

EVALUATION OF REQUIREMENT OF EXTRACTION OF PRIMARY MANDIBULAR SECOND MOLAR IN 3 TO 5 YEAR OLD CHILDREN

ABSTRACT :

Introduction : Tooth extraction is done based on a variety of reasons, the most common reason being the tooth becoming unrestorable as a result of dental caries, trauma to the tooth or periodontal disorder. The tooth indicated for extraction is usually associated with pain except in some cases where the tooth is removed for orthodontic treatment. Dental caries is a chronic disease of the tooth which is represented by demineralisation and destruction of the organic matter of the tooth. It is the most common cause of dental extraction. The aim of this study is to analyse the prevalence of extraction of primary mandibular second molars in children treated under general anesthesia from a private dental hospital.

Materials and method : This study is a single centered retrospective study in which the data was collected from a private dental college and hospital in Chennai, India. Patient details were collected from the hospital management system and a total of 47 samples were collected. The data was tabulated using Excel and then statistically analysed using the latest version of SPSS software.

Results and discussion : The primary mandibular right second molar was found to be extracted the most. Also, primary mandibular second molar was extracted more in males and in the age group of 5.

Conclusion : In the study conducted, the primary mandibular right second molar was the most extracted tooth.

Key words : *Dental extraction, Dental caries, Innovative technique, pediatric dentistry*

INTRODUCTION :

A tooth extraction, which is also known by other names like dental extraction, exodontia, exodontics or colloquially called teeth pulling is the bringing out of the teeth from its socket (dental alveolus) in the alveolar bone (Waes, 2019). Tooth extraction is done based on a variety of reasons, the most common reason being the tooth becoming unrestorable as a result of dental caries, trauma to the tooth or periodontal disorder (Alsheneifi and Hughes, 2001). The tooth indicated for extraction is usually associated with pain except in some cases where the tooth is removed for orthodontic treatment (Suljkanovic, Balic and Begic, 2021). Sometimes, impacted wisdom teeth are extracted in order to relieve pain and avoid periodontal infections. In orthodontic treatments, generally bicuspid are removed to provide more space in case of crowding (Phulari, 2011)(Bridgman, Ashby and Holloway, 1999).

In the process of dental extraction, first the past medical history of the patient is collected (Bridgman, Ashby and Holloway, 1999; Holt, 2003). This includes medical conditions like congenital cardiac problems, diabetes, fluctuation in blood pressure, bleeding disorders, liver problems, thyroid disorder, renal and adrenal diseases (Bridgman, Ashby and Holloway, 1999). The drug history including the current medication ingested by the patients are also gathered. Patients are asked if they had had dental extraction done previously and if so, if there were any complications or specific precaution taken for a particular discomfort (Tickle, Blinkhorn and Milsom, 2008). Dental extraction ranges from a simple procedure in which local anesthesia is given to the patient, the tooth is luxated using an elevator and then removed using a forcep, to a complex surgical extraction which requires cutting into the gingiva with a tiny

incision (Coulter *et al.*, 1990). Sometimes it may be required to remove a small portion of the bone or cut the tooth into portions before the extraction (Levine, 2021). These complex dental extractions require administration of local anesthetic with intravenous anesthesia or sometimes even general anesthesia if there are additional health conditions associated (Johnson and Baldwin, 1968).

Dental caries, when left untreated, progresses to a severe stage until there is no way to salvage the tooth (Wogelius, Poulsen and Toft Sørensen, 2003). Decayed teeth contribute to the most common reason for dental extraction. Dental caries can be present throughout the lifetime, in both deciduous and secondary dentition (Folayan *et al.*, 2005). Dental caries affect the crown portion of the tooth initially, and may affect the unprotected root surfaces later on (McDonald, Avery and Dean, 2004). Prevalence of dental caries is computed with taking factors like percent of people impacted, number of tooth affected, number of teeth surfaces involved and extent, magnitude and severity of the carious lesion (Folayan *et al.*, 2005; Alshami *et al.*, 2021). It can be easily prevented with proper awareness among people and by following simple measures like using fluoride toothpaste, proper oral hygiene and intake of a balanced diet.

