EXTRACTION OF TEETH IN PATIENTS OVER 55 YEARS OF AGE - A RETROSPECTIVE STUDY

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ABSTRACT:

Introduction : Extraction of tooth is the removal of a tooth from its socket in the bone. A tooth extraction is a painless removal of the entire tooth with minimal trauma to the investing tissues. Extractions of permanent teeth are performed for several reasons such as dental caries, periodontal diseases, traumatic injuries, prosthetic considerations, orthodontic treatment, failed endodontic treatment and tooth impaction. The impact that tooth loss can have, creates a psychological impact in the patient as well as affects the quality of life.

Aim : A retrospective cross sectional study was conducted to analyse the extraction of teeth performed in patients over 55 years of age using the patient records from June 2019 to March 2020.

Materials and methods : The data of patients who underwent extraction above the age of 55 years old was collected and then subjected to statistical analysis. Chi square test was performed with a level of significance set at p<0.005.

Result : The mean age for patients undergoing extractions that were included in the study was 73.63. The age group associated with the most number of extractions were seen in the age group 55-65 years of age 67.3% (n=1251), followed by 65-75 years and 27.4% (n=510). Male patients over the age of 55 years underwent more extraction 52.3% (n=972), when compared to female patients 47.6% (n=885).

KEYWORDS: Extraction; Tooth loss; Dental caries; Trauma; Age; Gender

I. INTRODUCTION

Tooth extraction is the removal of a tooth from its socket in the bone. (Maffi and Secchi, 2015; Vijayalakshmi and Kumar, 2015) An ideal tooth extraction is a painless removal of the whole tooth or tooth root with minimal trauma to the investing tissues (Mp SK, 2017). Extraction is one of the most common procedures that are carried out in the dental outpatient and can be done for various reasons. (Mp, 2017a) Local anesthesia is used during extraction procedures, local anaesthetic (LA) is a drug that causes reversible local anesthesia, generally for the aim of having a local analgesic effect, that is, inducing absence of pain sensation by inhibiting nerve conduction. (Christabel et al., 2016; Marimuthuet al., 2018) The World Health Organization defines “a safe injection” as one that does not harm the recipient, does not expose the provider to any avoidable risk, and does not result in any waste that is dangerous to the community. (Packiri, Gurunathan and Selvarasu, 2017)

Extractions of permanent teeth are performed for several reasons such as dental caries, periodontal diseases, traumatic injuries, prosthetic considerations, orthodontic treatment, failed endodontic treatment and tooth impaction. Tooth impaction has also been a common phenomenon nowadays. (Rao and Santhosh Kumar, 2018) Dental caries and periodontal disease are two major causes of tooth loss worldwide. (Abhinav et al., 2019) Tooth
loss is often associated with poor oral health which in turn can affect the overall health of an individual. (Kumar S & Sneha S, 2016) Patil et al., 2017) A decrease in the number of teeth may result in poor dietary habits and deterioration of quality of life. (Mp SK, 2017) Negative impact of tooth loss on oral health-related quality of life has been well documented. (Kumar and Rahman, 2017; Mp, 2017b) The primary aim should be to prevent loss of tooth. Dental caries was the main cause for tooth loss, few studies revealed that a greater proportion of tooth extractions were due to periodontal disease. (Mp and Sneha, 2016; Patturaja and Pradeep, 2016; Vijayakumar Jain et al., 2019)

There are two main types of dental extraction, simple extraction and surgical extraction. Simple dental extraction involves the removal of teeth that are visible in the mouth using instruments such as an elevator and dental forceps. Surgical dental extraction involves the removal of teeth that are not easily accessible inside the mouth. (Rahman and Mp, 2017) This may be because they have not erupted through the gum completely or they have been fractured under the gum line, it is necessary to make an incision into the connective tissue surrounding the tooth to gain access to it for extraction, often followed by reflection of a mucoperiosteal flap, followed by bone removal to facilitate tooth extraction. Although the evidence for bone loss due to reflection of the flap is inconclusive. (Jesudasan, Abdul Wahab and Muthu Sekhar, 2015; Mp, 2016)

