

PNL

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Contributing Factors for Fever After Tubeless Percutaneous Nephrolithotomy



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Although placing a nephrostomy tube at the end of PCNL has been considered a routine procedure in the past; the necessity of the nephrostomy tube itself has been challenged by tubeless modification in this decade. The tubeless modification method offers several advantages over traditional PCNL, including reduction in hospital stay, decrease in analgesia requirements, and an earlier recovery to normal activities.

Urinary tract infection (UTI) after PCNL is a common problem despite widespread usage of antibiotic prophylaxis. Catheter-associated bacteriuria and UTI is one of the most common health care associated infections, and the most effective way to reduce the incidence of catheter associated bacteriuria and UTI is to reduce the use of urinary catheterization by restricting its use.

However, whether omitting the nephrostomy tube in percutaneous renal surgery interferes with bacterial cloning and subsequent occurrence of UTI and fever has not yet been reported. The authors in this study aimed to evaluate the contributing factors for fever after tubeless percutaneous nephrolithotomy (PCNL).

The authors retrospectively evaluated the data of 395 patients who underwent tubeless PCNL between May 2009 and December 2013. After stone extraction, the authors cauterized the bleeding points for hemostasis to enable tubeless modification. They evaluated the patient charts to define the contributory factors for fever.

In their series, forty-four patients (11.7%) developed fever after tubeless PCNL. There was no difference in gender, age, and body mass index in the development of fever. Episodes of febrile or septic urinary tract infection before PCNL were found to have occurred in 35 patients, but the incidence of postoperative fever was not significantly higher in these patients. The mean stone size ($p=0.295$), rate of staghorn stones ($p=0.459$) or having a struvite stone ($p=0.715$) did not alter the postoperative fever rates. The operation time was not significantly

higher in the group with urinary tract infection ($p=0.468$). Having a residual stone ($p=0.002$) significantly increased postoperative fever rates.

The authors concluded that incomplete stone extraction was the major contributing factor for the development of fever after tubeless PCNL.

Endourology and Stones

Percutaneous Nephrolithotomy During Uninterrupted Aspirin Therapy in High—cardiovascular Risk Patients: Preliminary Report



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There is an increasing prevalence of aspirin therapy for primary and secondary prevention of cardiac and thromboembolic events. Aspirin, as a platelet inhibitor increases the risk for bleeding during and after surgery. However, interruption of aspirin around the time of surgery can lead to potentially disastrous complications including death.

Authors in the current study performed a retrospective analysis to determine the feasibility and safety of performing percutaneous nephrolithotomy (PCNL) in high-cardiovascular risk patients remaining on aspirin therapy. They reported the outcome of 16 PCNL cases performed in 14 patients continuing to aspirin therapy through surgery.

Mean estimated blood loss was 161ml and mean length of hospital stay was 2.8 days. All patients were stone free at the end of the procedure. None of the cases was terminated due to bleeding which impairs the vision and no intraoperative blood transfusions were necessary. Although a total of 5 patients experienced a postoperative complication, no patient experienced a perioperative thromboembolic or cardiac event.

The study has several limitations including small sample size, single institutional experience and the retrospective design of the study.

The authors concluded that PCNL can be performed safely and effectively in patients continuing aspirin perioperatively.

Extended Antimicrobial Use in Patients Undergoing Percutaneous Nephrolithotomy and Associated Antibiotic Related Complications

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PCNL represents a clean contaminated procedure with unique infectious risks due to intermixing blood from the renal parenchymal tract and urine from the affected kidney. It is known that large stones treated with PCNL are more likely to harbor bacteria and endotoxins, resulting in a greater risk of infectious complications, including a 4.5-fold increased risk of SIRS in patients with a positive stone culture. Thus, despite its minimally invasive nature the estimated overall risk of postoperative fever was reported to be high as 32% with SIRS developing in up to 37% of patients and sepsis developing in 1% to 5%.

Although the current AUA (American Urological Association) guidelines recommends 24 hours or less of perioperative antibiotic prophylaxis, these recommendations were challenged by studies suggesting that extended duration preoperative antibiotic therapy even in the setting of a negative preoperative urine culture may decrease the risk of infectious complications postoperatively.

In this study, the authors present their experience with a regimen of extended antibiotic therapy in patients undergoing PCNL, including short-term antibiotic related complications and antimicrobial resistance. They reviewed the records of 227 consecutive patients treated with percutaneous nephrolithotomy from 2009 to 2013. Patients with negative urine or stone cultures in the study received 7 days of empirical therapy preoperatively and postoperatively. The authors also recorded the adverse antibiotic related events for up to 3 months.

The median duration of antibiotic therapy (mainly nitrofurantoin, trimethoprim/sulfamethoxazole, fluoroquinolones and other antibiotics) was 14 days.

Antibiotic related complications developed in 23 patients (10%) at a median of 12 days.

