion. In the medicated group, the observation was highly significant 24 hours after denture insertion and after 3 months when compared to before denture insertion.

We found that the mean salivary flow rate before denture insertion in group I was 0.24 ml/min, 24 hours after denture insertion was 0.36 ml/min and 3 months after denture insertion was 0.27 ml/min. In group II, mean salivary flow rate before denture insertion was 0.29 ml/min, 24 hours after denture insertion was 0.38 ml/min and 3 months after denture insertion was 0.28 ml/min. Navazesh et al¹⁰ evaluated the relationship among systemic disorders, medications, and salivary flow rates. Sixty-three ambulatory dental patients aged 23 to 82 years were randomly selected. The nature, duration, and number of systemic disorders and medications were documented. Repeated measurements of unstimulated whole, chewing-stimulated whole, acid-stimulated parotid, and candy-stimulated parotid salivary flow rates were obtained. For persons with systemic disorders who were taking medication, all salivary flow rates were significantly lower than the flow rates in healthy persons. Among persons with at least one systemic disorder who were taking medication, those who had been taking medication for longer than 2 years had significantly lower unstimulated whole saliva, chewing-stimulated whole saliva, and candy-stimulated parotid saliva flow rates than those who had been taking medication for 1 to 2 years. The number of systemic disorders significantly and negatively affected the acid-stimulated parotid salivary rates. The prevalence of salivary hypofunction determined on the basis of unstimulated whole saliva and acid-stimulated parotid saliva was significantly higher in the those persons with systemic disorders and taking medications. The results suggest that salivary secretion is affected by the number of systemic disorders and duration of the potentially xerogenic medications.

Muddugangadhar et al¹¹ compared the flow rate and pH of resting (unstimulated) and stimulated whole saliva before and after complete denture placement in different age groups. Fifty healthy, non-medicated edentulous individuals of different age groups requiring complete denture prostheses were selected from the outpatient department. The resting (unstimulated) and stimulated whole saliva and pH

were measured at three stages i.e., before complete denture placement, immediately after complete denture placement; and after 2 to 3 months of complete denture placement. Saliva production was stimulated by chewing paraffin wax. pH was determined by using a digital pH meter. Statistically significant differences were seen in resting (unstimulated) and stimulated whole salivary flow rate and pH obtained before, immediately after, and after 2 to 3 months of complete denture placement. No statistically significant differences were found between the different age groups in resting (unstimulated) as well as stimulated whole salivary flow rate and pH.

The limitation the study is small sample size.

CONCLUSION

Authors found that there was no difference in salivary flow rate in in both medicated and apparently healthy patients before and after insertion of denture.

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