Bleeding complications can occur in healthy as well as systemically compromised patients. Hemostatic matrix such as oxidized regenerated cellulose, absorbable gelatin sponge, or collagen with figure of eight sutures are commonly applied to the extraction socket. (Mp, 2016) In major oral and maxillofacial surgical procedures, electrocautery and suture ligatures are most commonly used to control bleeding from small and major vessels. (Shah, Faldu and Chowdhury, 2019)

Ankur Shah, described that more than half of teeth were extracted due to dental caries in the patients less than 45 years of age. (Selwitz, Ismail and Pitts, 2007; Sweta, Abhinav and Ramesh, 2019) Periodontal disease was the main reason for extractions in patients who were 45 years or older. First molars were the most commonly extracted teeth followed by third molars. Dental caries seemed to be the main cause of extraction, but as age progresses periodontal disease becomes the much more important cause for tooth extraction. Extractions in preparation for a prosthesis was the next main cause of tooth extraction. (Santhosh Kumar and Lavanya, 2016) However, by proper dental care, early diagnosis of caries and proper oral hygiene the number of teeth extracted can be reduced significantly. (Fiske et al., 1998) Infection transmission can easily occur in routine dental practice. Therefore, protection from cross infection in the dental setup is a critical aspect of dental practice. (Kumar and Rahman, 2017) Previously our team has a rich experience in working on various research projects across multiple disciplines((Neelakantan et al., 2015; Ramamoorthi, Nivedhitha and Divyanand, 2015; Abdul Wahabet et al., 2017; Eapen, Baig and Avinash, 2017; Manivannan et al., 2017; Patilet et al., 2017; Ezhillarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; Ravindiran and Praveenkumar, 2018; Wahabet et al., 2018; MalliSureshbabuet al., 2019; Mehta et al., 2019; Rajeshkumaret et al., 2019; Samuel, Acharya and Rao, 2020; Sathish and Karthick, 2020).

Teeth extraction is an important problem in elder patients. The impact that tooth loss can have creates a psychological impact in the patient as well as affects the quality of life. (Davis et al., 2000; Hari Priya and Kumar, 2015; Kumar, 2016) The aim of this study is to assess the extraction of teeth in patients over 55 years of age.

II. MATERIALS & METHODS:
This retrospective study examined the records of 86000 patients from June 2019 - March 2020 undergoing treatment at Saveetha Dental College and Hospitals, Chennai. Ethical approval was obtained from the Institutional Ethical Committee. Ethical Approval Number SDC/SIHEC/2020/DIASDATA/0619-0320. The study population included patients who underwent extraction over the age of 55 years. Non-probability sampling was done. All the relevant patient data analysed and was used to identify the patients who underwent extractions. Relevant data such as age, sex and treatment done was recorded. Repeated patient records and incomplete records were excluded. Data was verified by an external reviewer. Data was recorded in Microsoft Excel and later exported to IBM SPSS (version 20.0 Chicago, USA) and subjected to statistical analysis. Chi-square test was employed with a level of significance set at p <0.05.
III. RESULTS & DISCUSSION:
The age groups of the patients were divided into 55-65, 65-75, 75-85 & 85-95 years respectively. The mean age for patients undergoing extractions was 73.63. The age group associated with the most number of extractions were seen in the age group 55-65 years of age 67.3% (n=1251) followed by 65-75 years-27.4% (n=510). The prevalence of patients who underwent extraction over 55 years of age were 1856 as shown in Figure 1. Male patients above the age of 55 years underwent more extraction 52.3% (n=972) when compared to female patients 47.6% (n=885) as shown in figure 2. The most common tooth to be extracted over the age of 55yrs among males and females was the left maxillary second molar followed by the right mandibular second molar as shown in figure 3.

Figure 1 Bar Chart depicting the distribution of age groups where X-axis denotes the age group & Y-axis denotes the number of patients. 67.3% of the participants are in the age group of 55-65 years, 27.4% of the participants are in the age group of 65-75 years, 5% of the participants are in the age group of 75-85 years and 0.2% of the participants are in the age group of 85-95 years.

Figure 2 Bar Chart depicting the distribution of gender. X-axis denotes the gender while Y-axis denotes the number of patients. Male patients are 52.3% & Female patients are 47.6%
Figure 3: Bar chart depicting the distribution of teeth extracted. X-axis represents the tooth number while Y-axis denotes the number of teeth extracted. 7.7% of the teeth extracted are of left maxillary second molar which is the highest followed by right mandibular second molar (7.49%).

