



# Comparative study of the effect of sutureless vs multiple suture technique following third molar extractions in a university setting

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## Abstract

**Objective:** The purpose of this prospective study was to evaluate the incidence of various complications, including alveolitis, infection and paresthesia of the inferior alveolar nerve, in association with removal of impacted mandibular third molars. The relation between these 3 complications and several clinical variables (age, sex, degree of impaction, surgical difficulty and use of oral contraceptives) was also examined.



**Materials and methods:** Data were collected prospectively for all patients who underwent surgical extraction of an impacted third molar in Saveetha dental college and hospital over a 9 month period. The data collected included age, gender, type of procedure performed whether multiple sutures or sutureless, teeth no and postoperative complications. The data was then exported to SPSS and analysed

**Results:** A total of 777 impacted third molars were extracted (47% males and 53% females). There were more surgical extractions in the age group 15-30 yrs with 42%. Over 90% of the surgical extractions were in the lower third molars. There were more occurrences of postoperative complications in the multiple suture group than the sutureless group. The association between the postoperative complication and suture technique was found to be statistically significant,  $p=0.0001$ .

**Conclusions:** In the present study, there were more surgical extractions in the lower third molar than the upper third molar. There was a higher rate of postoperative complications in the multiple suture group than the sutureless group. Since there is a significant difference in the postoperative complications between the suture and sutureless group, there should be more knowledge and strategies among the dentists to include this technique in the surgical extraction of third molars to minimise the adverse effects.

**Keywords:** Extraction, surgical, impacted, suture, complications

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## Introduction

Impacted third molars are seen more commonly than other impacted teeth, in which the mandibular third molars have a higher incidence than the maxillary impacted tooth (Nahum, 1982). An impacted tooth can be understood as a tooth that is prevented from erupting into position within the jaw in its natural expected time due to a physical constraint within the path of eruption (Kapil and Sareen, 2014). The third molar impactions can be associated with acute or chronic pathological changes, like severe pain, infections, caries, periodontal disease, bone loss, cysts or tumors indicating its removal (Andersson, Kahnberg and Anthony Pogrel, 2012). There has been previous evidence of increased incidence of periodontal problems on the adjacent tooth or second molars when third molars were present or impacted (Blakey *et al.*, 2006). There have also been suggestions to surgically remove asymptomatic impacted third molars before the development of a pathology at a time when the post-operative healing is ideal and with a minimal risk of complications (Blakey *et al.*, 2006; Chen, Chi and Lee, 2021).

Identifying the risks associated with the surgical extractions of impacted third molars is an

important part for both patients and dentists. The patient should be informed about the postoperative complications that may arise before any surgical procedures. Postoperative pain, swelling, trismus and temporary inability to work are the commonly accepted inevitable postoperative complications (Killey, Seward and Kay, 1975). Surgical removal of third molars often involves the procedure of flap elevation followed by tooth sectioning, to remove the tooth from the bone thereby very commonly include inflammatory symptoms such as pain, swelling, and trismus after the surgery, that eventually heals within a period of two weeks (Anighoro *et al.*, 2013). However, certain postoperative complications that do not resolve within two weeks are more severe like TMJ pain and dry socket, paresthesia previously reported with the prevalence rate of 4.6% to 30.9%, are some of the complications that we look for in the present study (Osborn *et al.*, 1985). Other known complications include hematoma, bone spicules, oroantral communication that is less common in the surgical extractions of third molars.

Although these surgical complications are quite common, the magnitude of these depends on the inflammatory response resulting from the



tissue damage . This inflammatory response in turn depends on the age, gender, oral health status, and operative factors such as difficulty index , magnitude of osteotomy, and duration of surgery (Dubois, Pizer and Chinnis, 1982). Multiple closure techniques such as incorporation of drains , use of drugs like analgesics and corticosteroids cryotherapy , soft laser application , and sutureless techniques are reported as evidenced to minimize postoperative complications (Filho *et al.*, 2005). By suturing the flap back, it promotes the healing process and effective maintenance of oral hygiene, and hemorrhage control. But it also allows food debris to cause lodgement in the socket without eliminating it which eventually leads to local infection and inflammation(Hashemi, Beshkar and Aghajani, 2012). Sutureless techniques in third molar extractions with secondary healing and minimal manipulation of soft tissues and also reducing time of surgery, allowing self-drainage route for inflammatory exudate thus effectively reducing the post operative complications has a greater impact in the oral health quality of life index(Nb Seerdy Publishing, 2019)(Aggarwal and Kunnumakkara, 2009; Wahab *et al.*, 2018; Mudigonda *et al.*, 2020; Fan *et al.*, 2021; Narayanasamy *et al.*, 2021; Saravanakumar *et al.*, 2021).

