

Use of Fibrin Glue and Gelfoam to Repair Collecting System Injuries in a Porcine Model: Implications for the Technique of Laparoscopic Partial Nephrectomy.

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Abstract:

Background and Purpose: One of the challenges of laparoscopic partial nephrectomies is the repair of a collecting system injury. We hypothesized that fibrin glue plus Gelfoam could be sufficient to repair such injuries. **Materials and Methods:** Four pigs (eight kidneys) underwent collecting system injuries of various lengths (3, 5, and 10 mm) (N = 8 each) during partial nephrectomy. Gelfoam soaked in the fibrin glue was applied to seal the collecting system and parenchymal defects. After 1 hour of passive filling, the renal pelvis was distended at supraphysiologic pressure to the point of leakage. Each repair site was examined for urinary extravasation during the physiologic and active phases of filling. **Results:** Hemostasis was achieved, and all collecting system injuries, regardless of size, were free of urinary leakage at physiologic pressures. Moreover, all defects maintained a seal at supraphysiologic pressures of at least 50 cm H₂O. **Conclusion:** The combined use of fibrin glue and Gelfoam is an effective means to obtain hemostasis and seal collecting system injuries up to 10 mm at physiologic pressures and up to 50 cm H₂O in the acute setting. Our hope is that this technique can facilitate both laparoscopic and open partial nephrectomies. New technologies will be employed in an attempt to obtain better seating of the sealant plug in the future. Survival studies are in progress.