Figure 4: Bar graph represents the association between the age group of the patients and location of teeth extracted. X-axis represents the location whether the extracted teeth belongs to upper arch or lower arch and Y-axis represents the number of patients who underwent extractions, where blue, green, beige and red colour denotes the age group of 55-65, 65-75, 75-85 & 85-95 years respectively. More number of extractions had undergone in the age group of 55-65 years both in the upper and lower arch than other age groups, however it is not statistically significant. Pearson Chi square value: 21.572, p value: 0.000 (<0.05 which is statistically significant).
In the age group of 55-65 years old, majority of the patients underwent extraction in the upper arch 50.6%, while 43.45% of the patients underwent extraction in the lower arch. Upper arch teeth were commonly extracted in the age group of 65-75 years (62.7%) while in the lower arch it was 37.2%. In the age group 75-85 years, teeth located in the upper arch were commonly extracted 52.1% followed by the lower arch 47.8%. There was an increase in the number of extractions in the upper arch above the age of 85 years (66.6%) followed by the lower arch 33.3% as shown in figure 4. Pearson Chi-Square value was 21.572, the p value was 0.000 which is statistically significant. This shows a positive correlation between age and the tooth extracted (P < 0.05). Male patients had undergone more extractions both in the upper arch (52%) and lower arch (48%) than females, however it is not statistically significant. Chi-square test, Pearson Chi square value: 3.492, p value: 0.062 (p>0.05 which is not statistically significant). In the current study, the majority of the patients who underwent extractions were males when compared to females. The study conducted by Da’ameh, D stated in his study that the majority of the patients who underwent extraction were males. (Da’ameh, 2006) Ankur Shah also mentioned in his article the increase in the number of male patients who underwent extractions (Shah, Faldu and Chowdhury, 2019). In the study conducted by M. Jafariana et al, the majority of patients who underwent extraction were females. (Jafarian and Etebarian, 2013) The possible reason being higher caries among females that is often due to earlier eruption of teeth in girls, hence longer exposure of girls' teeth to the cariogenic oral environment, easier access to food supplies by women and frequent snacking during food preparation, and pregnancy.

In the current study tooth of the upper arch was commonly extracted among the age group of above 55yrs followed by the lower arch. Similar study conducted by Gharib DS et al & Muhammad Ali et al stated an increase
in the incidence of extraction in the lower arch when compared to the lower arch, the possible reason being excessive use of sweets and candies, improper brushing techniques, lack of dental visits/follow-ups and poor oral hygiene. (Gharibet et al., no date; Ali et al., 2019) The tooth commonly extracted in the present study was the posterior 27 was the most commonly extracted tooth followed by 47. A study conducted by Da’ameh, D all stated the majority of the tooth extracted was the posteriors, the possible reason being dental caries and periodontal disease as the progresses. (Da’ameh, 2006) The study conducted by M. Jafarion showed the majority of tooth extracted were the lower third molars followed by upper premolars, the possible reason being impacted tooth. Impaction of mandibular third molar is commonly due to the lack of space in the dental arch in the area behind the second molar. (Malik, 2012; Jafarian and Etebarian, 2013) Any pathological changes either in the bone or the adjacent tooth bud can cause obstruction in the pathway of the eruption of the third molar. The major cause for extraction of premolars was for the need of orthodontic treatment. (Caldas, 2000; Richards et al., 2005; Alesia and Khalil, 2013) Although caries remains the leading cause of extraction, there also has been an increase in the extraction carried out for orthodontic treatment & impacted teeth. Our institution is passionate about high quality evidence based research and has excelled in various fields (Pc, Marimuthu and Devadoss, 2018; Ramesh et al., 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai et al., 2019; Sridharan et al., 2019; VijayashreePriyadharsini, 2019; Mathew et al., 2020).

IV. CONCLUSION:

Within the limits of the current study, increased number of extraction was seen in patients of the age group 55-65 years, and was higher in males when compared to females. The maximum number of teeth extracted was the left maxillary second molar. This study provides inputs based on epidemiological significance of teeth extraction performed in a fixed time frame undergone by a specific age group of patients which can help to improve preventive therapeutic measures to retain natural teeth in late adulthood.

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