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The Technique of Precise Injection of Floseal Along the Nephrostomy Tract to Facilitate Tubeless Percutaneous Nephrolithotomy

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LETTER TO THE EDITOR

Dear Editor,

After percutaneous nephrolithotomy (PCNL), a nephrostomy tube has been routinely placed to ensure hemostasis, provide drainage, and maintain access to the collecting system. This causes pain after surgery and persistent urine leaks after its removal. Recently, efforts have been expended to either reduce the size of the nephrostomy tube or eliminate it altogether. Hence, tubeless percutaneous nephrolithotomy is now increasingly advocated for the treatment of uncomplicated, large kidney stones [1-3]. After surgery, closure of the skin without sealing the nephrostomy tract postoperatively risks bleeding and urinary extravasation [4]. Hemostatic agents have therefore been advocated to seal the PCNL tract. Herein we describe a method to facilitate the accurate application of a Floseal Matrix from the renal parenchyma to skin, and we report the outcomes of tubeless PCNL.

TECHNIQUE

The selection criteria for tubeless percutaneous nephrolithotomy (PCNL) include a single-access tract, no significant residual stones, minimal bleeding, and no requirement for a secondary percutaneous procedure.

Routine PCNL is performed. After stone clearance, an intraoperative nephrostogram and flexible nephroscopy were performed to ensure total calculus clearance and no ureteric obstruction. The access sheath is then withdrawn to the junction of renal parenchyma and collecting system under direct nephroscopic vision and fluoroscopic guidance. The nephroscope is then removed and exchanged for the Floseal laparoscopic applicator; its tip is carefully aligned with the access sheath tip under fluoroscopic guidance (Figure 1). A rubber band is then placed around the applicator to fix its position within the access sheath (Figure 2). Five mls of Floseal was injected down the sheath, which was slowly withdrawn simultaneously with the applicator held in position with the sheath by the rubber band. The tract is re-examined at the skin level for bleeding, and another 5 mls of Floseal was given, if necessary. The skin can then be closed with DERMABOND.

Clinical data of our initial patient series were collected prospectively. No DJ stents were placed on our patient postoperatively, but a ureteric catheter connected to the Foley catheter is left in situ until postoperative day 1.

RESULTS AND DISCUSSION

In our series of 5 patients, the median age was 47 (range: 29 to 61) years; the average stone load was 23.4 (range: 16.7 to 30) mm. The average duration of surgery, on average, was 174 (range: 155 to 194) min, and 100% stone clearance was achieved in all patients. The median length of stay of tubeless PCNL patients was 2 days. There were no complications reported, including bleeding or urine leaks. In particular, there were no

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Figure 1. An image of the flouroscopy..

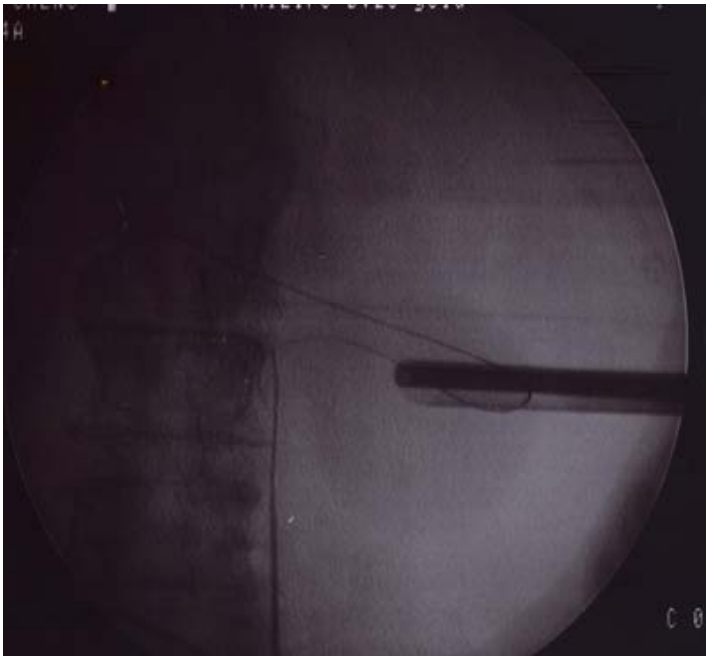
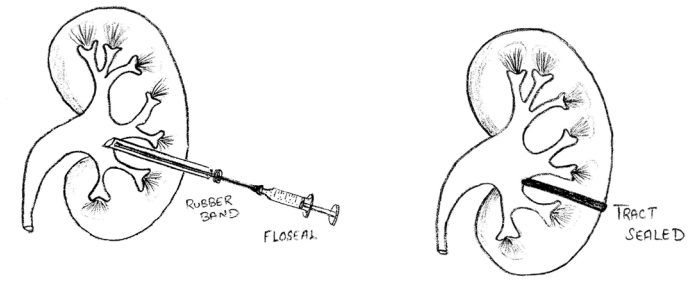


Figure 2. Tubeless PCNL.



wound complications. This was compared to our earlier series whereby only the skin was closed and no Floseal applied; the wound complication was 20%.

CONCLUSION

For patients who have been rendered completely stone free during uncomplicated PCNL, the administration of Floseal Matrix to the nephrostomy tract, precisely with the above novel technique, may achieve immediate hemostasis and eliminate the need for the placement of a nephrostomy tube. This novel technique can potentially facilitate safer tubeless PCNL than just skin closure alone.

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