



Comparison of two different suture materials on postoperative morbidity after bilateral impacted mandibular third molar surgery

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Submitted: 15-06-2021

Revised: 27-06-2021

Accepted: 30-06-2021

ABSTRACT:Background: The aim of this study was to compare the effects of two different suture materials with respect to postoperative sequelae of pain, wound healing (redness, swelling and secondary infection) and wound dehiscence after surgical removal of bilateral impacted mandibular third molars. 30 patients with an age range of 18-35 years were included in this study. Facial measurements were recorded preoperatively. Vicryl was used on all right sided impactions and mersilk on all left sided impactions. All the above mentioned parameters were evaluated on 1st, 3rd and 7th postoperative days. Secondary infection was evaluated on 3rd, 5th and 12th postoperative days.

Conclusion: Postoperative sequelae after third molar surgery has been found to be associated with many factors. It has been concluded from the study that in comparing two different suture materials on reducing postoperative complications that are observed after impacted mandibular third molar surgery, suturing of the wound using vicryl suture material should be preferred over mersilk.

KEYWORDS: Impacted third molar, suturing, vicryl, mersilk, resorbable, Postoperative morbidity,

reduces postoperative bleeding and narrows the extraction socket, preventing food from entering into it and thus protects the blood clot and accelerates healing². Sutures used in oral and maxillofacial surgery behave differently from those used in other parts of the body because of the differences in the quality of body tissues involved, exposure to food debris, vascularization and functions related to speech and mastication³. Sutures should have specific physical characteristics and properties such as good resistance to traction, lack of memory, dimensional stability, good knot security and sufficient flexibility to avoid damage to the oral mucosa. At the same time, sutures must avoid or at least limit bacterial adhesion and proliferation to the parts exposed to oral fluids, thereby avoiding contamination inside the wound³. Many types of sutures with different properties have been used in oral surgical procedures⁴.

The aim of the present study was to compare the effects of vicryl and mersilk suture materials on the postoperative sequelae of pain, wound healing (redness, swelling and secondary infection) and wound dehiscence after surgical removal of bilateral impacted mandibular third molars.

I. INTRODUCTION

The extraction of impacted mandibular third molars is a common procedure in oral and maxillofacial surgery. The reasons for extracting these teeth include acute or chronic pericoronitis, periodontal problems, presence of cysts or a tumour and presence of a carious lesion in relation to second or third mandibular molar. Extraction is performed in preparation for orthodontic treatment or orthognathic surgery in some cases¹. Suturing is necessary after surgical extraction of these teeth to recover the soft tissues for better healing. Suturing

II. MATERIALS AND METHODS

The present clinical study selected randomly 30 patients, age ranging from 18-35 years with bilateral mesioangular impacted mandibular third molars.

The inclusion criteria were:

(1) Patients with bilateral impacted mandibular third molars that were of comparable clinical presentation and technical difficulty (Pell and Gregory), positioning and angulations as seen on periapical and panoramic radiographs.



(2) Patients not having any significant medical history.

(3) Patients not on any medication that would affect the surgical procedure or postoperative period of healing.

(4) Nonsmokers and patients with good oral hygiene.

The exclusion criteria were:

(1) Patients with relevant medical history and pregnancy.

(2) Patients having any chronic periodontal disease.

(3) Patients not interested to participate in this study.

SURGICAL PROCEDURES

A thorough history of all cases was recorded and informed written consent was obtained from all the patients. Clinical examination along with routine blood investigations were carried out in all the patients and specific investigation if required. All the patients were operated under local anesthesia. Inferior alveolar and long buccal nerve blocks were given to achieve desired local anesthetic effect. All surgical procedures were performed by the same surgeon, using a similar flap design to avoid any discrepancy in surgical expertise. All mandibular left impacted third molars were assigned as group A, where suturing was done using vicryl suture material and all mandibular right third molar were assigned as group B, where suturing was done using mersilk suture material.(fig 1)All parameters were assessed on 1st, 3rd and 7th postoperative days. Secondary infection was assessed on 3rd, 5th and 12th postoperative days.

