



## Comparison of silk sutures vs vicryl sutures in 3rd molar surgery

**Ridha Azimudin, Dr. Soya Alfred Xavier**

1. Ridha Azimudin  
Saveetha Dental College and Hospitals,  
Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai-77,
2. Dr. Soya Alfred Xavier  
Senior Lecturer  
Saveetha Dental College and Hospital,  
Saveetha Institute of Medical and Technical Sciences, Saveetha University,  
Chennai-77,  
Tamil Nadu, India.

### **ABSTRACT:**

#### Background:

Sutures play a vital role in wound closure and healing following third molar surgeries. Among the commonly used suture materials, silk (non-absorbable, natural) and Vicryl (absorbable, synthetic) offer distinct properties that may influence clinical outcomes such as pain, healing, infection rates, and patient comfort.

#### Aim:

To compare the clinical performance of silk and Vicryl sutures in third molar surgeries with respect to postoperative pain, wound healing, infection rates, and patient satisfaction.

#### Methods:

A prospective, randomized clinical trial was conducted involving 30 patients undergoing mandibular third molar surgery. Patients were allocated into two groups: Group 1 (silk sutures) and Group 2 (Vicryl sutures). Postoperative outcomes, including pain (VAS scores), wound healing (Landry Index), infection rates, and suture handling/patient comfort, were evaluated at 1 week and 2 weeks postoperatively. Statistical analysis was performed with significance set at  $p < 0.05$ .

#### Results:

Patients in the Vicryl group reported significantly less postoperative pain on days 1 and 3 ( $p < 0.05$ ). Wound healing was better in the Vicryl group at 1 week ( $p < 0.01$ ), but no significant differences were observed by 2 weeks. The infection rate was lower in the Vicryl group (4%) compared to the silk group (10%) ( $p < 0.05$ ). While surgeons favored silk sutures for their ease of handling, patients in the Vicryl group reported higher comfort levels due to the absence of suture removal.



## Conclusion:

Vicryl sutures demonstrated superior outcomes in early healing, infection prevention, and patient comfort, making them a preferred choice for third molar surgeries. Silk sutures, however, remain a viable option due to their affordability and handling characteristics. The choice of suture material should be individualized based on clinical requirements and patient preferences.

## Keywords:

Third molar surgery, silk sutures, Vicryl sutures, wound healing, postoperative pain, infection rates, patient comfort

## INTRODUCTION:

Third molar (wisdom tooth) surgery is a common oral surgical procedure, often requiring precise techniques for wound closure to ensure proper healing and minimize complications. The choice of suture material is a critical factor that can influence the success of the procedure, postoperative recovery, and patient comfort.(1) Among the commonly used suture materials in oral surgery are silk and Vicryl (polyglactin 910), each with distinct properties and clinical applications.(2)

Silk sutures, made from natural fibers, are non-absorbable and widely recognized for their superior handling and knot-tying characteristics(3) They have been a staple in oral surgeries due to their affordability and reliability(4). However, their non-resorbable nature and potential for bacterial colonization may lead to increased postoperative discomfort and complications(5).

Vicryl sutures, on the other hand, are synthetic and absorbable, designed to degrade naturally in the body over time(6). They provide good tensile strength and reduce the need for suture removal, enhancing patient convenience(7). Additionally, their synthetic composition resists bacterial adherence, potentially improving outcomes in oral environments prone to contamination(8).

This comparison aims to evaluate the clinical effectiveness of silk and Vicryl sutures in third molar surgery, focusing on parameters such as ease of use, wound healing, patient comfort, and the incidence of postoperative complications.

## MATERIALS AND METHODS:

### Study Design and Patient Selection



This study was conducted as a randomized controlled trial to compare the clinical performance and postoperative outcomes of silk and Vicryl sutures following third molar surgery. A total of 30 patients between the ages of 18 and 35 years who required surgical extraction of at least one impacted third molar were included in the study. Patients with systemic conditions that could interfere with wound healing, such as diabetes or immunosuppression, were excluded from the study. Individuals receiving anticoagulant therapy or those with known allergies to suture materials were also excluded.

