

Lower Pole Kidney Stones: PCNL, FURS,
OR ESWL?

Yanbo Wang*

Department of Urology, First Hospital of Jilin University, Changchun, PR China

Article Information

Received date: Aug 20, 2015

Accepted date: Sep 30, 2015

Published date: Oct 08, 2015

*Corresponding author

Yanbo Wang, Department of Urology,
First Hospital of Jilin University,
Changchun, 130021, China, Email:
doctorwyb@126.com

Distributed under Creative Commons
CC-BY 4.0

Article DOI 10.36876/smju.1006

Editorial

Since the first successfully performed in 1976 [1], Percutaneous Nephrolithotomy (PCNL) has gradually become the major treatment option for renal stones. Four years later, with the application of Extracorporeal Shock Wave Lithotripsy (ESWL), it is preferred by many urologists and patients as a low morbidity outpatient procedure. However, with the decrease of incidence of large and complex renal calculi and the improvement of armamentarium, Flexible Ureteroscopy (FURS), also termed Retrograde Intrarenal Surgery (RIRS), has becoming an important alternative to PCNL and ESWL over the last decade.

The 2015 European Association of Urology (EAU) guidelines show that PCNL and FURS are both the first-line treatment for lower pole stones because the efficacy of ESWL is limited.

Which method is more suitable for lower pole kidney stones ? PCNL or FURS?

The best therapy for renal stones is a procedure which costs less and provides a high stone clearance rate and minimum injury. However, PCNL and FURS have both advantages and disadvantages. The merits of PCNL are prominent, which includes higher stone-free rates and shorter operation time. However, its demerits are still obvious, higher complication rates and blood loss. Cost is the first and the major drawback of FURS, especially in developing countries. Last year, Saglam et al. [2] implemented robot-assisted method into FURS and found that Robo flex Avicenna provided a suitable and safe platform for robotic FURS. Thus, the patients will pay more than before. Reducing the nephroscope diameter is one of the improvements of PCNL. The modified techniques of PCNL, such as miniperc, microperc and Ultraminiperc, have emerged [3]. Then, one of the most problems of these modified PCNL methods is how to remove the stone fragments during operation. Recently, Zeng et al. [4] proposed a new concept "Super-Mini Percutaneous Nephrolithotomy" (SMP). The endoscopic system chiefly consists of a 7 Fr. Miniature nephroscope with enhanced irrigation and a modified 10-14 Fr. nephrostomy sheath with continuous suction-evacuation function. A total of 146 patients, coming from 14 medical centers, were enrolled. The authors draw a conclusion that SMP is a safe and effective treatment for renal stones up to 2.5 cm. For patients with lower pole stones, SMP might be a better choice instead of RIRS.

However, a latest systematic literature review and meta-analysis come to a different conclusion [5]. Two randomized and eight non-randomized studies were analyzed to compare PCNL with RIRS. PCNL include standard PCNL and Minimally Invasive Percutaneous Procedures (MIPPs) which include mini-PCNL and micro-PCNL. In terms of stone clearance rate, although RIRS is less than standard PCNL, RIRS is better than MIPPs. So, RIRS should be considered standard therapy for stones <2 cm. If FURS is not available, standard PCNL should be considered instead of MIPPs.

ESWL is not fit for lower pole kidney stones?

Last year, some experts assess the safety and effectiveness of ESWL for renal stones compared with PCNL or FURS based on Cochrane Renal Group's Specialized Register [6]. Results show that although ESWL is less effective than PCNL, ESWL is similar to FURS. However, this year, another systematic review draws a different conclusion [7]. The authors analyze six randomized and eight nonrandomized studies. Although the overall complication rates are not significantly different among the three treatment procedures, compared with FURS and PCNL, ESWL has lower stone free rate and retreatment rate.

All in all, we can see that standard PCNL is better than FURS and ESWL in the treatment of lower pole kidney stones. In the future, further larger Randomized Controlled Trials (RCTs) are required to investigate the safety and effectiveness of ESWL for renal calculi compared to PCNL and FURS.

What's more, with the emergence of miniaturized access sheaths, the terminology of PCNL is somewhat confusing. For example, there are micro-PCNL, mini-PCNL, ultra-PCNL, ultra-mini-PCNL and super-mini-PCNL. But, these concepts are somewhat uneasy to understand and some of

OPEN ACCESS

ISSN: 2574-8017

them are overlapping. So, a comprehensive and exact name is urgently needed [8]. For instance, if a PCNL is performed in prone position with a 24Fr balloon dilation, ultrasound fragmentation, double J stent and nephrostomy, it can be named as P-24-B-U-J-N PCNL. Similarly, if a patient underwent PCNL with a lateral position, 18Fr amplatz dilation, laser fragmentation and totally tubeless, the name of L-18-A-La-TT PCNL is suitable.

Conclusion

SMP is a safe and effective treatment for renal stones up to 2.5 cm. It might be particularly for Patients with lower pole stones, and stones that was not amenable to RIRS.

References

1. Fernstroem I, Johansson B. Percutaneous pyelolithotomy. A new extraction technique. *Scand J Urol Nephrol.* 1976; 10: 257-259.
2. Saglam R, Muslumanoglu AY, Tokatli Z, Caşkurly T, Sarica K, Taşçi Aİ, et al. A new robot for flexible ureteroscopy: development and early clinical results (IDEAL stage1-2b). *Eur Urol.* 2014; 66: 1092-1100.
3. Ganpule AP, Bhattu AS, Desai M. PCNL in the twenty-first century: role of Microperc, Miniperc, and Ultraminiperc. *World J Urol.* 2015; 33: 235-240.
4. Zeng G, Wan S, Zhao Z, Zhu J, Tuerxun A, Song C, et al. Super-Mini Percutaneous Nephrolithotomy (SMP): A new concept in technique and instrumentation. *BJU Int.* 2015; 27.
5. De S, Autorino R, Kim FJ, Zargar H, Laydner H, Balsamo R, et al. Percutaneous Nephrolithotomy versus retrograde intrarenal surgery: a systematic review and meta-analysis. *Eur Urol.* 2015; 67: 125-137.
6. Srisubut A, Patisat S, Lojanapiwat B, Setthawong V, Laopaiboon M. Extracorporeal Shock Wave Lithotripsy (ESWL) Versus Percutaneous Nephrolithotomy (PCNL) or Retrograde Intrarenal Surgery (RIRS) for kidney stones. *Cochrane Database Syst Rev.* 2014; 11.
7. Zhang W, Zhou T, Wu T, Gao X, Peng Y, Xu C, et al. Retrograde Intrarenal Surgery Versus Percutaneous Nephrolithotomy Versus Extracorporeal Shockwave Lithotripsy for Treatment of Lower Pole Renal Stones: A Meta-Analysis and Systematic Review. *J Endourol.* 2015; 29: 745-759.
8. Wright AE, Somani BK, Rukin NJ. Proposition for new terminologies in PCNL: what does 'ultra-mini-micro' actually mean? *Urolithiasis.* 2014; 42: 539-540.