The parameters evaluated were:

1)Pain: A visual analogue scale from 0 to 10 was used. This comprised from no pain on the left to the

extremely severe pain on the right. Patients were provided a VAS and asked to mark their postoperative pain.(Figure 2)

2)Wound healing:

a)Redness-Assessed by intra-oral examination.

b)Swelling- Postoperative swelling was evaluated by measuring the changes of the 5 distances on the face of the patients preoperatively and postoperatively, with a thread and millimeter ruler. These distances were from the angle of the mandible to the ala of the nose, angle of the mandible to the lateral corner of the mouth, from the angle of the mandible to the lateral canthus of the eye, from the tragus to the ala of the nose, from the tragus to the lateral corner of the mouth. The first measurement was recorded as the normal value, taken before the surgery and was then repeated on 1st, 3rd and 7th days postoperatively.(Figure 3)

c)Secondary infection- Assessed by checking for the presence of pus on 3th, 7th and 12th postoperative days.

3)Wound dehiscence- Assessed by intra-oral examination.

III. RESULTS

The total number of patients satisfying our inclusion criteria were 30. The results of the present study showed that pain was significantly more in group B when compared to group A on 1st, 3rd and 7th postoperative days with p- values of 0.007, < 0.001 and < 0.001 respectively(table1).Wound healing was better in group A when compared to group B(table 2a, 2b, 2c)Wound dehiscence was significantly more among Group B compared to Group A with p-value of 0.047(Table 3).

Table:1

VAS score	Group A		Group B		Mean Difference	t-test value	p-value
	Mean	Std. Deviation	Mean	Std. Deviation			
Day 1	6.37	1.43	7.33	1.27	-0.97	-2.774	0.007
Day 3	3.37	0.96	4.77	1.38	-1.40	-4.551	< 0.001*
Day 7	1.37	0.85	2.50	1.17	-1.13	-4.299	< 0.001*

Unpaired t-test

* Significant difference

The mean VAS score at day 1, 3 and 7 was compared between Group A and Group B using the unpaired t-test. The mean VAS score at day 1, 3 and 7 was significantly more among Group B compared to Group A.

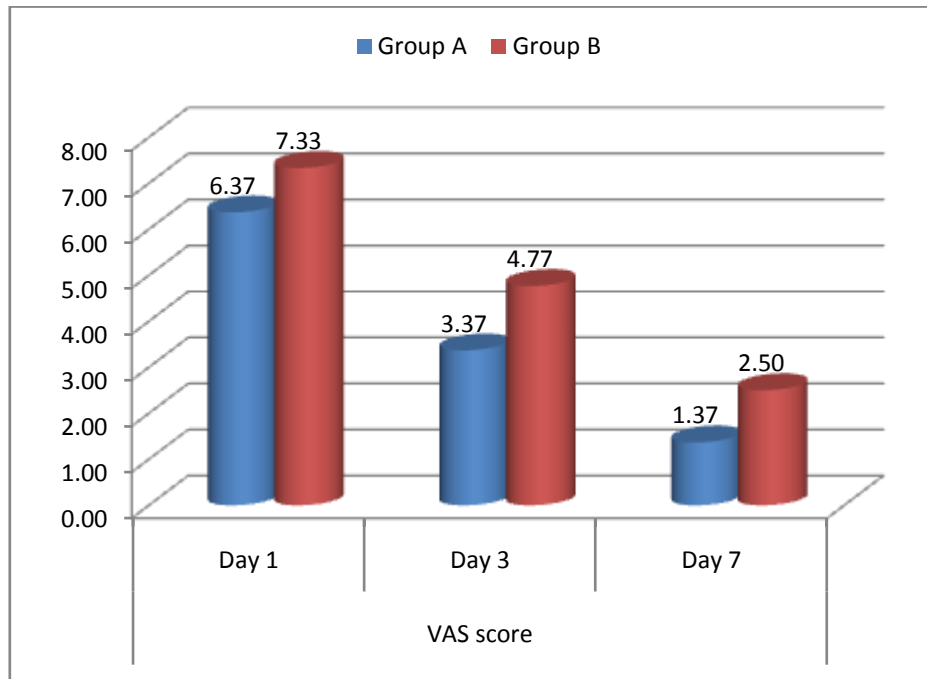


Table:2a

Swelling	Group A		Group B		Mean Difference	t-test value	p-value
	Mean	Std. Deviation	Mean	Std. Deviation			
Day 1	0.50	0.18	0.63	0.18	-0.13	-2.821	0.007*
Day 3	0.29	0.14	0.43	0.15	-0.14	-3.572	0.001*
Day 7	0.10	0.09	0.21	0.12	-0.10	-3.728	< 0.001*