### Materials and method

The study was designed as a retrospective cross clinical study analysing all the patients who had undergone surgical extraction of third molars

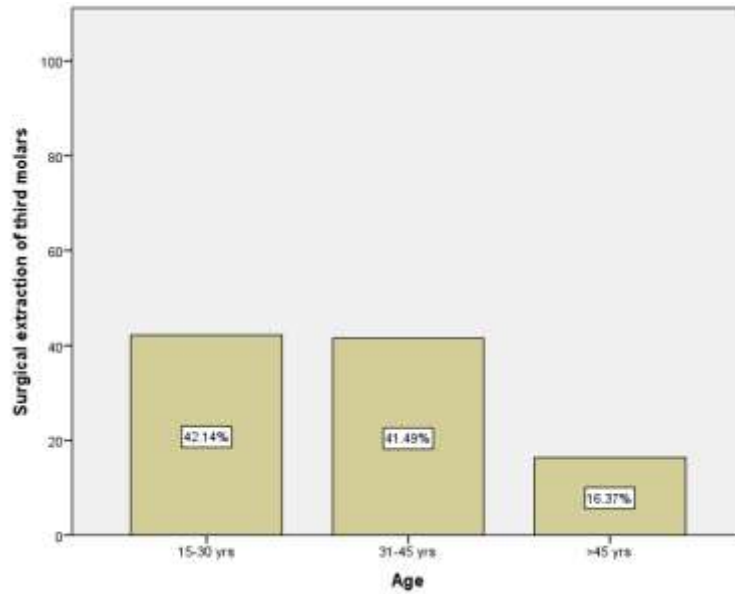
.The data of 86000 patient records were reviewed and analysed between June 2020 and March 2021 from which 777 patients underwent third molar extractions . The records with Incomplete medical documentation, replication of results in different time periods with improper clinical photographs or diagnosis were excluded from the study. Patient details like age, gender, upper or lower third molar, type of impaction, suture or sutureless, postoperative complications were included. The collected Data was described as frequency distribution and percentile. Statistical analysis was performed using Statistical Package for the Social Sciences ,version 22(SPSS).Descriptive analysis were based on quantitative variables and frequencies for categorical variables.A Chi square test was applied to determine the significance between groups. p value< 0.05 was considered to be statistically significant with a confidence interval of 95%.

### Results

Among the 777 patients , 42.14% were in the age group 15-30 yrs , 41.49% were 31-45 yrs old and around 16.37% were > 45 yrs old(Fig 1). 47% were male subjects and 52% were female participants( Fig 2). Around 90% underwent upper third molar extraction and 9.02% underwent lower third molar extractions ( Fig 3). 62.3% had multiple sutures and 37.3% were left sutureless post extraction (Fig 4). In around 61.3% postoperative complications like swelling , trismus were present .

