

Instructional PCNL course report at National Nephrology Hospital, Polonnaruwa, Sri Lanka
22nd – 26th July 2024

Mr Randeep Dhariwal FRCS (Urol), Urology ST7 Registrar, CCT October 2024.



Course Convenors: Medi Tech Trust, Sri Lanka association of urological surgeons (SLAUS) and Teaching hospital Polonnaruwa.

Background

Medi tech trust, a registered charity (number: 1157837), which has been changing lives through medical aid and training since 2002. They have been arranging training courses for surgeons in low income countries, which has provided a symbiotic relationship to provide training to UK and local surgeons with patient safety always paramount and the priority.

The China-Sri Lanka Friendship National Nephrology Hospital in Polonnaruwa, built with a Chinese grant, opened in June 2021 which includes 5 operating theatres, 200 inpatient beds and 100 haemodialysis beds.

Pre-course

Having been involved in the British Association of Urological Surgeons (BAUS) Endourology Residential Operating Course in November 2023 at Southampton General Hospital, I was awarded a bursary to be used for further developing my skills in endourology. I was made aware of this fantastic opportunity by Mr Marco Bolgeri, consultant urologist at St. George's Hospital, University of London. I felt very fortunate to have been offered a place on this course and was very excited to develop skills in puncture and dilatation for percutaneous nephrolithotomy (PCNL) surgery.

We arrived at Colombo International Airport, Sri Lanka on Saturday 20th July. This was my first trip to Sri Lanka, so I was excited about the cultural experience as much as the

educational opportunity. We were greeted by one of the local doctors at Colombo International Airport who had travelled 5 hours to meet us from Polonnaruwa, to ensure we had a safe transfer.

Upon arriving at Hotel Sudu Araliya, Polonnaruwa we checked in seamlessly before having dinner and getting some much-needed rest. On Sunday 21st July, we were able to experience some local sights prior to the course beginning the following day.



This ancient city is home to the UNESCO world heritage site, Sigiriya rock, where a fortress and palace was built for King Kasyapa in the 5th century. This climb to the peak was taken during the morning and the views from the summit were breath-taking. In the afternoon, we travelled via a jeep safari to observe the majestic elephants in Minneriya national park. The evening was completed with a traditional meal at a local restaurant, before a pre-course meeting with Mr Graham Watson and Mr Simon Mackie. We were able to discuss the equipment available, potential tract sizes and patient positioning as well as principles of fluoroscopic puncture.

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We were warmly welcomed on day one with an introduction of the team members and faculty with a diva lighting ceremony to mark the occasion within a purpose-built conference room. Immediately, it was apparent how kind and supportive the local team and faculty were as they expressed their gratitude for us attending this course. The local course organiser, Dr Munipriya Willaraarachchi, who is the only urologist in Polonnaruwa and covers urology care for a population close to 2 million people, introduced us to the cases for the day. We were informed there were 40 PCNLs planned for the week, with 8 cases per day.

We began with a review of the 8 PCNL cases planned for day one, split over two theatres which had been blocked out especially for this course. We were divided, by the faculty, in to a pair and group of 3 for this day. In the pair for this first day, I was able to participate in each case. We split the cases so that the delegate who performed cystoscopy and ureteric catheter insertion would perform the stone treatment, whilst the other would perform the

fluoroscopic puncture and dilatation. The first case, we performed in a supine position. It was good to see the use of the universal WHO checklist prior to the case. There were many similarities within the theatre environment, but unique differences included using re-usable drapes for cystoscopy, buckets for collecting fluid (rather than suction devices), lubricating gel replacing instiligel, drip stands hanging from ceiling attachments to hold fluid bags and gloves filled with fluid for pressure points. All of the disposable equipment such as wires and sheaths were reused, due to limited resources and nothing was wasted.



I learnt the supine position with two separate litre bags of saline wrapped to place below the shoulder and hips (as shown), which provided the side for puncture to be slightly raised and rotated. This position can also be used when performing a combined intrarenal surgery with antegrade and retrograde access. Though as we did not have access to flexible ureteroscopy or flexible cystoscopy, the focus was on antegrade access.

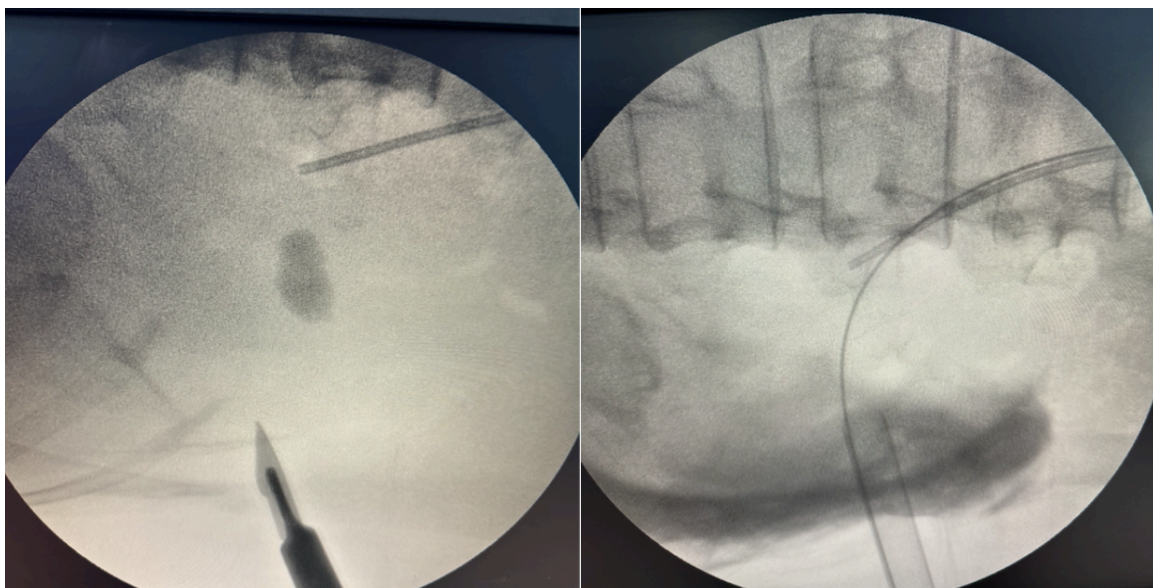
I learnt through use of ultrasound for every case, to check for visceral anatomy (alongside CT review) that may cross the path of the needle. Marking the posterior axillary line, 12th rib and iliac crest helped to plan a safe puncture site. Using the blade's fulcrum, once blade orientated towards the puncture site, to help plan the point of where to incise the skin.



