

## Comparison of the Efficacy of the Fingerless Suturing Technique with the Conventional Suturing Technique in the Mandibular Third Molar Surgical Extraction Procedure

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### Abstract

**Introduction:** The mandibular third molar surgical extraction is one of the most common procedures performed in any dental practice. It is generally done under local anesthesia in the dental office and involves suturing of the surgical wound at the end of the procedure.

**Aim:** To compare the efficacy of the fingerless suturing technique with one/two finger tie suturing technique in the mandibular third molar extraction procedure.

**Material and Methods:** A randomized clinical trial involving 100 patients comprising of diagnosed cases of impacted mandibular third molar in which surgical extraction was indicated. These cases were randomly divided into two groups. In Group 1 cases, conventional suturing technique was used, whereas in Group 2 the Fingerless Suturing Technique was used.

**Results:** The Fingerless Suturing Technique was found to better.

**Conclusion:** The Fingerless Suturing Technique is easy to learn, produces superior clinical results and is much more comfortable for the patient as compared to the conventional technique.

**Keywords:** Impacted Teeth; Disimpaction Surgery; Mandibular Third Molar Surgery; Intraoral; Suturing Technique

### Introduction

Predictability, speed, reproducibility, improved clinical outcome, ease of learning and minimum additional armamentarium requirement are the prime considerations when a variation/improvements over existing surgical techniques/procedures is proposed. The mandibular third molar surgical extraction is one of the commonest procedures performed in any dental practice. It involves a surgical incision and suturing of the wound at the end of the procedure after the tooth has been extracted. The suturing technique commonly taught and employed involves using a 3-0 braided silk/vicryl suture which is placed using a medium size needle holder (6 - 8 inches). Usually three to four sutures are placed i.e. one distal to the second molar, one or two sutures in the middle of the incision and the last towards the proximal end of the incision. In the conventional suturing technique, once the needle is passed through the edges of the incision/flap it is held between the index finger and thumb and pulled outwards by rotating/folding the thread, so that the free end gets shortened. The needle arm of the thread is then thrown/rotated around the needle holder and then slipped over the smaller end to form a knot. This knot is then tightened by holding the two sides of the suture between the thumb and index finger of both hands and pulled apart. The procedure can also be done with the suture held between the thumb and index finger of one hand and the needle holder in the other. This involves inserting the index finger and the thumb in the patient's mouth, which often results in patient discomfort, and gagging, movement of the patient's head and difficulty in suctioning due to lack of visibility

and access (Figure 1) [1]. Moreover, the process of knot tightening is a blind one i.e. dependent on tactile feedback, as execution of this step under direct vision is not possible due to lack of access. This often results in an insufficiently tightened knot thus contributing to post-operative sensitivity and periodontal issues [2]. Our study aimed at assessing the efficacy of executing the procedure of placing the sutures without insertion of the operator's fingers in the patient's mouth at any stage after the mandibular third molar surgical extraction.

### Aim

To assess the efficacy of a Fingerless Suturing Technique as compared to the Conventional Suturing Technique during the mandibular third molar extraction procedure.

### Objectives

1. To assess the time taken for placement of three - four sutures and compare it between the conventional and Fingerless Suturing Technique.
2. To ascertain the incidence of gag between these techniques.
3. To assess the incidence of post-operative sensitivity in cases managed by these techniques.

### Patients and Methods

This randomized controlled trial was conducted at our centre from Oct 2016 to Jun 2017. Hospital review board approval was obtained prior to the commencement of the study and patients

consent was obtained to include the information derived from their clinical experience to be included as part of a study, although the variation in technique did not involve disclosure of the patient's identity, use of new material and/or additional surgical procedure and/or risk. A total of 100 patients were included in the study. These were diagnosed cases requiring impacted mandibular third molar surgical extraction. The cases were randomly divided into two groups. All cases were mesioangular impacted in the Pell and Gregory class A and B and 1 and 2. Except for the different suturing technique, a standard surgical protocol was used in all cases in both the groups, thus ensuring similarity in both groups. Group 1 was the control group in which conventional suturing technique was used which utilizes the index finger and/or thumb placed within the patient's mouth to tighten the knot while placing the suture. In Group 2, the Fingerless Suturing Technique was used in which no fingers were placed in the patients oral cavity at any stage and the suturing was entirely done using the needle holder only.

