

Nishant Bedi - TUF Urolink Travelling Fellowship Award Lusaka, Zambia November 2022

Considerations for Transperineal prostate biopsies in Zambia

Background

Zambia is classified as a low-income country and has a population of 11.6 million. It is also one of the most urbanised countries in sub-Saharan Africa, with approximately 38% of the population living in urban areas.



The public sector is the largest provider of health care in Zambia. The University Teaching Hospital (UTH) is the biggest hospital in the country, having approximately 1,655 beds and 250 baby cots. It provides a full range of primary, secondary and tertiary health and medical services on both an inpatient and outpatient basis. It is located in the capital city, Lusaka, approximately 4 km east of the city centre and is the principal medical institution in the country for training medical students, interns and postgraduate doctors. It also trains nurses through the Nursing School located within the hospital grounds and Clinical Officers through their college located at Chainama Hills College Hospital.

The Urolink Lusaka Partnership

There is an established link between Urolink and Lusaka going back over 20 years. The catalyst for the link with Lusaka began in 2001 following a visit by Christine Evans, a retired consultant urologist from Wales. A good working relationship was developed with Dr Mohammed Labib

and continued with Dr Mapulanga, Dr Spasojevic and other urology faculty members since Dr. Labib's retirement. The link was successful in developing endoscopic procedures, urethroplasty surgery and evolving as a SIM teaching hub in the last 10 years.

In 2022, Dr Mapulanga approached the Urolink committee with a request to support the development of a Trans-perineal Prostate Biopsy Service at the UTH. As I had experience in introducing local anaesthetic trans-perineal prostate biopsies, targeted with MRI fusion, in my trust, and still perform them in my practice, I was very enthusiastic to help. I was also keen to visit Zambia and had discussed the centre with Urolink members who had previously visited UTH. I was awarded The Urology Foundation (TUF) Urolink travelling fellowship award in May 2021 and despite the COVID pandemic I did virtually "meet" some centres in sub-Saharan Africa via the Urolink webinar series; fortunately TUF were agreeable to carry my award forward to 2022 and this enabled my trip to Lusaka.

Understanding Current practice in Lusaka

Questions to consider in planning the trip were: What is the problem there currently? What is the prostate cancer referral pathway and current practices including MDT, pathology, imaging and management options? Is the skill worth doing and deliverable in this setting?

A key factor to consider in managing prostate cancer is life expectancy. The average male life expectancy in Zambia is increasing, currently around 60 years old (1) and prostate cancer is the number one malignancy in Zambian men with 561 deaths being recorded per year (WHO 2020).

A current public health campaign is resulting in higher referrals to secondary care. Unfortunately, presentation with prostate cancer is often late with advanced or metastatic disease already being present. Therefore, public health initiatives for prostate cancer referrals, aim to raise awareness and facilitate earlier presentation to the secondary care environment. Posters include warnings of early symptoms including haematuria, LUTS as well as local and systemic symptoms of advanced disease such as hip or back pain. (image 1).



Image 1: Public health poster raising awareness of prostate cancer, Lusaka international Airport, Nov 2022

Once seen in secondary care patients are assessed with a digital rectal examination and PSA and then, if suitable, a transrectal biopsy is offered; this is either ultrasound or finger guided. Multi-parametric MRI and trans-perineal biopsies were not available at the time of visiting.

Currently, approximately 10 biopsies are performed per week (500 per year). Triple antimicrobial prophylaxis is given pre and post-procedure, but despite this a 10% infection rate is reported in the region. Although the UTH current sepsis rate was not known, published data suggests this figure is usually around 1-2% in high-income countries, with multi-resistant infections being another risk of the trans-rectal biopsy approach.

The UTH cancer detection rate from prostate biopsy was not known at the time of visiting.

Benefits

The key known benefit of the trans-perineal approach is a reduced infection rate, making the trans-perineal approach a “strongly” recommended guideline in the 2022 EAU guidelines for prostate cancer. There is also a potential for an improved cancer diagnostic rate by accessing the anterior lobe (2).

Decreased infection rate with the transperineal approach

The trans-perineal approach provides the proven benefit of reduced complications of infection and sepsis (3).

Cancer diagnosis with the transperineal approach

Published data has varied with some studies showing equivalent diagnostic rates between non-targeted trans-perineal and trans-rectal approaches. Some recent studies do show an improved detection rate with the trans-perineal approach, with the argument that the anterior and apical areas cannot be well accessed via a trans-rectal approach. With no consensus reached on the optimal systematic non-targeted template the anterior lobe should be routinely sampled to realise this benefit.(4,5)

Pre-trip planning

Where to start?

Once I had heard about the opportunity I discussed the trip with the lead at UTH and colleagues with similar workshop experience, in addition to reading previous Urolink reports. The advice helped me plan for the trip and anticipate the challenges likely to occur in setting up a service in UTH.

Before leaving I spent time preparing a presentation to try and anticipate key questions and prepare the team for the steps of the procedure. I checked what equipment would be available on a call and parts of the equipment list seemed to be available locally. However, as I had been advised, I sought to take as much familiar equipment with me from donations, and this greatly helped when operating in an unfamiliar environment. I started asking my department early on for donations and was able to take several packs of urological equipment, including wires, stents, baskets and catheters, with me.

