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The Effects of Different Suture Techniques on Wound Healing in Abdominal Wall Closure

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Abstract: Purpose: The aim this study was to investigate the effects of different suture techniques on the healing of abdominal wall wound. Materials and Methods: 24 male Wistar albino rats were included in this study. The rats were divided into two groups. A 4 cm midline laparotomy was performed after ketamine HCl anesthesia. In Group I, the incision was sutured with 4/0 polypropylene interruptedly and in Group II, the wound was closed with 4/0 polypropylene continuously. The skin was sutured with an interrupted 4/0 silk suture. Then 2 cc of blood was withdrawn for biochemical and hematological tests by cardiac puncture. All the rats were killed on the 7th postoperative day. Tensile strength were measured and tissue samples were taken for hydroxyproline measurements and histopathological evaluation. Meanwhile intraabdominal adhesions were recorded. Results: Tensile strength was 751 ± 31 g in Group I and 622 ± 28 g in Group II. The difference was significant ($p < 0.05$). Hydroxyproline levels were 3.13 ± 0.15 µg/mg tissue in Group I and 2.81 ± 0.15 µg/mg tissue in Group II. The difference was significant ($p < 0.05$). Intraabdominal adhesions were found in 3 rats in Group I and in 6 rats in Group II. There was a significant difference between the two groups regarding tissue fibroblast numbers ($p < 0.05$). There was no significant difference between serological and hematological tests in the two groups. Conclusion: Closing the abdominal wall wound with the interrupted suture technique gave better results than with the continuous suture technique.

Key Words: Dehiscence, Abdominal wall closure, Hydroxyproline, Fibroblast, Wound healing

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