Unpaired t-test

*** Significant difference**

The mean Swelling at day 1, 3 and 7 was compared between Group A and Group B using the unpaired t-test. The mean Swelling at day 1, 3 and 7 was significantly more among Group B compared to Group A.

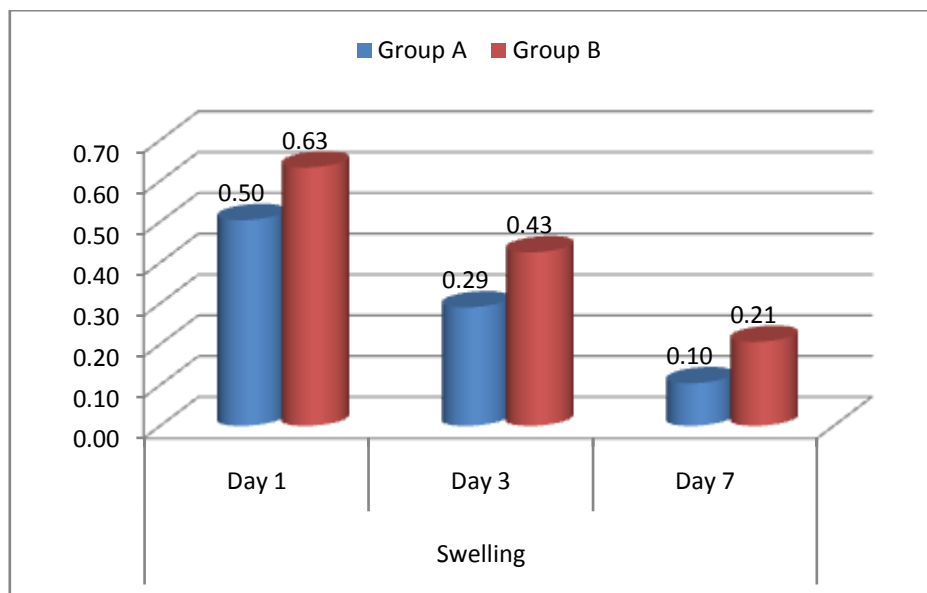




Table:2b

Redness		Groups		Chi-square value	p-value
		Group A	Group B		
Day 1	+	30	30	0.000	1.000
		100.0%	100.0%		
Day 3	-	6	0	6.667	0.010*
		20.0%	0.0%		
	+	24	30		
		80.0%	100.0%		
Day 7	-	29	11	24.300	< 0.001*
		96.7%	36.7%		
	+	1	19		
		3.3%	63.3%		

Chi-square test

* Significant difference

The distribution of Redness at day 1, 3 and 7 was compared between Group A and Group B using the chi-square test. Redness at day 3 and 7 was significantly more among Group B compared to Group A.

