



SUTURING IN IMPACTION REMOVAL - CASE CONTROL STUDY

J.Rubika	Saveetha Dental College And Hospitals, Saveetha Institute Of Medical And Technical Sciences, Saveetha University Chennai, India
Dr.Balakrishna R.N*	Senior Lecturer, Department of Oral Surgery, Saveetha Dental College And Hospitals, Saveetha Institute Of Medical And Technical Sciences, Saveetha University Chennai, India*Corresponding Author
Dr.Sri Sakthi	Department of Public Health Dentistry, Saveetha Dental College And Hospitals, Saveetha Institute Of Medical And Technical Sciences, Saveetha University Chennai, India

ABSTRACT Removal of impacted lower third molars is one of the most common surgical procedures in Oral Surgery. Wound closure techniques are used for the management after extraction of impacted lower third molars. The traditional suture methods such as simple interrupted suture, continuous non interlocking suture, continuous locking suture, figure of eight, horizontal mattress suture, vertical mattress suture, simple continuous suture, sling suture for single tooth, periosteal suturing technique and many more. Suture material and advanced modalities such as synthetic absorbable sutures, surgical staples and tissues adhesives are also used in dentistry. The aim of this study was to evaluate the prevalence of suture techniques in wounds after removal of impacted third molars. The purpose of this study was to analyse the suturing technique used for the removal of impacted teeth by dental students. A study was carried out by collecting data by reviewing patients data and analysing the data of patients between June 2019 and March 2020 at the private dental institute. A total number of 50 case sheets were reviewed from intra oral photographs and additional supports. Photographs were assessed to determine the technique of suturing for patients who underwent treatment for removal of impacted tooth. The study was evaluated and approved by the ethical committee of the private dental institute. Data was statistically analysed using SPSS 2.0, Chi Square Test was conducted. The results were recorded. The results showed the majority of the dental students provided simple interrupted sutures for the management of wounds. The study was considered positively significant as the p-value was less than 0.05 (p-value = 0.002). Within the limitation of present study, the majority of the dental students provided simple interrupted sutures for the wounds of impaction removal, especially in relation to tooth number 48.

KEYWORDS : Impaction removal, Simple continuous, Simple interrupted, Suture techniques, Wound.

3. INTRODUCTION:

Impacted tooth is defined as a tooth that is prevented from erupting into a position within the expected or limited time due to a physical barrier in the path of eruption^{1,2}.

Lysell et al., quoted that impacted is any tooth that is totally immersed in tissue and has already passed its right time for eruption while tooth not erupted for a tooth immersed in tissue still in its normal development period with great probability for eruption^{3,4}.

Impacted third molars are associated with several acute or chronic pathological changes, such as pain, infection, caries, periodontal disease, root resorption, bone loss, benign tumors and cyst formations. These factors result in removal of impacted teeth. Pain, swelling, limited mouth opening, and temporary inability to work are the generally accepted inevitable postoperative consequences following surgical extraction^{5,6,7}. In some cases, complications may occur, which are considered as unwanted reactions such as bleeding or hemorrhage, postoperative infections like dry socket, nerve injury, delayed healing and the creation of a periodontal pocket in the distal aspect of the adjacent second molar.^{8,9,10}

The suturing techniques are performed in dentistry to avoid and minimize the complications post extraction¹¹. The primary objective of dental suturing is to position and secure surgical flaps in order to promote optimal healing (first / primary intention) provides support for tissue margin until they heal, without dead space and to reduce postoperative pain. A good suture avoids that the displacing forces generated by the muscular insertions, functional movements and by the external agents destabilize or cause the surgical wound dehiscence.^{12,13}

The suture indicates the repairing surgical act that allows to approximate the wound edges, keeping them united until the healing process will confer to the same wound the intrinsic force sufficient to maintain itself, without the necessity of mechanical support¹⁴.

The traditional suturing techniques such as simple interrupted suture, continuous non interlocking suture, continuous locking suture, figure

of eight, horizontal mattress suture, vertical mattress suture, simple continuous suture, sling suture for single tooth, periosteal suturing technique and many more^{15,16}. There are several important modalities for local haemostasis that might be important to minimise postoperative bleeding, including suture materials, tranexamic acid mouthwash fibrin glue, gelatin sponge, surgical synthetic absorbable sutures, surgical staples are also used in dentistry¹⁷.