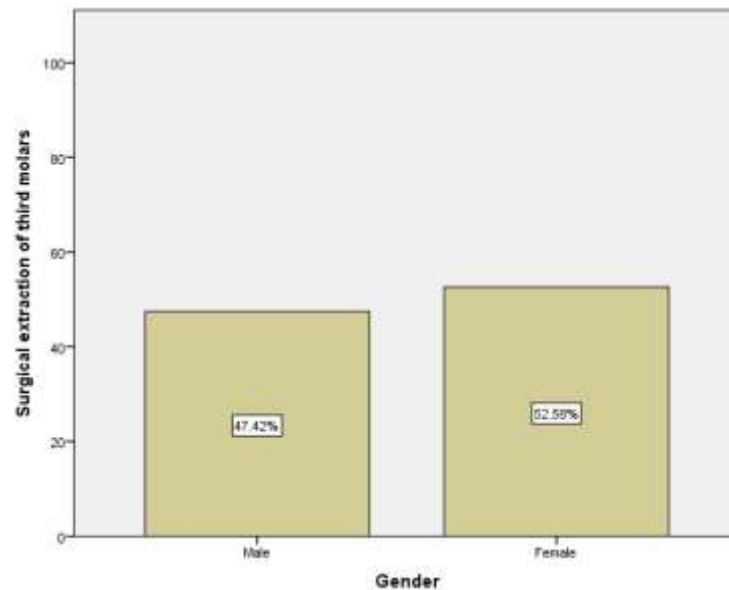
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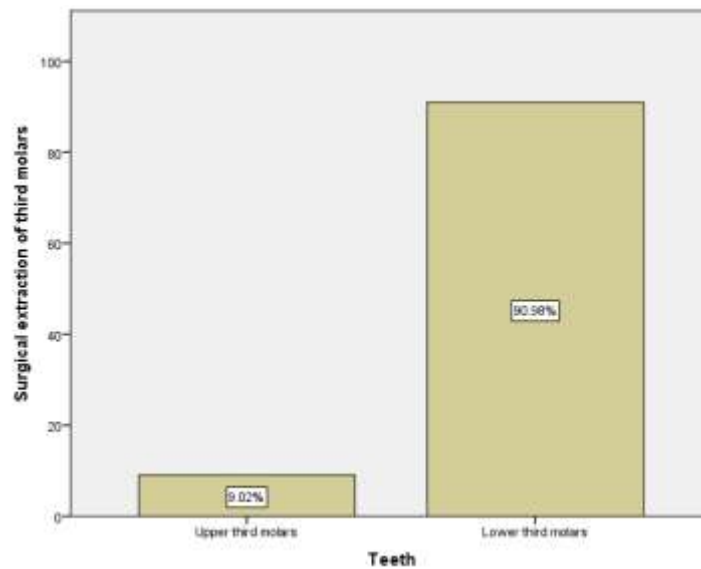
**Fig 1** Shows the age distribution of the subjects . 42.14% were 15-30 yr olds , 41.45% were 31-45 yr olds and 16.36% were > 45 yrs old.

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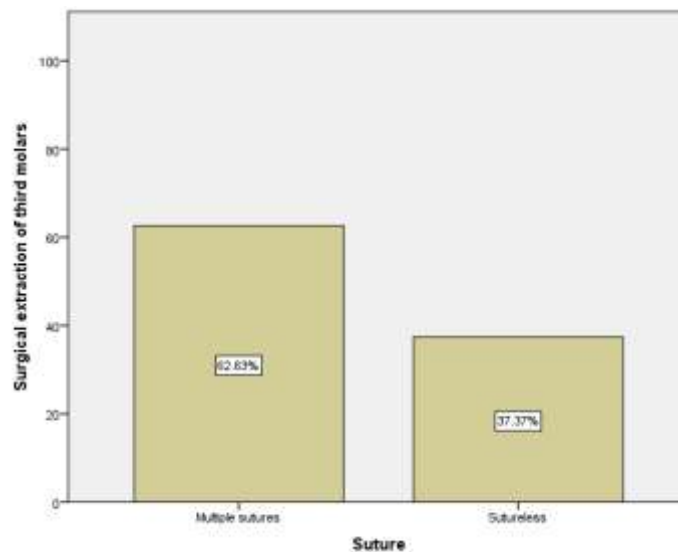
**Fig 2:** Shows the gender distribution of the subjects who underwent surgical extraction of third molars . The majority of the participants were female with 52% .





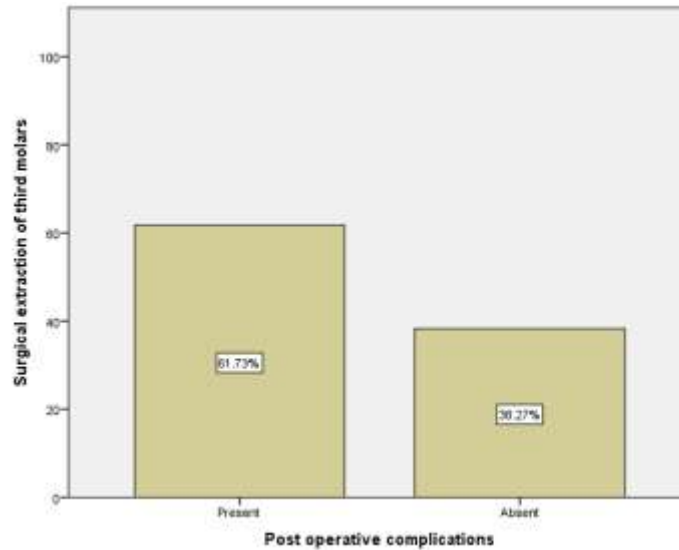
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**Fig 3:** Shows the frequency of third molar extractions in the upper and lower arch. The majority of the subjects underwent lower third molar extractions with 90.98% and only 9.02% underwent upper third molar extractions .