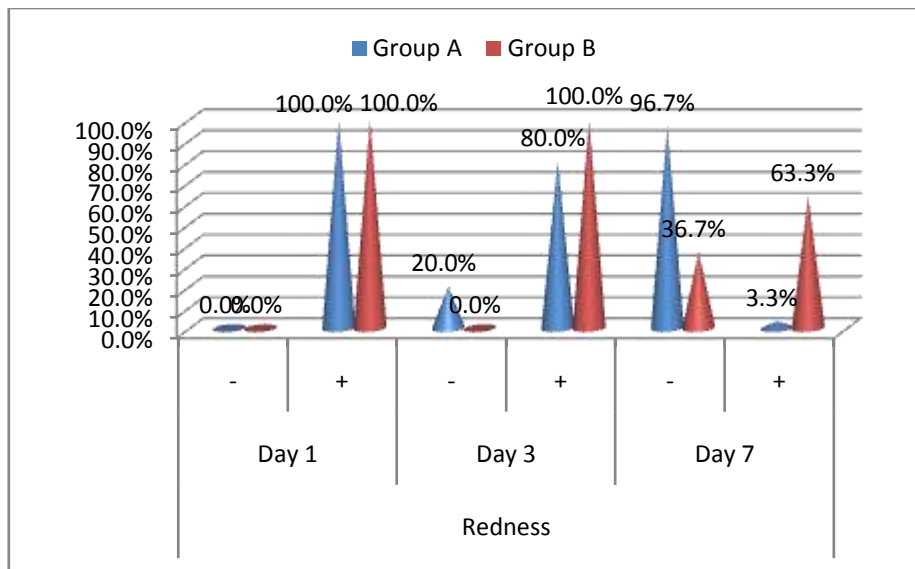


Table:2c

Secondary infection		Groups		Chi-square value	p-value
		Group A	Group B		
Day 1	Discharge present	0	4	4.286	0.038*
		0.0%	13.3%		
	No discharge	30	26		
		100.0%	86.7%		
Day 3	Discharge present	0	4	4.286	0.038*
		0.0%	13.3%		
	No discharge	30	26		
		100.0%	86.7%		
Day 7	No discharge	30	30	0.000	1.000
		100.0%	100.0%		

Chi-square test

* Significant difference



The distribution of Secondary infection at day 1, 3 and 7 was compared between Group A and Group B using the chi-square test. Discharge at day 1 and 3 was significantly more among Group B compared to Group A.