In case of impaction removal suturing is a must and most common suturing method is known to be the simple interrupted suturing method^{18,19}. An improper wound closure leads to swelling, bleeding and post-operative pain²⁰. The suture materials can be non resolvable or resolvable and allowed to heal by primary intention²¹. There are many advantages as well as disadvantages in all suturing materials and techniques. Therefore, this study was aimed to evaluate the type suturing technique in wounds of impaction removal used by dental students in a private dental institute.

4. MATERIALS AND METHODS:

Study Setting:

The study was conducted with the approval of the Institutional Ethics Committee [SDC/SIHEC/2020/DIASDATA/0619-0320]. The study consisted of one reviewer, one assessor and one guide.

Study Design:

The study was designed to include all patients aged between 18-45 years male and female patients and patients who treated for impaction removal only included. The patients who did not fall under this inclusion criteria and patients below the age group of 18 years, improper photographs, improper patient details were excluded.

Sampling technique:

The study was based on the Random sampling method. To minimise the sampling bias, all the cases were reviewed priorly and included.

Data Collection And Tabulation:

Data collection was done using the patient database with the timeframe work of 1st June 2019 to 30th April 2020. About 50 patients post operative intraoral photographs and additional supports were reviewed

and those fitting under the inclusion criteria were included. Cross verification of data was done by a reviewer. The collected data was tabulated based on the following parameters:

PID Number

- Patient Name
- Age
- Gender
- Tooth number(impacted tooth)
- Type of suture

Statistical Analysis:

The variables were coded and the data was imported to SPSS. Using SPSS Version 20.0 categorical variables were expressed in terms of frequency and percentage and bar graphs were plotted. The statistical significance of the associations were tested using the Chi-square test. The results were recorded.

GRAPHS :

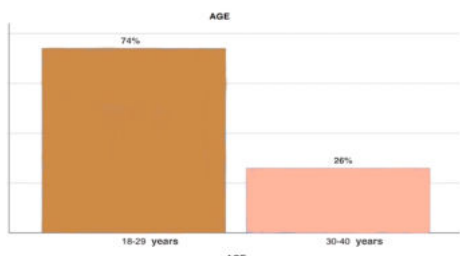


Fig 1: Graph showing the prevalence of age group patients reported for impaction removal in a private dental college. The graph explains that the most predominant age group reported for extraction of impacted teeth were from 18 years to 29 years when compared to the age group of 30 years to 40 years (within a limited sample).

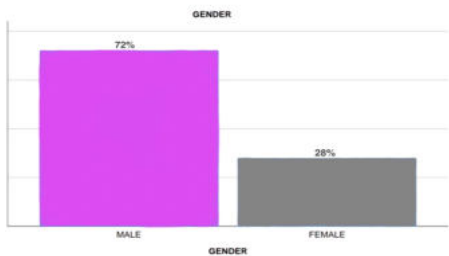


Fig 2: Graph shows the prevalence of gender among the patients undergoing extraction of impacted teeth. The graph explains that the most predominant gender undergoing extraction procedure were males(within a limited sample).

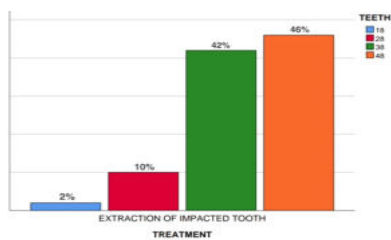


Fig 3: Graph showing the frequency of tooth underwent extraction. X-axis shows what was the treatment done among patients and Y-axis represents the frequency of tooth underwent for the impacted tooth removal. The graph explains that the most common tooth number which undergoes extraction of impacted teeth is 48.

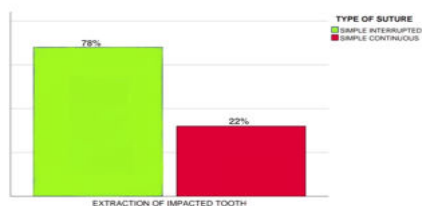


Fig 4: Graph showing the type of suture used in extraction of impacted teeth. X-axis represents what procedure was done for patients and Y-axis shows the type of suture used in the procedure of extracting impacted teeth. The graph explains that the most preferable suturing technique used for wound closure in extraction of impacted teeth is simple interrupted suture technique. Simple interrupted suture in impaction removal is statistically significant(p-value= 0.002)

5. RESULTS AND DISCUSSION :

Among the study population 74% of patients were under the age group of 18-29 years old and 26% patients were in between 30-40 years old age group. The predominant gender underwent impaction removal were males (72%), whereas females were only 28%. The most predominant tooth number which was prone to impaction removal was 48. The association of treatment done and the type of suture used was statistically significant as the p-value= 0.002. About 78% of dental students used simple interrupted suture and 22% of dental students used simple continuous suture.