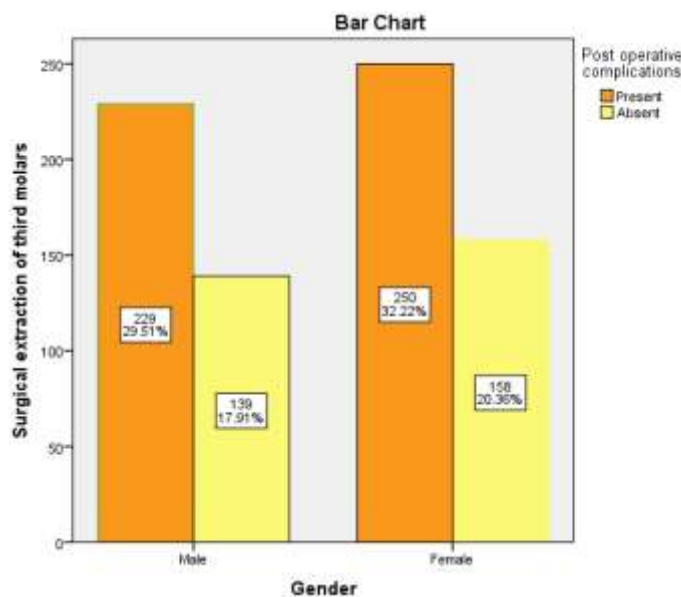
**Fig 4 :** depicts the type of sutures among the study population. 62.63% had multiple sutures and 37.37% were left sutureless post extraction.





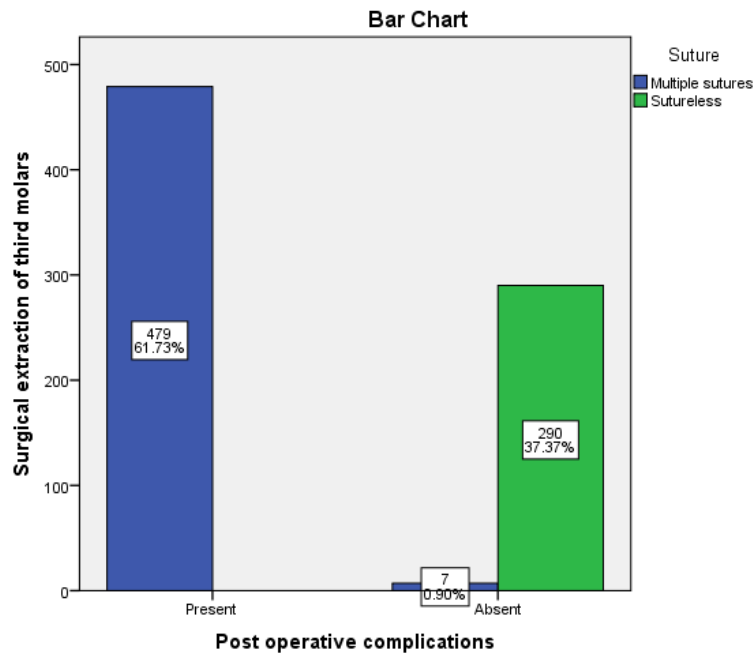
**Fig 5:** Shows the postoperative complications following third molar extractions. In about 61.73 % of the patients , there were some post operative complications present .

