Comparison of wound healing time post odontectomy surgery using silk and catgut sutures in Pirngadi Hospital

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Abstract

Objective: To compare post-odontectomy wound healing time using silk and catgut sutures at Pirngadi Hospital from May to June 2018.

Material and Methods: This is an on-laboratory experimental study with a "post-test only" design. Wound healing scores were assessed on the first and seventh days post odontectomy by seeing signs of inflammation. The number of patients studied was 30 people which 15 people used silk and 15 people used catgut.

Results: The results were statistically analyzed using Mann-Whitney Test. There was no significant relationship (p > 0.05) between the wound healing time to the suture type on the first day post odontectomy. On the seventh day, it was found that there was a significant relationship (p < 0.05) which silk had a score of 1.40 ± 0.507 while catgut had a score of 1.07 ± 0.258.

Conclusion: Catgut has a better wound healing time than silk.

Keywords: Catgut, Odontectomy, Silk, Wound Healing


Introduction

An impacted tooth is a tooth that are not perfectly erupted or erupted partially with positions that are not well supported by other tooth, bones, and soft tissues. This situation can occur due to insufficient eruption space, obstruction of neighboring tooth, and abnormal eruption path. A fully or partially impacted tooth must be removed when signs of pathological changes are found.1,3

Odontectomy is a minor surgery to remove impacted teeth that leave a surgical wound. Suturing of the surgical wound is necessary, aiming at holding a flap over the wound, reapproximating the wound edges, protecting underlying tissues from infection or other irritating factors, and preventing postoperative hemorrhage.3 Surgical wound healing may be delayed in the absence of the typical clinical features of infection.4 Banche’s research in comparison of silk, nylon, polyester, and poliglecaprone 25 in dentoalveolar surgery showed that there were more bacteria in non-absorbable sutures than absorbable sutures.5 Selvig’s research on silk and chromic gut showed that bacterial invasion of the suture track was a common outcome regardless of the material used, but it was particularly prominent for silk sutures.6 Lilly’s research on multifilament and monofilament sutures showed that the multifilament suture materials (silk, cotton, polyester and linen) resulted in a significantly higher tissue reaction as compared to the monofilament (steel, nylon, surgical gut, and chromic gut) suture materials.7 Despite of these studies, the best sutures material for wound healing has not been concluded by the researchers. The present study aimed to compare post-odontectomy wound healing time using silk and catgut at Pirngadi General Hospital from May to June 2018.

Material and Methods

This study was an experimental study with post-test only design. Wound healing score as independent variable was obtained by conducting examination on day 1 and day 7 after the extraction of the tooth. Subject included in this study were patient with third molar impaction from 20 to 45 years old at Pirngadi General Hospital from May to June 2018. The number of patients studied was 30 people in which 15 people used silk and 15 people used catgut. Every patient was given an informed consent about the procedures of this research and asked about the willingness to participate in this study. Study was conducted after obtaining Ethical Clerance No: 185/TGL/KEPK FK USU-RSUP HAM/2018 from Health Research Ethical Committee, Faculty of Medicine, Universitas Sumatera Utara.

Wound healing scores was assessed on the first and seventh days post odontectomy by seeing signs of inflammation. Each sign of inflammation obtained
will be given a score of 1 so that the accumulation of scores becomes the researcher’s assessment of the sutures under study. Scoring was done by calculating all signs of inflammation with higher scores indicating poorer wound healing. Healing status was graded by good (0-1), moderate (2), and poor(>3).

All results are checked to ensure the assessment matches the score and criteria used. The end result of each inspection is calculated manually and the data is processed computerized. In the Saphiro-Wilk test, it was found that the data in this study were not normally distributed. Thus, the data analysis test used is the Mann-Whitney test.

Results

**Figure 1A and figure 1B** results on day 1 examination were 33.33% samples using silk had a moderate score and 66.67% samples had a poor score. Then 6.67% samples using catgut had a moderate score and 93.33% samples had a poor score. There were no samples using silk or catgut which had a good score on the first day after odontectomy table 1.

**Figure 2A and figure 2B** result on day 7 examination were 60% samples using silk had a good score and 40% samples had a poor score. Then 93.33% samples using catgut had a good score and 6.67% samples had a moderate score. There were no samples using silk or catgut which had a poor score on the seventh day after odontectomy table 2.

Based on day 1 results, it was found that the mean score of wound healing time in the samples using silk was 2.67±0.488 and the mean score of wound healing time on the samples using catgut was 2.93±0.258 with a p-value of 0.073. Thus it can be concluded that there is no significant relationship between wound healing time and suture type on the first day after odontectomy table 3.

Based on day 7 results, the mean score of wound healing time in the samples using silk was 1.40±0.507 and the mean score of wound healing time in the sample using catgut was 1.07±0.258 with a p-value of 0.015. Thus it can be concluded that there is a significant relationship between the time of wound healing and suture type on the seventh day post odontectomy table 4.

Discussion

According to Chu, biocompatibility of a suture is the differentiator of each suture in influencing the -
The results showed that bacteria in silk sutures had five to eight times more bacteria than nylon with the least number of bacteria. In another study, Banche et al. studied microbial colonization in various intraoral sutures from patients after dentoalveolar surgery. The results showed a greater number of bacteria in silk sutures compared to polyglecaprone 25.

The presence of sutures in tissues can increase the risk of infection, especially in multifilament. When the sutures penetrates the mucosa, the oral fluid that acts as a bacterial medium will enter the gap between the filaments causing the spread of bacteria to the surrounding tissue. The spread of these bacteria can trigger a wider inflammatory reaction, especially around the tissues with multifilament sutures. That multifilament sutures provide an inflammatory response that is worse than monofilament sutures.

The research that has been done where the silk sutures was significantly (p <0.05) had an average score of wound healing time that was worse than catgut on the seventh day post odontectomy.

Conclusion

Based on the results of research and data analysis, it can be concluded that catgut sutures have better wound healing time on the seventh day after odontectomy. The catgut sutures have a mean score of wound healing time that is better than silk sutures. However, catgut sutures have rigid nature so it tends to give trauma to the oral mucosa tissue early after surgery and is more difficult to make knot than silk thread so that the time needed to perform suturing procedures tends to be long and the risk of trauma and irritation in the patient’s oral cavity is quite large. Silk sutures has better biocompatibility than catgut so that patients feel more comfortable when suturing procedures with silk suture.

Acknowledgment

The authors would like to thank the patients who have been willing to share his case for reported and participated cooperatively in this study.

Conflict of Interest

The authors report no conflict of interest.

References


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