Common complications included rash in 7 cases (3%), gastrointestinal upset in 6 (3%) and

Clostridium difficile colitis in 1 (0.4%). Trimethoprim/sulfamethoxazole was associated with

an increased likelihood of an adverse event ($p=0.04$) but patient age, gender, and therapy type (therapeutic vs. prophylactic) and duration were not. Finally, antibiotic and multidrug resistance developed in 4 (36%) and 3 patients (27%), respectively. The authors concluded that the rate of adverse antibiotic related events in patients treated with percutaneous nephrolithotomy who received extended perioperative antibiotic therapy is low. However, physicians should pay attention when considering trimethoprim/sulfamethoxazole as increased drug related adverse events are more common with this agent.

The main limitation of the current study is its retrospective nature. It also represents a single institutional data. The resistance patterns of pathogen bacteria may show great variations in different centers, thus multi-center studies are required to validate the findings of the current study.



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Supine pediatric percutaneous nephrolithotomy (PCNL)

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As in adults, percutaneous nephrolithotomy (PCNL) constitutes the mainstay treatment of large and SWL resistant kidney stones. Despite its popularity, prone PCNL has the disadvantages, including cervical spine trauma from excessive extension or flexion, difficulty in continuous monitoring of the endotracheal tube to avoid kinking or slippage in addition to the ventilatory difficulty caused by restricted mobility of thorax and abdomen. Although safety of supine PCNL has been reported in adult patients, the experience in pediatric patients is limited. Authors in this prospective study reported the outcome of supine pediatric PCNL in 27 children with a mean age of 6.8 years.

They positioned the patient in an oblique position by placing two bags, one underneath the shoulder and the other underneath the ipsilateral hip joint in order to provide a flank-free area and a wider range for nephroscopic movement. They put the ipsilateral arm on the thorax as

described with Barts modified Valdivia supine position. Finally they applied soft pads under all the pressure points.

They performed a single lower calyceal access in all cases through which they could successfully remove even the upper calyceal stones. The average operative time was 41 ± 15 min. The operation was successfully completed as planned in all cases with two cases of intraoperative complications (one case of pelvicalyceal system perforation and another case of intraoperative bleeding and blood transfusion). The initial stone free rate was (92.5%). Postoperative complications were reported in the form of 2 cases of fever that respond to medical treatment for 72 h.

The authors concluded that pediatric supine PCNL is a safe and effective method for management of pediatric renal stones. It carries the advantages of easily upper calyx access through the lower calyceal tract, low incidence of fluid absorption or hypothermia and easy anesthesia monitoring.

The limitations of the study are low patient number and lack of comparative group. The data provided are also from a single center.

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Supine percutaneous nephrolithotomy with endoscopic combined intra-renal surgery – Results of the first one hundred patients from a single UK centre

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Although the original studies did not provide any justification for the prone approach, it subsequently became the position of choice for PCNL as it position provides a larger surface area for renal access and a perceived lower risk of visceral injury. However, it may be contraindicated due to anaesthesiological concern, particularly in morbidly obese patients or in those with cardiopulmonary difficulties and the consequent morbidity of this approach has been well described and documented. Valdivia and associates were the first to describe a case series of supine approach PCNL in 1998 in which the patients were placed completely supine with a 3 L fluid bag below the ipsilateral flank and with the ipsilateral leg totally extended. Since then, several studies have demonstrated the safety and efficacy of supine PCNL especially in patients with cardiopulmonary compromise.

The Galdakao modification of the supine Valdivia position includes a modified lithotomy position that provides greater versatility since flexible ureterorenoscopy (URS) can be undertaken synchronously. This ensures precise tract placement under direct vision, minimisation of stone migration into the ureter, and access into those chambers of the pelvicalyceal system that cannot be visualized with the rigid nephroscope thereby optimizing complete stone extraction and visual evaluation of the punctured renal unit.

In this study, the authors performed a retrospective analysis of operative times, anaesthetic and surgical complications, and stone-free rates in 100 patients who underwent PCNL and ECIRS in the Galdakao Modified Supine Valdivia position at a single centre and compared the outcomes for those patients with BMI > 30 and those with high ASA grade to the remaining patient group. Mean operative time and hospital stay was 111.34 ± 36.92 min and 49.5 ± 18.6 h respectively with no demonstrable increase in either parameter for patients with high ASA grade or BMI. The overall PCNL stone-free rate was 87% with 13 needing a secondary procedure. Six patients had postoperative complications (three transfusion, two post-operative fever and one ITU admission for sepsis).

The authors concluded that supine PCNL incurs minimal anaesthetic morbidity while enabling PCNL to be performed in the obese safely with high stone-clearance rates when combined with ECIRS.

The main limitation of the current study is its retrospective nature. Also the findings presented here rely on a single center data without any comparison. We think that both supine and prone PCNL are equally effective and performing the puncture under the position that the surgeon is

most familiar would be the best especially when considering the estimated learning curve of supine PCNL.