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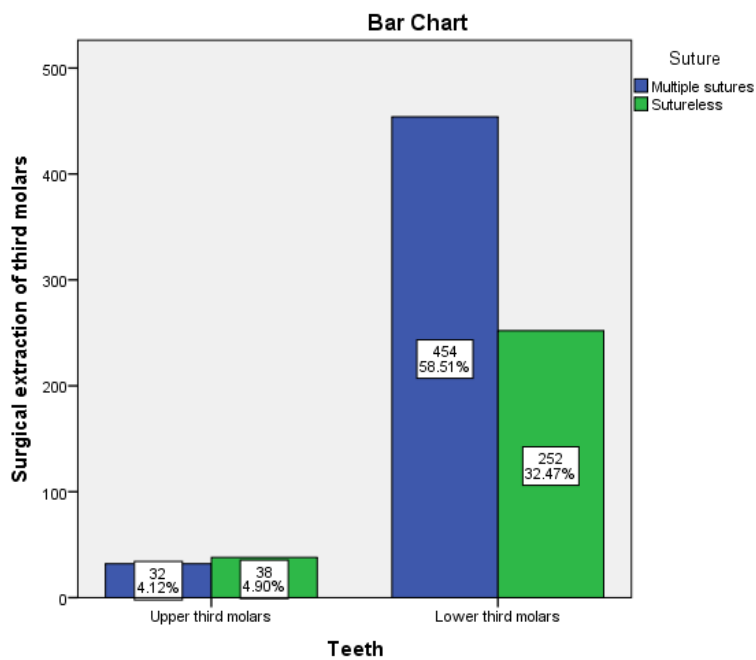
**Fig 6:** Bar graph showing the association between gender and post operative complications in patients who had undergone surgical extraction of third molars . X axis represents the gender and the Y axis the percentage of patients who underwent surgical extraction of third molars . Blue bar denotes present and green denotes postoperative complications were absent . Postoperative complications were seen more in number in females than in males with 32.2%. Pearson Chi square test,  $p = 0.1$  ( $p > 0.05$ , statistically not significant).





**Fig 7:** Bar graph showing the association between type of suture and postoperative complications in patients who had undergone surgical extraction of third molars . X axis represents the presence or absence of postoperative complications and the Y axis whether multiple sutures were placed or the extracted site was left sutureless . Blue bar denotes multiple sutures and green denotes sutureless . Postoperative complications were seen more in patients with multiple sutures with 61.73% . Pearson Chi square test,  $p=0.00$  ( $p<0.05$ , highly significant).

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**Fig 8:** Bar graph showing the association between third molars and sutures in patients who had undergone surgical extraction of third molars. X axis represents the upper and lower third molars and the Y axis whether multiple sutures were placed or the extracted site was left sutureless. Blue bar denotes multiple sutures and green denotes sutureless. Majority of the sutures were placed in the lower third molars with 58.51%. Pearson Chi square test,  $p=0.01$  ( $p<0.05$ , statistically significant).

## Discussion

Surgical extractions of third molars is a frequent clinical practice with a multifold increase in adverse effects in patients who experience severe pain, swelling and difficulty in mouth opening when compared to those who are asymptomatic (Bosch, Phillips and Lord, 2012). Sutureless procedure is becoming a simple and viable modality for reducing the postoperative complications, decreasing the chair time and also efficiently reducing the financial costs associated with suture material and follow-up visits needed for suture removal after surgical extractions. This financial benefit is also another one of the factors especially for patients from developing countries (Curtis Nickel, 1999).

The current study compares the effect of sutureless (by secondary healing) and multiple sutures (by primary healing) techniques on postoperative complications.

Pain is subjective and is influenced by many factors like age, gender, previous experience of pain, pain threshold and tolerance therefore making its assessment difficult. Pain and other postoperative complications was significantly higher in the multiple sutures group than the sutureless group. This was in accordance with the previous study by Rakprasitkul et al (Rakprasitkul and Pairuchvej, 1997).

In our study, the percentage of postoperative complications such as swelling was higher in the multiple suture group than the sutureless group. The association between the postoperative complications and the type of suture technique was found to be statistically significant with a p value,  $p=0.0001$ . Similar results were obtained in previous literature (Hooley and Whitacre, 1980). When compared with the upper third molar extractions, the lower extractions showed a

greater occurrence of postoperative complications in the multiple suture group. This is similar to a previous study conducted by Sayed et al., where there was higher occurrence of dry socket in the post extraction site of the lower third molars (Sayed *et al.*, 2019).

There have been previous reports on the formation of a periodontal pocket in the adjacent second molar with sutureless closure relation to the adjacent second molar with sutureless closure. Contradictory to these assumptions, studies by Magnus et al and meta-analysis found no significant differences on the outcome. It has been suggested that most of the extractions, if done properly, do not cause such defects (Mudjono, Rahajoe and Astuti, 2020).

Thus there should be more knowledge among the dentist about the sutureless techniques in regards to third molar extractions, to carry it out in situations where it is indicated.

## Conclusion

The present study shows that the sutureless technique had much lesser post operative complications compared to the suture sites. It is important to reassess the surgical extractions of third molars and consider sutureless technique as a cost-efficient alternative to decrease postoperative complications.

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## Conflict Of Interest:

There was no potential conflict of interest.

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