K-08

Modern hemostatic dressings improve the surgical procedure in murine kidney melanoma and renal cell adenocarcinoma animal models

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Introduction and Objective: Nephron Sparing Surgery (NSS) is most method frequently used in kidney oncological surgery. The explicit procedures for prevention the tumor recurrence after NSS surgery have certain limitions. Our goal was to test the usefulness of selected biopolymers as well as nanomaterials as a hemostatic dressings in different animals models.

Methods: Different cell lines and animal models were used to test our hypothesis. In the first animal model, murine melanoma cells (10^6 cells) was implanted into the capsula fibrosa of the kidney of C57B1/J mice (20 animals/group). In the second animal model, Von Hipple-Lindau-deficient human cells, 786-O (10^6 cells) was implanted into the capsula fibrosa of the kidney of immunedeficient BALB mice (20 animals/group). Total of ten mice from each strain were used as a control groups. The wound bleeding and hemostasis were evalutaed after partial nephrectomy.

Results: Partial nephrectomy was performed after 10 days of implanted the cells into the kidney capsules of both animal models. The modern biomaterials of hemostatic dressings that used during the partial nephrectomy show that clotting time of 52 seconds for collagen (Type I) and 39s for polycaprolactone PCL (Type II). These data suggest that PCL (Type II) is better hemostatic dressings can be used over the time of the procedure of the partial nephrectomy. No bleeding was detected during the experiment period (3 weeks). The implanted murine melanoma cells and 786-O cells into kidney of both animal models showed tumor formation that dissected from the kidneys 2 weeks later.

Conclusion: Our data show that the potential carrier of the oncostatic compounds not increased the clotting time during partial nephrectomy procedure that may help recover the wound during the surgery. In addition, the histological data of the murine kidney cancer validate this model towards the prevention of recurrence the tumor following NSS.