Tooth impaction is a pathological situation where a tooth fails to attain its normal functional position. Impacted molars as well as other teeth in the same condition, may predispose an individual to other problems, such as pericoronitis, orofacial infections, dental caries, periodontitis, resorption of the adjacent tooth, cystic or neoplastic alterations, orthodontic or prosthetic problems, and even temporomandibular joint disorder. These diseases can lead to certain symptoms that can seriously affect the patients quality of life.

Surgical procedures should be pre-planned and executed. The estimation of possible difficulty in the removal of impacted third molars is a constant challenge for surgeons. There is a highly significant association between the level of difficulty for surgical removal of lower third molars and postoperative inflammatory complications.

The factors should be considered before any impaction removal were the following : Weight in which surgical procedures are difficult in overweight patients due to the cheek, intraorally making retraction is difficult, depth of impaction where oroantral communication may occur, pathological processes, orientation of the impaction in which deviation from the vertical alignment of the tooth increases surgical difficulty; Root morphology and number of roots, limited root development allows the rotation of the tooth around its axis, commonly requiring sectioning and time-consuming surgery of more than 30 minutes. Teeth with complete and divergent roots also prove more difficult to remove; Proximity of the alveolar nerve, The relation between the mandibular canal and tooth roots should be considered during extractions ; proximity between the second and third molars, angulation of the third molar, existing periodontal pocket, preoperative NSAIDs and analgesic agents, radiographic evaluations, age, temporomandibular joint problems, nerve involvement , sinus communication, flap design.²²

Figure 1 depicts that the most predominantly patients reported in between the age group of 18 years and 29 years underwent extraction of impacted teeth which was 37 patients(74%). Whereas, 30 years to 40 years aged patients were only 13 patients(26%).

In Figure 2, it shows that the prevalence of gender among the patients undergoing impaction removal.. The most predominant gender undergoing extraction procedure were males which was 36 (72%) . While the females were only 14 patients (28%).

It is shown that the correlation of treatment done and the frequency of tooth underwent extraction. The most predominant tooth number which was prone to impaction removal was 48 as shown in Figure 3. Dental students extracted tooth number 48 in 23 patients(46%) ; Around 21 patients(42%) underwent extraction in 38 ; for 5 patients(10%) in tooth number 28 ; Only one patient(2%) underwent extraction in tooth number 16.¹⁸

The available types of sutures for extraction of impacted teeth were simple interrupted suture and simple continuous suture. According to Figure 4, the majority of the dental students have given simple interrupted suture for the wound management which was 39 patients(78%) and remaining 11 patients (22%) were sutured with simple continuous suture technique. It is seen that the simple interrupted suture in extracted sites of impacted teeth was positively significant as the p-value is 0.002.

In the previous study showed that Osunde et al., has reported that the effect of simple interrupted suture technique on postoperative pain is positively significant, in which 52% of the patients were treated successfully¹⁵.

The possible reason for the results of the present study were mainly about operator skills and knowledge. Operators might select the suture type based on wounds in the extracted site. The sutures were given to enhance the healing process.

The study sample is smaller in size, has geographic limitations and its uniconcentric study; In future scope study for larger populations has to be done. The clinical assessment on baseline of sutures type for wounds has to be provided to dental students and the ways of treating patients has to be improved and targeting excellent diagnosis and prognosis.

6. CONCLUSION :

The removal of impacted teeth is a common surgical procedure done in routine practice; Suturing is a common practice done in oral surgery. Simple interrupted sutures are the most preferably used technique in dentistry. The innovations in suturing materials decrease the potential for postoperative infections. Within the limitations of study, concluded that the majority of the dental students provided simple interrupted sutures in the extracted sites of impacted teeth especially in relation to tooth number⁴⁸.

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CONFLICT OF INTEREST:

This research project is self funded. There is no conflict of interest.

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