In the Fingerless Suturing Technique, once the needle has been passed through both the edges of the incision the free end is shortened by pulling the needle end and folding/rotating the needle arm of the suture in the left hand (for the right handed operator). The free end should be shortened to a point that it comes to rests on the lower lip. Subsequently, the needle arm is thrown/rotated around the needle holder twice in the conventional manner and then the tip of the free end which is lying on the lower lip is grasped with the tip of the needle holder (Figure 4). The left hand is pulled at this stage, however, the needle holder suture arm is held lax so that while the left hand holding the needle is pulled the knot doesn't get locked tight immediately, but the needle holder end gets pulled and becomes shorter up to a point where the free end is small enough that it reaches the posterior dorsum of the tongue (Figure 1-3). Once this stage is reached, the tip of the needle holder is now pushed in the opposite direction utilizing the space available in the oropharynx and stabilized against the posterior dorsum of the tongue, very gently (Figure 6). It is important to avoid touching the pharyngeal mucosa with the needle holder at this stage to avoid provoking the gag reflex. This tightens the knot and locks it. The needle holder is then released/opened, resting the free end on the dorsum of the tongue (Figure 7). The needle arm is now thrown once around the now closed needle holder, which is then opened and the free end lying on the dorsum of the tongue is grasped (Figure 8). The knot is tightened in a similar fashion as described above and the procedure is repeated four times while using a 3-0 silk suture. The suture is then cut conventionally. 3 to 4 sutures are placed to close the incision depending on the size of the flap (Figure 9).

**Figure 1:** Conventional suturing technique.

**Figure 2:** Needle passed through the free buccal flap.

**Figure 3:** Needle passed through the fixed lingual flap.

**Figure 4:** Free end pulled and shortened upto the lower lip.

**Figure 5:** A loose knot formed.

**Figure 6:** The free end further shortened and knot tightened and locked by reversing the direction of movement of the needle holder while the needle arm is being pulled out of the mouth.

**Figure 7:** The free end now placed on the dorsum of the tongue for easy access and grasp subsequently.

**Figure 8:** Next knot placed by easily grasping the free end lying on the dorsum of the tongue.

**Figure 9:** Closed incision without placement of fingers in the oral cavity.

## Results

In our study a total of 100 patients were included. These were randomly divided in two groups of 50 patients each. In Group 1 conventional suturing technique was used, whereas in Group 2 Fingerless Suturing Technique was used. The average time taken for Group 1 was approximately 2.6 minutes and in Group 2 it was 2.3 minutes. The incidence of gag was 11 patients in Group 1 and 01 patient in Group 2. Postoperative sensitivity was assessed based on the patient's complaints on the post-operative review visit. It was reported in 04 patients in Group 1 and 01 patient in Group 2. However the sensitivity in Group 2 case was due to acute pulpitis due to distal caries of the second molar tooth for which root canal treatment had to be done to resolve the issue.

Statistical analysis using SPSS16.0 for windows was done and at 95% confidence interval the time difference to suture between the two groups was found to be statistically insignificant.

	N	Mean	Std. Deviation	Std. Error Mean
Time_tak-en_Gr_1	50	2.6492	.31459	.04449
	N	Mean	Std. Deviation	Std. Error Mean
Time_tak-en_Gr_2	50	2.3622	.20043	.02835

## Discussion

The conventional technique of suturing of intraoral wounds/incisions entails the use of the index finger and the thumb holding the two ends of the suture and pulling them apart in opposite directions. This is not only uncomfortable for the patient as the operator fingers are placed in the patient's mouth but often results in a very uncomfortable gag reflex in many patients. Additionally, due to little room to maneuver in the posterior region of the mouth sometimes there is insufficient tightening of the knot, resulting in a loose suture. This loose suture, especially distal to the second molar has been implicated in the post-operative sensitivity and other periodontal issues [2-4]. In view of all these concerns, the Fingerless Suturing Technique seems to be offering a definite advantage. Not only does the technique offers a better clinical outcome in terms of reduced triggering of the gag reflex, negligible incidence of post-operative periodontal issues and a more comfortable over all experience for the patient, the technique also upholds the principles of standard suturing technique using a needle holder, wherein the needle holder is stabilized against the adjacent tissue and the needle end/arm is pulled to tighten the knot. There is however a minor variation here, in which the direction of pull is not exactly perpendicular to the incision as the needle end, is being pulled out of the oral cavity rather than perpendicular to the incision. Apart from this the Fingerless Suturing Technique takes into consideration all the other basic tenets of the standard suturing principles which are used for other areas of the body e.g. skin. Although, the time taken for both the techniques may not have significantly differed statistically in our study, the overall outcome was definitely better for the patient and the operators for the Group 2 cases, as it was easier to suction the area at all times as the oral cavity was accessible for placement and unrestricted movement of the surgical suction tip. Additionally, the Fingerless Suturing Technique is also deemed safer as the needle is safely secured between the operators left index finger and thumb and at no stage is found hanging free.

## Conclusion

Keeping in view that the conventional/finger tie technique is commonly taught at both undergraduate and post graduate level and widely practiced and considering the fact that the Fingerless Suturing Technique offers a significantly overall better clinical outcome/experience, greater operator/assistance ease and safety, it may be worth recommending it as a standard technique for suturing of intraoral wounds/incisions. (The author has successfully used this technique in more than five thousand cases over the past decade).

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