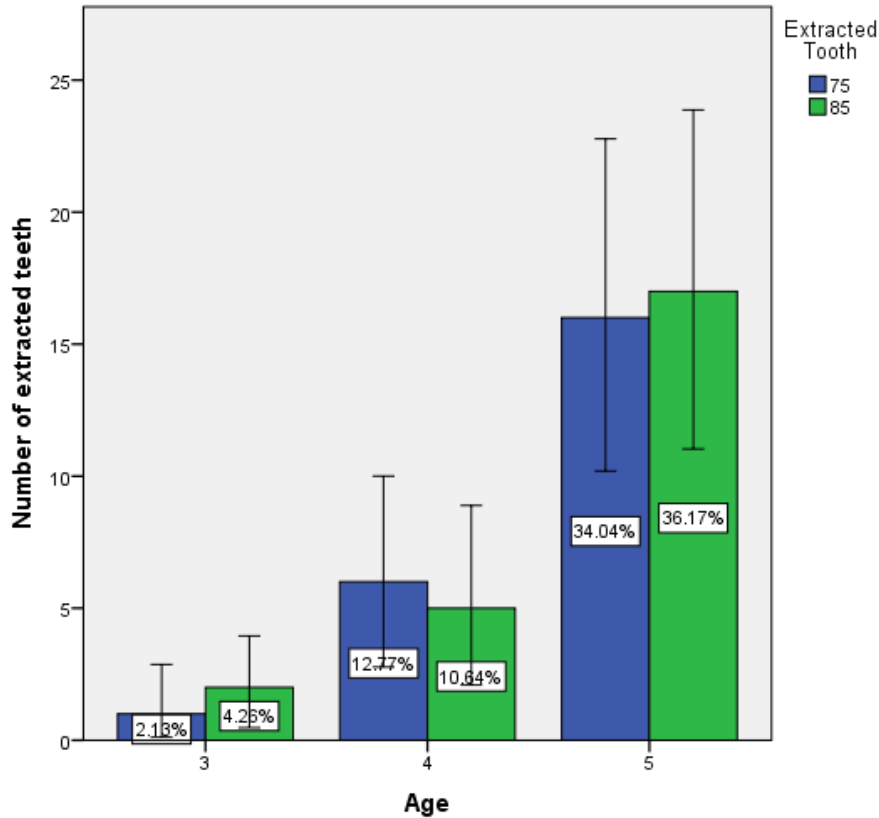
Just like any other surgeries, dental extraction also has some mild complications (Shivpuri *et al.*, 2021). The complications of tooth extraction include dry sockets, pain, inflammation and red coloured appearance at the site of dental extraction, cough and breathing trouble (Kalra *et al.*, 2021). In case of an infection fever, chills and sweats might also be seen. After the teeth extraction, care must be taken and certain steps must be followed (Tomás *et al.*, 2007). Until the anaesthesia subsides, the patient must intake liquid items only and then stick to soft food for a couple days after the extraction (Neuhaus and Lussi, 2019). Care should be taken to prevent injury at the site of extraction while brushing the teeth and following other dental hygiene measures (Ripa and Barenie, 1979). Our team has extensive knowledge and research experience that has translate into high quality publications(Jeevanandan and Thomas, 2018; Subramanyam *et al.*, 2018; Gothandamet *et al.*, 2019; Ramaduraiet *et al.*, 2019; Ramakrishnan, Dhanalakshmi and Subramanian, 2019; Su *et al.*, 2019; Mathew *et al.*, 2020; Princeton, Santhakumar and Prathap, 2020; Sekar *et al.*, 2020; Aldhuwayhiet *et al.*, 2021; Saravanakumar *et al.*, 2021; Velusamy *et al.*, 2021; Wei *et al.*, 2021)(Bai *et al.*, 2019; Duraisamy *et al.*, 2019; Sekar, 2019; Sekar *et al.*, 2019; Sekar, Nallaswamy and Lakshmanan, 2020; Parimelazhagan *et al.*, 2021; Syed, Gnanakkan and Pitchiah, 2021).

MATERIALS AND METHODS :

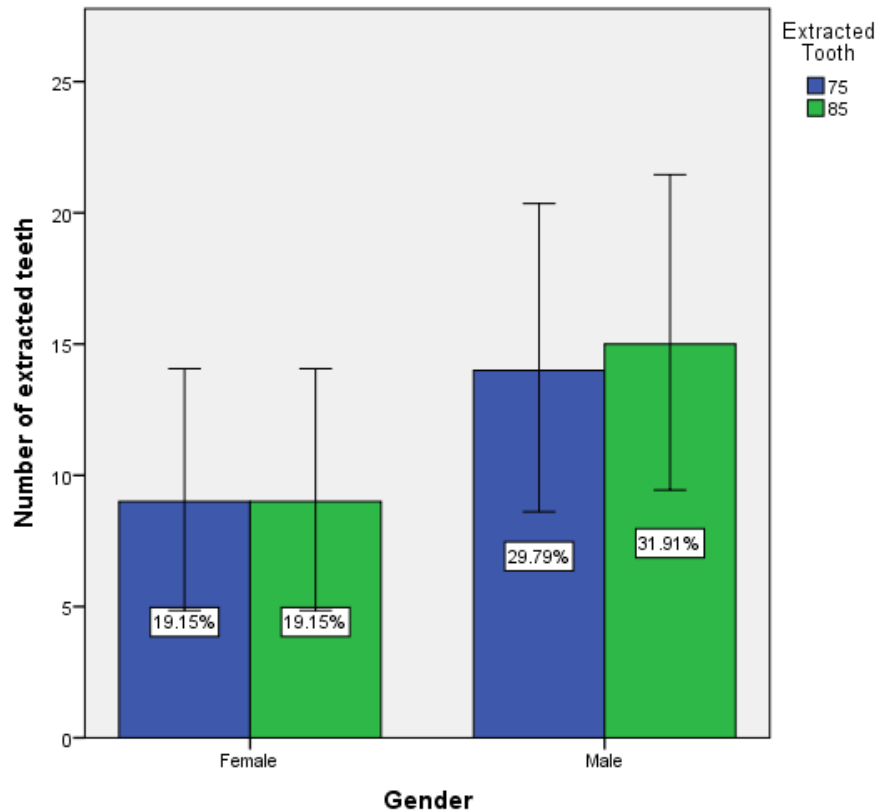
This was a single centered retrospective study done in a university hospital setting. The patient details were collected from the hospital management system from a private dental college and hospital in Chennai, India. Patient records between June 2019 and February 2021 were analysed. A total of 47 children who visited the hospital for dental treatment were included for data collection. The inclusion criteria included children within the age group of 3 to 5 years. Children from other age groups and those who received treatment for other than extraction were excluded. The data was collected, tabulated and analysed using Excel sheet. These data were cross verified with photographs. Approval from the ethical committee was taken before beginning the study.

