

“Maxi vs Mini” PCNL – The Southeast Asia Experience

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The so called “stone belt” traverses our planet within which populations have a 10-15% prevalence of urolithiasis. Southeast Asia sits in the heart of this high-risk area. The high case volumes and expertise of surgeons in these regions in the management of urinary stone disease makes a travelling fellowship to southeast Asia a priceless commodity for a training endourologist. This certainly isn’t a path untrodden and there is now a flux of international fellows and trainees visiting these countries as a “finishing school” prior to starting independent practice.

Both Nepal and Sri Lanka are two such places and were both highly recommended to gain surgical experience by many senior endourologists from the UK. I was fortunate enough to spend 4 months between these two countries gaining invaluable hands-on experience in both conventional “maxi” and mini-PCNL.

My trip started in Colombo, Sri Lanka where I attended the Sri Lankan Association of Urological Surgeons (SLAUS) annual meeting and participated in an excellent hands-on PCNL live surgery course. Under the direct supervision of senior urology Consultants, Dr Kanchana Edirisinghe and Dr Manjula Herath I spent a total of 4 weeks over two trips in Kandy Teaching Hospital. The operating theatre turnaround and work ethic of the theatre staff was overwhelming with up to 18 open and endourology cases being performed daily in a single theatre. Some immediately noticeable differences from UK practice were the lack of extensive paperwork and administration requirements, and the large number of auxiliary staff available enabling such impressive operative volumes. We operated 4 days a week starting at 8am and on average performed 3 or 4 PCNLs through the day. Due to the financial challenges and a lack of expertise outside of Kandy patients from almost half of the island travelled for kidney stone procedures to this teaching hospital making the elective operative waiting list approximately 3 years. This put an even greater emphasis on achieving total stone clearance in a single sitting. Due to this, the standard treatment for most stones larger than 1cm was conventional PCNL and retrograde intrarenal surgery was seldom utilised. Due to the immense pressures and the limitations of the radiology department many patients did not have a CT scan prior to PCNL, a practice we take for granted in the UK. The urologists took this in their stride and skilfully adapted their approach based on the on-table retrograde pyelogram appearance. The cases varied from solitary renal pelvic stones to complex staghorn calculi in solitary kidneys. This included both paediatric and adult populations and I was fortunate to gain PCNL experience in young children under 2 years old. Despite the time pressures, I received excellent hands-on training and was guided through both fluoroscopic and ultrasound-guided renal access. By the end of my visit I was performing some PCNLs skin-to-skin with the consultants un-scrubbed and I even managed to perform my first totally tubeless procedure.

Their standard approach was with the patient under general anaesthesia in a prone position. All punctures were infra-12th rib and tract dilatation was performed using Alken's dilators. With the exception of the paediatric population, a 24F renal access sheath ("maxi"-PCNL) was used for the procedure and lithoclast for stone fragmentation. Only one set of tri-prong forceps was used for all the stone extractions with no luxury disposables like stone baskets, being available. The majority of patients were left with a nephrostomy tube overnight and discharged within 48 hours.

I performed approximately 30 PCNLs in my 4 weeks, a volume performed annually by the average endourologist in the UK. Overall, this experience is highly recommended, and Kandy boasts picturesque landscapes and a multitude of historic Buddhist temples and tourist attractions to keep you occupied during the days away from hospital.

The second leg of my fellowship was spent in Kathmandu, Nepal under the supervision of Dr Sanjay Khadgi. Having performed over 8000 minimally invasive PCNLs he is undoubtedly one of the pioneering endourologists in the art of miniaturized PCNL. Nepal has a population of 30 million, slightly bigger than Sri Lanka, with over 6 million residents below the poverty line. Patients travelled from far and wide with all their clinical notes in hand and were usually nil by mouth with the expectation of an operation on the same day. During my stay, Dr Khadgi worked in-between two private hospitals and performed up to 10 mini-PCNLs and 2 laser prostatectomies daily usually at heavily discounted prices due to the financial situation of the patients. He had a fantastic team alongside him, with his own junior doctor to look after his patients exclusively between sites and non-clinical staff for administration. One couldn't help but notice the stark difference in waiting times between the overstretched government hospitals and the private medical care set-up where patients were being offered high quality surgery on the same day. The patient expectations were also contrasting with some wanting a guarantee of complete stone clearance and adapting a mindset that anything less would solely be secondary to surgical inadequacy.