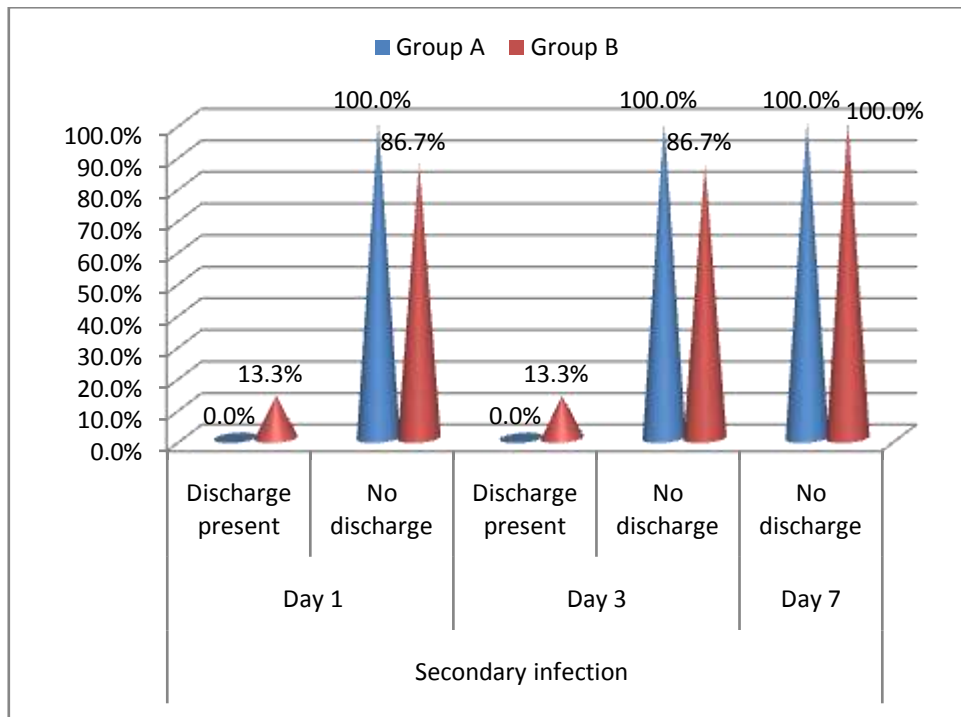


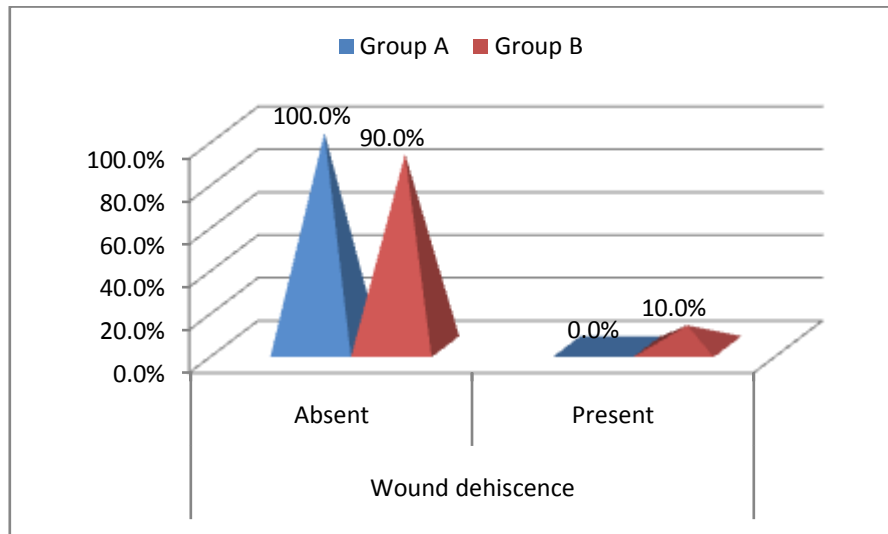
Table:3

Wound dehiscence	Groups		Chi-square value	p-value
	Group A	Group B		
Absent	30	27	3.158	0.047*
	100.0%	90.0%		
Present	0	3		
	0.0%	10.0%		

Chi-square test

* Significant difference

The distribution of Wound dehiscence was compared between Group A and Group B using the chi-square test. Wound dehiscence was significantly more among Group B compared to Group A.



IV. DISCUSSION-

Removal of impacted mandibular third molar is associated with postoperative complications. Immediate complications include pain, swelling, trismus, dysphagia while delayed complications include bleeding, alveolar osteitis, wound dehiscence, delayed wound healing, infections, periodontal pocketing and nerve injury⁵. Suturing becomes necessary after surgical extraction of these teeth². In particular, sutures used in oral and maxillofacial surgery behave differently from those used in other parts of the body because of the quality of body tissues involved, the constant presence of saliva, exposure to food debris, the high levels of vascularization and functions related to speech, mastication³. Different suture materials such as resorbable and nonresorbable sutures can be used after third molar surgery⁶.

In the present study we investigated whether two different types of suture materials has any effect on reducing the postoperative complications, especially primary wound healing after impacted mandibular third molar surgery. We compared vicryl and mersilk and the study showed that there is statistically significant difference between these two suture materials on the postoperative complications. Traditionally, silk has been the most widely used suture material for dental and surgical procedures. It should not be considered as a “material of choice” for oral surgical procedures even though it is easy to handle as compared to other nonabsorbable suture materials⁷.

Studies on oral tissue reactions to sutures have concluded that constant inflammatory reaction is more prominent with silk and cotton and minimal with others including nylon, polyester and

polyglycolic acid⁸. A histological study has compared the oral tissue reactions to various suture materials, results showed the presence of a large number of neutrophilic polymorphonuclear leukocytes in the vicinity of silk sutures which were less in oral tissues farther from silk sutures. Another finding was that fibroblasts and new capillaries in the oral tissues in the vicinity of silk sutures formed at a slower pace compared to tissues farther from the silk sutures. This may be considered as a justification for the delayed healing and intense tissue reactions associated with silk sutures⁹. Vicryl is a synthetic, absorbable and multifilament suturing material. It is well suited for handling and does not allow adherence of plaque. Healing of wounds is faster with vicryl. It has lower incidence of dehiscence and shows milder local reactions as compared to mersilk¹⁰.

V. CONCLUSION

In comparing two different suture materials on reducing postoperative complications that are observed after impacted mandibular third molar surgery, suturing of the wound using vicryl suture material should be preferred over mersilk.

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Figure 1

