Gender difference in prevalence and incidence of mucosal lesions associated with wearing removable dentures

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ABSTRACT

Denture users are vulnerable to changes in the oral cavity due to improper maintenance of dentures. Most common lesions due to dentures are denture stomatitis, epulis fissuratum, traumatic ulcers etc. The aim of this study is to find out the gender difference in prevalence and incidence of mucosal lesions associated with wearing removable dentures. Case records were collected and analysed the data of 41000 patients between June 2019 and March 2020 from saveetha dental. A total of 249 cases were recorded with patients who have a removable denture, and their data was tabulated with parameters such as age, gender, type of lesion, size of the lesion, type of denture. Data were then imported to spss for statistical analysis. Descriptive statistics and chi-square test were used for further analysis. Total of 249 patients was recorded who had dentures in which 40.1% (n=100 patients) were affected with oral lesions, in which 53% were females, and 47% were males who were affected. The mucosal lesions were found to be more prevalent in age groups above 50 years. The most common lesion was denture stomatitis, where t the most common type of denture used was TPD (73%). Within the limits of this study, Prevalence of mucosal lesions due to dentures was similarly seen in both genders, with denture stomatitis being the most common lesion associated with a denture.

INTRODUCTION

Dentures are appliances which replace the lost natural tooth or teeth with artificial teeth. Dentures, when used for a period of time, causes changes in the oral cavity, like lesions related to dentures such as denture stomatitis, traumatic ulcers, epulis fissuratum etc. These lesions might be associated with systemic disease also (Márton et al., 2004; Kivovics, 2007; Ali et al., 2015). Studies showed that Diabetes is one of the risk factors for denture stomatitis and hyperplasia due to denture (Dundar and Kal, 2007). The prevalence of mucosa lesions is increased with an increase in an age where studies have proven it (Corbet et al., 1994). One of the causes of oral
lesions due to dentures is not replacing old or worn-out dentures (Moskona and Kaplan, 1992; Ashok et al., 2014).

Proper oral hygiene and health care has to be maintained for preventing these lesions (Selvan and Ganapathy, 2016; Subasree et al., 2016; Vijayalakshmi and Ganapathy, 2016; Basha et al., 2018).

The prevalence of females being affected with oral lesions more than men is seen in a few studies as well as in the current study (Dorey et al., 1985; Firoozmand et al., 2006; da Silva et al., 2011).

Denture stomatitis/ denture sore mouth is characterized by inflammatory changes and which is most frequently seen in the maxilla. Females are more prone to denture stomatitis (Love et al., 1967; Chrigström et al., 1970).

Previous literature suggested that defective dentures, improper cleaning techniques of denture cleaning affect the condition of denture which can induce the lesions (Budtz-Jorgensen, 1981; Peltola et al., 2008; Sesma et al., 1999; Jyothi et al., 2017).

Traumatic ulcers occur due to newly fitted dentures, ill-fitting dentures, overextend denture flanges which frequently occur in the first five years.
Table 1: Gender distribution in accordance with the type of lesion.

| Lesion Present                  | Male | Female |
|---------------------------------|------|--------|
| Denture stomatitis              | 36   | 47     |
| Epulis fissuratum                | 8    | 3      |
| Traumatic ulcer                  | 3    | 2      |
| Denture induced papilloma        | 0    | 1      |
| No lesion present                | 90   | 59     |

Table 2: The frequency of different age groups in accordance with the type of lesion.

| Lesion Present                  | 18-30 years | 31-40 years | 41-50 years | 51-60 years | 61-70 years | 71 years and above |
|---------------------------------|-------------|-------------|-------------|-------------|-------------|-------------------|
| Denture Stomatitis              | 8           | 5           | 18          | 23          | 24          | 5                 |
| Epulis Fissuratum                | 0           | 0           | 1           | 4           | 3           | 3                 |
| Traumatic Ulcer                  | 0           | 0           | 1           | 1           | 2           | 1                 |
| Denture Induced Papilloma        | 0           | 0           | 0           | 1           | 0           | 0                 |
| No Lesion Present                | 3           | 6           | 29          | 31          | 47          | 33                |

RESULTS AND DISCUSSION

Total of 249 patients was recorded in which 55% were male, and 45% were female. Out of 249 patients, only 40% (n=100) had oral lesions in which 53% were females, and 47% were males Figure 1Table 1. In this study, the prevalence of females being more affected was seen, which is 53% (n=100). Some studies have also shown the same results (Dorey et al., 1985; Firoozmand et al., 2006; da Silva et al., 2011). It wasn’t well understood, but it has been suggested that women tend to overuse dentures while not needed, such as during sleeping (Cutright, 1974).