Each morning Dr Khadgi collected me from my hotel after breakfast at around 9am and drove to work. He would religiously review all his inpatients across sites on a daily basis. There was usually a clinic of approximately 30 patients followed by surgery which would continue until all patients were successfully operated on. Despite the overwhelming volume of patients, he was incredibly methodical in his approach and scrutinized all the patient's imaging in depth prior to surgery.

Dr Khadgi almost exclusively performed mini-PCNL for all stones at or above the level of the proximal ureter. With the exclusion of paediatric patients, all patients had their procedure under spinal anaesthesia. His team have several publications and substantial expertise in this technique which led to a remarkably accelerated post-operative recovery. His standard approach was in the prone position with fluoroscopic guided renal access. I gained invaluable hands-on experience in the art of the "gradual decent" technique for renal access and felt comfortable performing this independently by the end of my trip. The standard dilatation was up to 16-18F and a 12F mini-nephroscope was utilized which was connected to an intermittent irrigation pump to prevent sustained high intra-renal pressures. The majority of the percutaneous punctures were above the 12th rib with interpolar calyx being

targeted, a technique which enabled access to almost all of the pelvi-calyceal system in a hydronephrotic kidney. The ease of manoeuvrability is a great asset of miniaturized PCNLs and is simply not possible without significant trauma using the conventional nephroscope and sheath. Lithoclast was used for stone fragmentation and the “vacuum cleaner” effect utilized to flush the stones out by trapping the fragments with the sheath and simultaneously withdrawing the nephroscope in conjunction with flushing the retrograde ureteric catheter. The technique minimizes the requirement of additional equipment like stone graspers and baskets. Most patients had an antegrade stent at the end of the procedure with no nephrostomy tube (tubeless).

Dr Khadgi visits Dhangadhi, a rural town in the most western aspect on Nepal, for 2 days a month. I was fortunate enough to join him on two separate occasions and this was, without a doubt, the highlight of my trip. We flew there with all our instruments packed in a small suitcase. This intense trip allowed us to review hundreds of patients, many of which had travelled for days from the neighbouring mountainous villages. We would operate until the early morning and start again at sunrise. This exhausting but highly rewarding experience enabled us to perform up to 25 mini-PCNLs in the short trip. Despite the significant limitations in equipment and basic resources of the hospital, where electrical power cuts were the norm, the surgical precision and professionalism of the theatre team were faultless and almost all patient were deemed completely stone-free with no significant complications during my trip.

Throughout my visit, I participated in academic research in collaboration with Dr Khadgi’s team and we submitted two posters both of which were accepted for podium presentations in international conferences, including one in the annual BAUS meeting.

Having experienced the benefits of mini-PCNL first hand I am undoubtedly planning to incorporate this technique in to my routine practice in the UK. The technique can be used for stones of all sizes and the significantly low, procedure-related complications makes it a very attractive first-line option.

Nepal is a beautiful country rich in its history and culture. Despite the obvious scars from the recent earthquake, the Himalayas are at your doorstep and the panoramic views are other worldly. Its people are incredibly welcoming and hospitable, traits mirrored by the hospital staff and most of all by Dr Khadgi himself. I would highly recommend visiting Nepal and Dr Khadgi for anyone with an interest in developing their skills in miniaturised PCNL. By no means am I alone in this sentiment as he regularly has international visitors and hosts a multitude of renowned leaders in the field of endourology.

I would like to thank BAUS for their generous support in this travelling fellowship. It certainly was an experience of a lifetime for me and one I hope many future enthusiastic training endourologists would follow and benefit from in years to come. I have taken a substantial amount of experience away from this trip which I plan to utilize in my future consultant practice.