The collected data was later transferred and analysed using the latest version of SPSS software for statistical analysis. Frequency distribution was done to analyse the data. For the chi square test, p value was set as 0.05 as level of significance.

RESULTS :



Graph 1 portrays the association between age of the children and the tooth that was extracted from the patients. X axis represents the age of the patients and Y axis represents the particular tooth for which extraction was done. Blue color represents the tooth number 75 - primary mandibular left second molar and green color represents the tooth number 85 - primary mandibular right second molar. Most incidence of extracted primary mandibular second molar was seen in the age group 5. 36.17% of primary mandibular right second molar and 34.04% of primary mandibular left second molar were extracted in five year olds. In the 4 year old age group, 12.77% of primary mandibular left second molar and 10.64% of primary mandibular right second molar were extracted. The least amount of extraction was performed in 3 year olds. 2.13 % of primary mandibular left second molar and 4.26% of primary mandibular right second molar were extracted in 4 year old children. Chi square test was done and the association was found to be statistically insignificant. Pearson's chi square value, $p = 0.805$ ($p > 0.05$).



Graph 2 portrays the association between gender of the children and the tooth that was extracted from the patients. X axis represents the gender of the patients and Y axis represents the particular tooth for which extraction was done. Blue color represents the tooth number 75 - primary mandibular left second molar and green color represents the tooth number 85 - primary mandibular right second molar. The graph shows that in females, an equal amount of primary mandibular left second molar and primary mandibular right second molar (19.15%) were extracted. 29.79% of primary mandibular left second molar and 31.91% of primary mandibular right second molar were extracted in males. Chi square test was done and the association was found to be statistically insignificant. Pearson's chi square value, $p = 0.908$ ($p > 0.05$).

DISCUSSION :

Dental extraction is performed when the tooth is damaged beyond repair. In children, tooth decay stays the most common cause of dental extraction. This study investigates the prevalence of extraction of primary mandibular second molar in 3 to 5 year old children. The primary mandibular right second molar was found to be extracted the most. Also, primary mandibular second molar was extracted more in males and in the age group of 5.

In an article by Hughes CV, a retrospective study with 277 patients was conducted in Boston. The prevalence of extraction done in children under the age group 3 to 13 was studied (Alsheneifi and Hughes, 2001). The prevalent tooth to which extraction was done, age prevalence and gender prevalence was studied. The most commonly extracted tooth was reported to be incisors. Males were found to have had more dental extractions than females. This is in accordance with our study, where males had the

most number of dental extractions done in mandibular second molars. Wogelius P, et al., studied the prevalence of dental anxiety in Danish children who underwent dental extraction (Wogelius, Poulsen and Toft Sørensen, 2003). A cross sectional study was done among 1600 patients under the age group six to eight years. It was reported that most of the population who had extraction done were females which is in contradiction with our study. The prevalence of children with dental anxiety was found to be 5.7%.

A cohort study of 739 patients was done by Tickle M, et al., in North west England. Incidence of tooth pain in patients with dental extraction was studied. The age group of four years was prevalently known for the incidence of dental extraction in children. This is in close accordance with our study wherein three year olds had the highest incidence of mandibular molars extracted. It was also found that the incidence of dental extraction was found to be high in restored teeth than in unrestored teeth (Tickle, Blinkhorn and Milsom, 2008). Tomas, et al investigated the prevalence, causes and duration of bacteremia after dental extractions in patients under eighteen years of age. Data of 53 patients undergoing dental extraction under general anaesthesia was collected. There were more male patients than female patients partaking in the study. This is also in accordance with our study (Tomás *et al.*, 2007). The study also recorded that the majority of the patients who underwent dental extraction developed bacteremia.

Under the conditions of this study, it appears that the prevalence of extraction of primary mandibular second molar is significantly higher in males and patients of age group 5years.

CONCLUSION :

In the study conducted, the primary mandibular right second molar was the most extracted tooth. Dental extraction of primary mandibular second molar was prevalent in the 5 year old age group and in males.

ETHICAL CLEARANCE : Taken from Saveetha Institute Human Ethical Committee.

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