The most affected age group in this study were 51-60 years (29%) and 61 to 70 years (29%) while the least affected was 31-40 years Figure 2Table 2. Several authors claim that with an increase in age, there is a decrease in the salivary flow which makes them prone to these lesions (Canger et al., 2009; Filgueiras et al., 2016). In this study, Denture Stomatitis was the most commonly seen lesion, which is 83% out of 100 patients and 33.3% out of 249 patients Figure 3. Some studies showed a high prevalence of denture stomatitis such as 65%-463 students and low prevalence rate -3.3% out of 210 cases (Budtz-Jorgensen, 1974; Ali et al., 2015). This could be the fact that patients were maintaining oral hygiene properly recommended by the dentist.

MATERIALS AND METHODS

It is a retrospective cross-sectional study done under a university setting. Case records were collected and analyzed the data of 41000 patients between June 2019 and March 2020. A total of 249 cases were recorded with patients who had a removable denture. The case sheets were cross-verified. The data is tabulated under parameters such as age, gender, type of lesion, size of the lesion, type of dentures. Data were then imported to spss for statistical analysis where descriptive statistics and chi-square test were done for further analysis.
Table 3: The frequency of the type of denture in accordance with the type of lesion.

| Lesion present                      | CD  | TPD |
|-------------------------------------|-----|-----|
| Denture stomatitis                  | 16  | 67  |
| Epulis fissuratum                   | 8   | 3   |
| Traumatic ulcer                     | 3   | 2   |
| Denture induced papilloma           | 0   | 1   |
| No lesion present                   | 92  | 57  |

Table 4: The frequency of site of lesion in accordance with the type of lesion.

| Lesion present                      | Maxilla | Mandible | Maxilla and mandible | No lesion present |
|-------------------------------------|---------|----------|----------------------|-------------------|
| Denture stomatitis                  | 83      | 0        | 0                    | 0                 |
| Epulis fissuratum                   | 2       | 9        | 0                    | 0                 |
| Traumatic ulcer                     | 1       | 2        | 2                    | 0                 |
| Denture induced papilloma           | 1       | 0        | 0                    | 0                 |
| No lesion present                   | 0       | 0        | 0                    | 149               |

these oral lesions (Ali et al., 2015). This might be due to the fact that people in this region are not aware of proper oral hygiene maintenance. Maxilla was the most prevalent site of lesions (34.9% - 249 patients, 87% - 100 patients) Figure 4 Table 4 due to denture stomatitis mostly affecting maxilla (Budtz-Jorgensen, 1974; Ariga et al., 2018). Chi-square test was done with the type of lesion present and with the type of denture used, P<0.05, which was statistically significant Figure 3. Another positive correlation was found between the type of lesion present and site of the lesion, P<0.05, which was statistically significant Figure 4.

Figure 1 shows that the X-axis represents lesions present, and Y-axis represents the number of patients affected by lesions. Green color indicates females and blue indicates males. According to this graph, the prevalence of these lesions was similar in both the genders. (Pearson chi-square value- 8.961, p-value- 0.062, p>0.05 which is statistically not significant). Figure 2 shows that the X-axis represents lesions present, and Y-axis represents the number of patients affected by lesions. Blue color indicates 18-30 years, green indicates 31-40 years, black indicates 41-50 years, purple indicates 41-60 years, yellow indicates 61-70 years and red indicates 71 and above years. The figure explains that patients above 50 years had a higher prevalence, making them prone to these lesions, statistically not significant (Pearson chi-square value-24.103, p-value- 0.238, p>0.05 which is statistically not significant).

Figure 3 shows that the blue color indicates CD and green indicates TPD. The X-axis represents lesions present, and Y-axis represents the number of patients affected by lesions. Denture stomatitis was the most common lesion seen mostly in TPD users (Pearson chi-square value- 42.629, p-value- 0, p<0.05, which is statistically significant). Figure 4 X-axis represents lesions present, and Y-axis represents the number of patients affected by lesions. Blue color indicates maxilla, green indicates mandible, black indicates both maxilla and mandible and purple indicates no lesion. This graph shows that maxilla had a high occurrence of the denture-related lesion which was mostly seen in cases of denture stomatitis (Pearson chi-square value-526.4, p-value- 0,p<0.05 which is statistically significant). Short sample size, single centered study and absence of different ethnic populations were the limitations of this study. Studying for a larger population with different ethnic populations and making it a multi-centred study can be done in the future.

CONCLUSIONS
Within the limits of the study, Prevalence of mucosal lesions due to dentures was almost similar in both the genders. TPD users were most commonly affected with the denture-related lesions with denture stomatitis being the most common among the lesions associated with dentures. The prevalence of these lesions can be reduced by giving strict and proper instructions about the maintenance of dentures as well as oral hygiene.

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Conflict of Interest
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