

# **Laparoscopic fibrin glue ureteral anastomosis: Experimental study in the porcine model.**

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## **Abstract:**

Laparoscopic suturing is still difficult and time-consuming. The aim of this study, using the porcine model, was to evaluate the feasibility, safety, and efficacy of laparoscopic fibrin glue ureteral anastomosis without stay sutures for approximating the ureteral ends. In five pigs, after bilateral cystoscopic insertion of a 7F ureteral catheter, each upper ureter was laparoscopically dissected free and transected with scissors. The ureteral ends were then approximated with two atraumatic grasping forceps, and the fibrin glue was applied over the anastomotic site using a specially designed catheter (Duplocath). After waiting 5 minutes for the sealant to adhere, the forceps were removed, and the anastomotic site was examined for any early disruption. The ureteral stents were then pulled back to the distal ureter, and retrograde ureteropyelography was accomplished bilaterally in order to assess the immediate patency of the anastomoses. The animals were sacrificed and the ureteral anastomoses surgically removed for histologic examination. The operative time after insertion of the trocars averaged 15 minutes for each anastomosis, and no early disruption was observed after withdrawal of the grasping forceps. Immediate ureteral fluoroscopic patency was achieved in all 10 ureteral anastomoses, without leakage in 8 and with minimal leakage in 2. Histologic examination revealed a mild inflammatory reaction in the serosa with no modifications of the mucosa or the muscularis. Subsequently, two pigs were subjected to the same procedure bilaterally and not sacrificed. These two animals died with enormous urinomas on postoperative days 6 and 8. In each case, the anastomotic site was completely disrupted on one

side, while the other side remained grossly patent. However, histologic examination of these latter anastomoses revealed no real coaptation of the ureteral ends, while demonstrating complete eversion of the mucosa. In conclusion, fibrin glue ureteroureterostomies, although easy to accomplish, are not safe enough to be used without stay sutures in laparoscopic surgery.