

STONE DISEASE

Pain after percutaneous nephrolithotomy: impact of nephrostomy tube size

Pietrow PK, Auge BK, Lallas CD, Santa-Cruz RW, Newman GE, Albala DM, Preminger GM
Comprehensive Kidney Stone Center, Division of Urology, Department of Surgery, Duke University Medical
Center, Durham, North Carolina 27710, USA
J Endourol. 2003; 17: 411-4

Background and Purpose: Percutaneous nephrolithotomy (PCNL) is the procedure of choice for managing large renal calculi. Investigations have recently focused on reducing the morbidity of the procedure and improving postoperative patient comfort by using smaller endoscopic instruments. We sought to evaluate the effect of a smaller percutaneous drainage catheter on postoperative pain.

Patients and Methods: Thirty consecutive patients were randomized to receive either a 10F pigtail catheter or a 22F Councill-tip catheter for their percutaneous drainage after PCNL. The demographics were similar in the two groups, as was the rate of supracostal access (47% v 43%, respectively). Self-assessed analog pain scores were collected at 6 hours postoperatively as well as on the morning of the first and second postoperative days (POD). Total narcotic usage was tabulated using morphine equivalents. Complications, including the change from baseline hematocrit, were reviewed.

Results: There was no significant difference in the change in hematocrit (6.8 v 6.2 percentage points, respectively). Those patients with the smaller nephrostomy tube noted significantly lower pain scores at 6 hours (3.75 v 5.3; $P = 0.03$). Although the pain scores were lower on POD 1 and 2 for the 10F catheter group, the difference was not statistically different (1.9 v 2.9 and 1.25 v 1.9, respectively; both $P > 0.05$). The patients having the 10F catheter required fewer narcotics: 78 mg v 91 mg, although the difference was not statistically significant.

Conclusion: The use of a small drainage catheter after PCNL is associated with lower pain scores in the immediate postoperative period, yet no statistically significant benefit to the patient with regard to comfort is demonstrated beyond 6 hours. In addition, there is a trend toward reduced narcotic requirements. Finally, there is no apparent increase in patient morbidity from the use of the smaller nephrostomy tubes.

Editorial Comment

Despite the uniformly high stone free rates achieved with PCNL irrespective of stone burden, stone location or stone composition, alternative therapies such as ureteroscopy and SWL continue to be advocated despite less successful outcomes because of the lower associated morbidity. Consequently, efforts to reduce the morbidity of PCNL primarily through alterations in tube management have been under way. Pietrow and colleagues performed a prospective, randomized trial of 30 patients undergoing PCNL who received either a 22F nephrostomy tube or a 10F pigtail catheter post-procedure and compared the 2 groups with regard to subjective and objective pain measures, complications and bleeding. Although the stone free rates, complication rates and mean drop in hemacrit were comparable between the 2 groups, visual analog pain scores were consistently lower at 6 hours and 1, 2 and 14 days post-operatively in the 10F group, although only the difference in the 6 hour scores reached statistical significance. Post-operative narcotic requirements were also correspondingly less in the 10F group, but not statistically significantly so.

Based on this study and others, it would seem that the use of a smaller caliber nephrostomy tube results in less early post-operative pain without compromising safety or the ability to return to the operating room for second look flexible nephroscopy. Liasikos and associates (1) additionally noted that the use of a tail stent in conjunction with a small nephrostomy tube compared with a standard 24F re-entry tube reduced urine drainage from the tract as well as produced less pain; however, urine drainage was not assessed in the current study.

Furthermore, avoiding the stent obviates the need for office stent removal and the associated cost and discomfort associated with it. Likewise, a small bore nephrostomy tube has an advantage over a “tubeless” PCNL in that the nephrostomy tract is maintained in the event residual stones are identified on post-operative imaging studies and second-look flexible nephroscopy is needed. Indeed, small-caliber nephrostomy tubes provide the ideal compromise for management of uncomplicated PCNL in that they maintain the nephrostomy tract, maximize comfort and obviate the need for an internal stent.

Reference

1. Liatsikos EN, Hom D, Dinlenc CZ, Kapoor R, Alexianu M, Yohannes P et al.: Tail stent versus re-entry tube: A randomized comparison after percutaneous stone extraction. *Urology*. 2002; 59: 15-9.

Dr. Margaret S. Pearle

Associate Professor of Urology
University of Texas Southwestern Med Ctr
Dallas, Texas, USA

Stone recurrence predictive score (SRPS) for patients with calcium oxalate stones

Lee Y, Huang W, Lu C, Tsai J, Huang J

Department of Surgery, Veterans General Hospital-Kaohsiung, School of Medicine, National Yang Ming University, Taipei, Taiwan
J Urol. 2003; 170: 404-7

Purpose: We developed a convenient, self-administered 8-item stone recurrence predictive score (SRPS) to predict the recurrence of calcium oxalate stones.