We used a mixture of methylene blue with contrast to perform a retrograde study via ureteric catheter to assist the fluoroscopic puncture with use of triangulation. Though, there are various techniques, I found triangulation allowed changing the trajectory of the needle to puncture the planned calyx and live XR screening close to the kidney allowed to visualise an impression of the needle in the punctured calyx. Once the desired calyx was punctured, a guidewire was passed in to the kidney. I found that as long as sufficient wire was inserted in to the kidney, and where possible, passed down the ureter, a safe dilatation could be commenced. We had access to metal sequential (alken) dilators, 28fr nephroscopes and 24fr and 28fr Amplatz sheaths. Prior to the alken dilators, fascial dilatation was performed up to 10Fr. The inner core of the alken dilators was positioned and secured in place with the non-dominant hand. A twisting (clockwise and anti-clockwise) forwards motion with each separate dilator I found helped to gradually introduce each one up to the end of the inner core where it would naturally lock. I found at points when the dilators would not progress, through mentoring, that removing the previous dilator I found tissue / fascia may be trapped.

As we developed our skills, we were able to go down to a 24fr Amplatz sheath and use the nephroscope without the outer sheath allowing it to pass more easily and helped utilise more of a vortex to help evacuate stone fragments. I learnt it was very important to keep the scope straight without the sheath as there is a risk of damage to the equipment and awareness to prevent excessive torque to the kidney is required.

We had access to pneumatic lithoclast and graspers to help remove fragments. I found it very important to maintain a straight line with the lithoclast as it was very easy to bend this equipment and cause damage if this was not done. Overall, the techniques utilised helped achieve stone clearance. For practical purposes, we were asked to place antegrade stents and leave catheters overnight as there was limited cover overnight. The use of nephrostomies is not routine in Sri Lanka, with uneventful procedures. In some cases, we did leave the ureteric catheter in situ overnight taped to the urethral catheter for removal the next morning.



The last case of day one, we performed a bilateral PCNL in the prone position, which is not something I had been involved in previously during my training. We started with the side which had the smaller stone as the plan was to proceed to the second side as long as the first side went well, which it had. A colleague and I performed the puncture and stone clearance on each side and overall the patient had a great outcome.

Following completion of day one, we debriefed in the conference room before visiting the wards to review our post-operative cases. The evening was followed by further hospitality from the local team and we were treated to some local authentic food.

Day two to five, all promptly began at 07:30, with a review of the planned cases prior in the conference room. It was great to see such efficiency at the beginning and between cases which appeared seamless. Day two, there was a large staghorn stone which had been treated prior but still had significant stone and required multiple tracts for clearance.



The most interesting case I was involved in on day three had a ureteric, renal pelvis and upper pole stone which had a stent with encrustation above the ureteric stone as well as a further stone on the opposite side (pre-stented).

The case required ureteroscopy laser stone fragmentation to clear the ureteric stone and fragment the encrustations on the stent as attempted removal had failed prior to this. Following a lower pole puncture, the remaining stones were cleared.

I observed the great work ethos by the entire team and felt this was very rewarding when reviewing the patient's post-operatively and seeing the gratitude they had.

The most challenging aspect of the experience was communication at times with staff and patients, as the primary languages spoken are Sinhalese and tamil. Though we always had local colleagues nearby to help translate when required.

In summary, this course has truly helped me to learn and develop my skills in performing a safe puncture and dilatation for PCNL cases. I received the equivalent exposure and training in PCNL surgery in 5 days during this course which was comparable to one year's training in the UK from recent review. I was involved in 16 cases whilst performing 8 separate punctures and dilatations which has really helped to learn and refine the technique in such an intense manner.



I feel privileged to have had this opportunity and will be eternally grateful to everyone who made this course possible. I plan to take these skills and develop them further in my career. The opportunity to experience a different healthcare setting has also given me a level of appreciation for the NHS, which we can tend to take for granted. It would also be great for this course to receive further recognition and sponsorship from industry which would allow opportunity to develop the course further.



There are many I wish to thank, but in no particular order, I would like to thank BAUS section of Endourology for the bursary to assist with costs for this course, Medi Tech Trust for organising such an excellent course with Mr Simon Mackie and Mr Graham Watson leading this from the UK perspective, the Sri Lankan faculty including Professor Srinath Chandrasekera, Dr Munipriya Willaraarachchi, Dr Kanchana Edirisinghe, Dr Sohan Perera, Dr Kalana Parana Palliya Guruge, Dr Rajana, Dr Ashanta Weerackody, Dr Charaka, Dr Sriyan De Silva, Dr Dinnendra Madhushank, Dr Chatureh. There are simply too many people to name so I wish to thank all the wonderful doctors, my fellow delegates, the fantastic nurses, hospital management and support staff involved in theatres and the wards. Lastly, I would like to thank all the patients who trusted us to treat their kidney stones.