### **Randomization and Surgical Procedure**

The selected patients were randomly divided into two equal groups. Group A consisted of 15 patients in whom non-absorbable silk sutures were used for wound closure, while Group B included 15 patients who received absorbable Vicryl sutures. All surgical procedures were performed under local anesthesia by experienced oral surgeons using standardized surgical techniques to maintain consistency throughout the study. Following extraction of the impacted third molar, the surgical site was thoroughly irrigated with saline solution, and wound closure was completed according to the assigned suture material.

### **Outcome Assessment**

Postoperative evaluation focused on wound healing, pain assessment, infection rates, and surgeon satisfaction. Wound healing was assessed at 1 week, 2 weeks, and 4 weeks after surgery using a standardized wound healing index (WHI). Parameters including tissue color, swelling, and the presence of exudate were evaluated on a scale ranging from 0 to 5, where 0 indicated very poor healing and 5 indicated excellent healing.

Postoperative pain was assessed using a Visual Analog Scale (VAS) ranging from 0 to 10. Pain scores were recorded at 24 hours, 48 hours, 1 week, and 2 weeks following surgery. All patients were provided with a standardized postoperative pain management protocol to ensure uniformity in analgesic use.

The incidence of postoperative infection was recorded based on clinical signs such as erythema, swelling, and purulent discharge. Whenever necessary, microbiological analysis was carried out to confirm the presence of infection. Surgeon satisfaction regarding the handling characteristics and overall performance of the sutures was also evaluated using a 5-point Likert scale, where 5 represented excellent, 4 good, 3 satisfactory, 2 poor, and 1 very poor.

### **Statistical Analysis**

The collected data were analyzed using SPSS software version 23. Statistical significance was determined using a p-value of less than 0.05.



**RESULTS:**

Parameter	Silk Sutures (Mean ± SD / %)	Vicryl Sutures (Mean ± SD / %)	p-value	Statistical Significance
<b>Postoperative Pain (VAS Score)</b>				
Day 1	6.2 ± 1.1	4.8 ± 1.0	<0.05	Significant
Day 3	3.9 ± 0.9	2.7 ± 0.8	<0.05	Significant
Day 7	1.1 ± 0.4	0.9 ± 0.3	>0.05	Not Significant
<b>Wound Healing (Landry Healing Index)</b>				
1 Week	3.4 ± 0.7	4.3 ± 0.6	<0.01	Highly Significant
2 Weeks	4.7 ± 0.5	4.8 ± 0.4	>0.05	Not Significant
<b>Incidence of Infection</b>	10%	4%	<0.05	Significant
<b>Suture Handling (Surgeon Rating)</b>	Excellent	Good	—	—
<b>Patient Comfort</b>	Moderate	High	—	—

**Table 1:** Postoperative pain was evaluated using the Visual Analog Scale (VAS) on Days 1, 3, and 7 following surgery. Wound healing was assessed using the Landry Healing Index at 1 and 2 weeks postoperatively. The incidence of infection was determined based on clinical signs such as swelling, erythema, and purulent discharge. Surgeon satisfaction regarding suture handling and patient comfort was assessed qualitatively through clinical observations and patient feedback. Values are expressed as mean ± standard deviation (SD), and a p-value of less than 0.05 was considered statistically significant.

1. Postoperative Pain (VAS Scores)

- On Day 1, patients in the silk suture group reported slightly higher pain scores compared to the Vicryl group (p < 0.05).
- By Day 3, pain levels had reduced in both groups, but the Vicryl group consistently reported lower scores.
- On Day 7, minimal pain was observed in both groups, with no statistically significant difference.

2. Wound Healing (Landry Index)



- At 1 week, the Vicryl group showed better healing scores compared to the silk group ( $p < 0.01$ ).
- At 2 weeks, both groups demonstrated comparable healing, with no significant difference.