Materials and Methods: An 8-item SRPS to predict stone recurrence was developed based on general patient data, including age, sex, urine volume, smoking, wine drinking, family history, stone number and history of gouty arthritis. Mean age of the 204 studied patients with calcium oxalate stones +/- SD was 59.4 +/- 14.5 years (range 24 to 83). The male-to-female ratio was 3:1. Of the patients 115 were recurrent stone formers and 89 were single stone formers. We compared all available general data in the recurrence and control groups.

Results: Family history, stone number, gouty arthritis and SRPS were independent risk factors for stone recurrence. Mean SRPS in recurrent and single stone formers was 7.6 +/- 3.1 and 5.1 +/- 2.0, respectively ($p = 0$). An increase in SRPS had a significant positive correlation with stone recurrence ($r^2 = 0.859$, $p < 0.0001$). At an SRPS cutoff of 7 or greater we achieved 61.7% sensitivity and 75.3% specificity to predict stone recurrence. At an SRPS of 11 or greater we found that 100% of patients had recurrent stones.

Conclusions: With the introduction of the 8-item SRPS we provide a simple, convenient and reliable tool to predict calcium oxalate stone recurrence. Due to the characteristics of the high incidence of stone recurrence thorough metabolic evaluation may be justified in patients with an SRPS of 7 or greater and preventive measures are highly recommended in those with an SRPS of 11 or greater.

Editorial Comment

The efficacy of medical therapy in preventing stone recurrence has been established by several prospective, randomized trials. However, the cost-effectiveness of metabolic evaluation and medical therapy has been questioned, particularly for first-time stone formers. Lee and colleagues attempted to devise a stone recurrence predictive score (SRPS) based on an 8-item questionnaire relating to known stone risk factors that

could stratify risk of stone recurrence and predict patients at high risk of recurrence. From a review of 204 patients followed for 2 to 5 years with radiographic studies and history, a linear regression model was constructed to determine the importance of each factor in predicting stone recurrence. The factors of positive family history, multiple stones, gouty arthritis and SRPS correlated with stone recurrence rate. At an SRPS cut-off level of ≥ 7 , the sensitivity and specificity of calcium oxalate stone recurrence is 62% and 75%, respectively.

In this era of limited resources and costly medical care, stratification of risk is critical in order to allow identification of subgroups of patients more likely to suffer a defined event. Metabolic evaluation and indefinite medical therapy is costly. On the other hand, surgery is also costly, but the likelihood of experiencing a stone event requiring surgery is relatively low. As such, prophylactic treatment of patients after their first stone event may not be cost-effective. However if we can identify patients at highest risk of stone recurrence, medical evaluation and treatment in this group would avoid much suffering and expense and would likely justify the cost of treatment. This self-administered questionnaire provides a quick way to stratify patients, and although it will require further retrospective and prospective validation in larger patient groups, it represents a first step towards simple risk stratification.

Dr. Margaret S. Pearle
Associate Professor of Urology
University of Texas Southwestern Med Ctr
Dallas, Texas, USA

ENDOUROLOGY & LAPAROSCOPY

Hellstrom technique revisited: laparoscopic management of ureteropelvic junction obstruction

Meng MV, Stoller ML

From the Department of Urology, University of California, San Francisco, School of Medicine, San Francisco, California, USA

Urology. 2003; 62: 404-9

Objectives: To present our experience with the treatment of adult ureteropelvic junction (UPJ) obstruction using a laparoscopic Hellstrom vascular relocation technique.

Methods: Transperitoneal laparoscopy was performed in 35 patients for the management of UPJ obstruction. In 9 cases, we identified crossing lower pole vessels and performed the Hellstrom technique. We discuss our indications, intraoperative techniques, and outcomes when performing only vascular relocation in these patients.

Results: All 9 patients presented with long-standing flank pain and were identified as having UPJ obstruction (7 primary, 2 secondary) on radiographic imaging. The intraoperative decision to perform the Hellstrom technique was based on the presence of the crossing vessels, a grossly normal appearance of the ureter and UPJ, and a small renal pelvis. The crossing vessels were completely mobilized, displaced cephalad, and fixed using intracorporeal sutures. The mean operative time and blood loss was 164 minutes and 15 mL, respectively. At a mean follow-up of 19 months (range 14 to 31), the patients were asymptomatic with no evidence of obstruction on Lasix nuclear renography.

Conclusions: Traditional treatment of UPJ obstruction, with or without crossing vessels, has been accomplished by pyeloplasty. Dismembered pyeloplasty is a standard method in cases of associated crossing vessels; however, we propose that the Hellstrom technique be considered in cases in which the ureter appears normal and the pelvic anatomy is unfavorable for transection and anterior reanastomosis of the ureter and