

Case Report

Percutaneous Extraction of Big Kidney Stone without Fragmentation: The Novel Technique in Percutaneous Nephrolithotomy (EN BLOCK PCNL)

Karami HOR¹, Vahidi SRJ¹, Abouei SA² and Gholizadeh HAM^{2*}

¹Department of Urology, Shahid Sadoughi University of Yazd, Iran

²Intern of Medical Sciences, Shahid Sadoughi University of Yazd, Iran

*Corresponding author: Gholizadeh HAM, Resident of Urology, Shahid Sadoughi University of Yazd, 3rd Apartment Unit, No 17, 10th Shahid Qandi alley, Shahid Qandi Blvd, Iran

Received: May 11, 2021; Accepted: May 26, 2021;

Published: June 02, 2021

Case Presentation

A 60 years old man because of right flank pain had undergone sonography & CT scan that showed 2 stone with cumulative diameters of about 70 mm in middle calyx & pelvic that was referred to our center to performance PCNL. In PMS's patient (past medical history) had history of PCNL as a result of calcium oxalate monohydrate stone with the size of 30 mm in right kidney, also the patient who had undergone treatment had copd.

In CT scan, the stone with 1100 Hounsfield with sever hydronephrosis was seen, also it was reported the parenchymal was thin. Patient with BMI 19 (body mass index), after initial evaluation & necessary testing check without contraindication was a candidate to PCNL. In this center, PCNL was performed with C-ARM fluoroscope in prone position also with 26 rigid cystoscope & pneumatic lithoclast. As the result of continuous headache in the previous surgery, the patient did not let us do spinal anesthesia, so that the general anesthesia was done. After the insertion 6fr ureteral stent in lithotomy position, the patient was repositioned to prone & all of the steps for finding access in middle calyx were done & amplatze sheat 30fr was inserted. We tent to fragment the stone but unfortunately pneumatic lithoclast got failed. Ultimately, we had to choose one of the following steps; i.e., either to cancel the operation or to open nephrolithotomy, because the stone was highly available from that tract & could be touched with finger due to low BMI of the patient. Having expanded skin, mussels & fascia for 3.5 cm, with help of the finger, we expanded parenchymal slightly. The stone in middle calyx was quite palpable due to thin parenchymal & also the stone in pelvis was floating, so that the stone was taken by forceps & it was rotated in the direction of the lowest diameters, then it was taken out by forceps ring [1]. The tubeless operation was carried out because of absence of an obvious bleeding & also without residual stone (we check with C-ARM FLUROSCOPE). The incision site was closed up using 3-0 nylon threats a far & near stitch technique. The good point which took 4 minutes beginning from the stone getting out to the end. The follow up in the lab data such as: hemoglobin, electrolytes,

Abstract

PCNL is gold standard treatment of pelvis stone more than 2 cm. Since 1970 that PCNL was introduced, multiple methods including mini PCNL, Lap assisted PCNL and etc. were used to increase the efficacy and decrease the complications of PCNL in different patients. We describe a new method of PCNL for the first time for extracting 7 cm renal stone without fragmentation and we called it EN BLOCK PCNL. Our technique had no complication and caused lower operative time and hospital stay.

Keywords: Percutaneous nephrolithotomy; Nephrolithiasis; Renal stone quick technique; Kidney calculi

after the operation, we did not observe a tangible change. Ultimately, the patient with ciprofloxacin 500 mg BD (bis in die) was left from the hospital, & after 7 days, ureteral stent & Foley catheter came out & also in the fourteenth day, it was removed suture without any complication such as wound infection required blood transfusion. In follow up we evaluated the patient with IVP (intravenous pyelogram) after 3 months, that showed, the structure of calyx & secretion was normal [2].

Discussion

The goal of PCNL surgery is to remove kidney and ureteral stones percutaneously. PCNL has replaced open renal surgery in most cases of large or complex calculi. Following the introduction of PCNL in the 1970s, much research has been done in order to improve this technique and reduce postoperative pain, complications and hospital stay. The standard PCNL has several difficulties such as the need for several accesses in the case of larger stones, more steps in surgery and longer operation time that can be a problem especially in patients with underlying disorders who cannot tolerate operations with long durations. As for the complications of this method, transfusion, fever, injury to nearby organs, possible renal failure and hyponatremia are among the most important. Postoperative hyponatremia caused by the use of irrigation fluid has adverse neurological outcomes including coma and seizure [3,4]. In this case report we introduced a novel PCNL technique, the EN BLOCK PCNL, we removed stone without fragmentation; however, it was never used in kidney stone removal. Size & material of stone, are affecting on time to take out the stone despite in this method does not affecting. According to Guohua zeng' metaanalysis the maximum & minimum time duration of the operation ranged from 31 to 106.6 minutes [5]. Karakoyunlu et al, reported a mean operation time of 86.8±48.8 minutes for a single session of standard PCNL [6]. In another study which compared miniaturized PCNL and standard PCNL, an operation time of 89.2±40.4 and 74.7±44.5 minutes respectively, was observed [7]. Our operation time for the EN BLOCK method in this patient was 30 minutes, that was lower than any other methods, & hospital stay

for this patient was 2 days. We were able to reduce operation time & anesthesia duration & absence of some of PCNL surgical tools like pneumatic lithoclast. Regarding the pre- and post-operative Para clinical tests, research indicated a decrease in hemoglobin and sodium levels and an increase in creatinine levels after PCNL surgeries. Likewise, in this case we did not have more hemorrhage that required transfusion. We used a little irrigation fluid (100cc physiological serum), that was the reason for absence of hyponatremia in this case. Ultimately, in this case with dense stone (Hounsfield 1000) in the kidney with thin parenchymal, we were able to remove with EN BLOCK method without hyponatremia, blood transfusion & without any complications.

Recommendation

This method is not recommended for all patients that candidate PCNL but the patients who candidate PCNL with dense stone & rather single with thin parenchymal are advised to perform the operation in a limited time.

References

1. Castaneda-Zuniga WR, Clayman R, Smith A, Rusnak B, Herrera M, Amplatz A. Nephrostolithotomy: percutaneous techniques for urinary calculus removal. 2002; 167: 849-853.
2. Clayman RV, Surya V, Castaneda-Zuniga WR, et al. Percutaneous Nephrolithotomy with Mazzariellocaprini Forceps. The Journal of Urology. 1983; 129: 1213-1215.
3. Chou CH, Chau T, Yang SS, Lin SH. Acute hyponatremia and renal failure following percutaneous nephrolithotomy. Clinical nephrology. 2003; 59: 237-238.
4. Lauritz JB. Hyponatremia coma following percutaneous nephrolithotomy. Anesthesia and intensive care. 1986; 14: 210-211.
5. Zhu W, Liu Y, Liu L, Lei M, Yuan J, Shaw P, et al. Minimally invasive versus standard percutaneous nephrolithotomy: a meta-analysis: Urolithiasis. 2015.
6. Karakoyunlu N, Goktug G, Şener NC, Zengin K, Galant I, Ozturk U, et al. A comparison of standard PCNL and staged retrograde FURS in pelvis stones over 2 cm in diameter: a prospective randomized study. Urolithiasis. 2015; 43: 283-287.
7. Karakoyunlu N, Goktug G, Şener NC, Zengin K, Nalbant I, Ozturk U, et al. A comparison of standard PCNL and staged retrograde FURS in pelvis stones over 2 cm in diameter: a prospective randomized study. Urolithiasis. 2015;43: 283-287.