### 3. Incidence of Infection

- Infection was observed in 10% of patients in the silk group compared to 4% in the Vicryl group. This difference was statistically significant ( $p < 0.05$ ).

### 4. Suture Handling and Patient Comfort

- Suture Handling: Surgeons rated silk sutures as easier to handle and tie compared to Vicryl sutures.
- Patient Comfort: Patients in the Vicryl group reported greater comfort due to the absence of the need for suture removal.

### 5. Need for Suture Removal

- All patients in the silk group required suture removal at the 7-10 day follow-up. No removal was needed for the Vicryl group.

## **DISCUSSION:**

The comparison of silk and Vicryl sutures in third molar surgeries highlights key differences in their clinical performance, each with advantages and limitations. This section interprets the study findings and contextualizes them within existing literature.

### Postoperative Pain

The study revealed that patients in the Vicryl group experienced significantly less postoperative pain on days 1 and 3 compared to those in the silk group(8,9). This difference could be attributed to the reduced inflammatory response associated with Vicryl sutures, as their synthetic and absorbable nature minimizes irritation at the wound site. In contrast, silk sutures, being non-absorbable and natural, are known to provoke a more pronounced foreign body reaction, contributing to greater discomfort(8–10). These findings align with previous studies demonstrating reduced pain and inflammation with absorbable sutures in oral surgeries.

### Wound Healing

Wound healing was assessed using the Landry Index, showing superior healing scores in the Vicryl group during the first week. This can be explained by the ability of Vicryl sutures to resist bacterial colonization and maintain an optimal wound environment(8–11). Silk sutures, while effective in maintaining closure, are more prone to harboring bacteria due to their braided structure and non-resorbable nature, potentially hindering early healing. However, by the second week, both groups



showed comparable healing outcomes, indicating that the initial healing phase is more influenced by suture material(9–12).

### Infection Rates

The infection rate was significantly lower in the Vicryl group (4%) compared to the silk group (10%). Silk sutures, being non-absorbable and braided, provide a conducive surface for bacterial adhesion and biofilm formation, increasing the risk of postoperative infections(9–13). In contrast, Vicryl's synthetic composition and absorbable nature reduce bacterial adherence and the risk of secondary infection, consistent with findings from previous research on suture materials in contaminated surgical fields(9–14).

### Suture Handling and Patient Comfort

Surgeons rated silk sutures as easier to handle due to their superior knot security and tactile feedback, making them a preferred choice in situations where precise knotting is critical. However, patients in the Vicryl group reported greater comfort, primarily due to the elimination of suture removal. This advantage is particularly important in third molar surgeries, where ease of postoperative care significantly impacts patient compliance and satisfaction.

### Clinical Implications

The findings suggest that Vicryl sutures may be more suitable for third molar surgeries, especially in patients at higher risk of infection or those seeking minimal postoperative discomfort. However, silk sutures remain a viable option in settings where cost constraints or specific handling preferences play a role.

### Limitations of the Study

This study has certain limitations, including a relatively small sample size and the lack of long-term follow-up to assess scar formation or other late complications. Future studies with larger cohorts and extended follow-up periods could provide more comprehensive insights into the comparative performance of these suture materials.

## **CONCLUSION:**

The comparison of silk and Vicryl sutures in third molar surgeries highlights distinct advantages and limitations for each material. Vicryl sutures, being absorbable and synthetic, offer superior early wound healing, reduced infection rates, and improved patient comfort by eliminating the need for suture removal. These attributes make them a preferred choice, particularly in procedures where minimizing postoperative complications and enhancing patient satisfaction are priorities.



Silk sutures, on the other hand, are valued for their affordability and ease of handling, making them a practical option in resource-constrained settings or for surgeons prioritizing precise knot security.

Ultimately, the choice of suture material should be guided by the clinical scenario, patient preferences, and surgeon expertise. This study underscores the importance of tailoring suture selection to optimize outcomes in third molar surgeries.

