Does fibrin sealant applied to the kidney wound of a young rat affect the development of this organ? A comparative study.

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Abstract:

Objective: The aim of the study was to compare the results of the application of fibrin sealant and absorbable interrupted sutures and to evaluate the impact of the kidney wound closure method on the further development of the organ in young rats. Materials and methods: In 140 rats, a longitudinal bipolar incision of the renal parenchyma was made. In the study group the wound was closed using a fibrin sealant, whereas in the control group single absorbable sutures were applied to the renal parenchyma. Intravenous pyelography, postmortem and histopathological examinations were carried out 4 weeks and 6 months after the surgery. Results: The blood loss was smaller and the time of procedure shorter in the study group than in controls, and the differences were statistically significant. Both 4 weeks and 6 months after the surgery, the differences in the kidney dimensions and kidney weight between the two groups were statistically significant. The differences increased after a longer period of time following the surgery. The histopathological examination revealed that in the case of animals with surgical sutures applied to the wound, the rate of resorptive granulomas and abscess formation was higher, whereas kidneys with fibrin sealant applied to the wound featured a high number of lymphocytic infiltrations of minor severity. Conclusions: The application of the fibrin sealant simplified the surgical procedure, shortened its duration, and provided hemostasis and permanent closure of the wound. The fibrin sealant facilitates the process of wound healing. The application of a fibrin sealant, compared to surgical sutures, improved the growth of rat kidneys without impairing their functions.