## REFERENCES:

1. Akgun U, Karahan M, Randelli PS, Espregueira-Mendes J. Knots in Orthopedic Surgery: Open and Arthroscopic Techniques. Springer; 2018. 193 p.
2. Mehra P, D'Innocenzo R. Manual of Minor Oral Surgery for the General Dentist. John Wiley & Sons; 2015. 317 p.
3. Borle RM. Textbook of Oral and Maxillofacial Surgery. JP Medical Ltd; 2014. 830 p.
4. Mohan S, Jayanth BS, Saralaya S, Sunil SM, Sageer ASM, Harikrishnan R. Comparative Study on the Efficacy of Postsurgical Oral Prophylactic Antibiotic Versus Antimicrobial Suture Placement Alone in Preventing Surgical Site Infection After Removal of Impacted Mandibular Third Molar. J Maxillofac Oral Surg. 2020 Dec;19(4):546–51.
5. Dragovic M, Pejovic M, Stepic J, Colic S, Dozic B, Dragovic S, et al. Comparison of four different suture materials in respect to oral wound healing, microbial colonization, tissue reaction and clinical features-randomized clinical study. Clin Oral Investig. 2020 Apr;24(4):1527–41.
6. Kaur P, Maria A. Efficacy of platelet rich plasma and hydroxyapatite crystals in bone regeneration after surgical removal of mandibular third molars. J Maxillofac Oral Surg. 2013 Mar;12(1):51–9.
7. Karapataki S, Hugoson A, Kugelberg CF. Healing following GTR treatment of bone defects distal to mandibular 2nd molars after surgical removal of impacted 3rd molars. J Clin Periodontol. 2000 May;27(5):325–32.
8. Qi W, Li JN, Zhao JR, Xing HX, Pan J. [Effect of triangular flap design and healing procedure on the sequelae after extraction of impacted lower third molars]. Beijing Da Xue Xue Bao Yi Xue Ban. 2019 Oct 18;51(5):949–53.
9. Vijayakumar KCB, Sridharan G, Prasad TS, Deepanjali M, Parthasarathy B, Evelyn R N. Comparative evaluation of V-Loc knotless closure system and silk sutures in impacted mandibular third molar surgery: a split-mouth randomized controlled trial. Oral Maxillofac Surg. 2025 Aug 11;29(1):141.
10. Dilan OZ, Levent C, Volkan K, Mehmet G, Abdurrahman G, Mohammad A, et al. Evaluation of the effects of silk and polyethylene terephthalate sutures on postoperative complications in impacted lower third molar surgery. J Mater Sci



---

Mater Med. 2023 Oct 16;34(11):51.

11. Mahardawi B, Jiaranuchart S, Rochanavibhata S, Siriwat K, Mattheos N, Pimkhaokham A. Cyanoacrylate tissue adhesive versus silk sutures for mandibular third molar surgery: a systematic review and meta-analysis. *Clin Oral Investig*. 2024 Feb 29;28(3):180.
12. Parrini S, Bovicelli A, Chisci G. Microbiological Retention on PTFE versus Silk Suture: A Quantitative Pilot Study in Third Molar Surgery. *Antibiotics (Basel)* [Internet]. 2023 Mar 13;12(3). Available from: <http://dx.doi.org/10.3390/antibiotics12030562>
13. Uysal AE, Sencimen M, Ozkan A, Hosbul T, Samur Erguven S, Parlak F. Clinical and microbiological comparison of knotless/barbed and silk sutures for impacted third-molar surgery. *Minerva Dent Oral Sci*. 2023 Aug;72(4):161–7.
14. Balakrishna R, Poojary D, R A, Sali S, Moharana AK, Ts D. Single blind, randomized study comparing clinical equivalence of Trusilk and Mersilk silk sutures for mucosal closure following surgical removal of mesioangular impacted mandibular third molar. *F1000Res*. 2022 Jun 21;11:689.