Trip Experience

Trip Schedule

14th November 2022, Day 1. We landed in the morning and went to visit the hospital, it was the rainy season and there was heavy, cold rain all day rather than the hot African weather we had expected (and packed for). We met the team, who were friendly and welcoming. Unfortunately, Dr Victor Mapulanga had to travel to India for an experience in renal transplant surgery, therefore Dr Masebo Bruce (2nd Year Urology Resident) was tasked to look after arrangements for the workshop, including booking the biopsy room, lecture room and booking patients. We discussed the plan for the week and confirmed patients were booked appropriately for biopsies during the week. We visited the facilities, including the biopsy area, which was part of a larger room divided into 3 sections by a thin movable screen. Different medical specialities would be performing other medical procedures alongside us, in the other sections within the room.



Image 2. Main Entrance to UTH

15th November 2022, Day 2. We started in the morning with a PowerPoint presentation of our current practice and the transperineal biopsy approach. The talk was attended by all residents

and three consultants. We discussed their practice and challenges and complications as well, helping us to understand the local context.

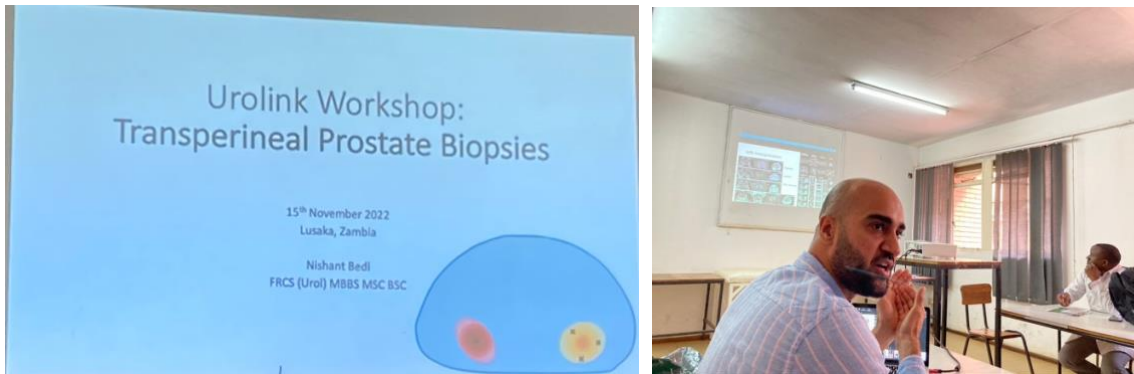


Image 3. Mr Bedi discussing the technique of TP biopsy.



Image 4. The UTH Urology team with Mr Bedi

Then we demonstrated and trained the procedure on a “phantom” simulator, followed by trans-perineal prostate biopsies on three patients. On day 3 and 4 we continued as planned with trans-perineal biopsies on three patients, on each day.

Most patients had been referred with a raised PSA ranging from 8 to 400, with two patients having an abnormal DRE. All patients were given one dose of ciprofloxacin. The samples were

taken with the trans-perineal approach from the right and left peripheral zones and the anterior zone was included. We then followed local practice; all samples were combined into one container for histology. The patients were given the biopsies to take away to the pathology lab and submit them for histological processing.

NOTE: The container is a potentially breakable glass vial and sadly one patient dropped the vial and lost the samples before they could be submitted for processing.



Image 5. Mr Bedi demonstrating on a simulator followed by supervising a trainee



Image 6. Mr Bedi supervising the procedure

Initial Results

All patients tolerated the procedure to completion, with a pain score between 3 to 4 /10. In this small sample, there were no major complications. Minor complications were transient and resolved spontaneously; including initial difficulty voiding in one patient without catheterisation and one patient experiencing mild vasovagal symptoms, they did not lose consciousness and recovered enough to walk home after a period of approximately 20 minutes.

The patients did not have prostate volume measurements, but as expected in this demographic, some patients had very large prostates.

Final histology data and prostate cancer detection rate are still awaited along with the 30 days complication rate.

Differences in Healthcare:

Clinical Team and resources

There are 5 consultants in the team with 15 registrars of varying levels of seniority. One nurse is assigned to assist with the procedure, which involves admitting and preparing the patient, giving medications and assisting the surgeon. After the procedure they then clean and recover the patient and wash all the equipment with water, soap and Cidex, for re-use. These tasks would usually be divided in our department, with often three members of both the nursing team and health care assistants to carry out these tasks before, during and after this procedure.

Mostly the working day finished at 2 pm, with limited availability of the room or staff afterwards thus limiting the total number of biopsies possible.



Equipment Used

The most noticeable difference is the re-use of single-use disposables, which are used only for one patient in the UK. In UTH the disposables are washed in water and soap and then “Cidex” an antiseptic solution. This includes the Chiba needle for LA administration and the Bard biopsy gun and “Precision Point” guide.

Pathology

Patients are handed their biopsy samples after the procedure to take away in a glass vial. This contained all samples, from the left, right and anterior sides of the gland. If using the free government service it takes 1 month for results, whereas a private service takes 1 -2 weeks and costs 35 dollars. In the UK all samples are never given to patients and are sent internally to be processed and reviewed in the pathology lab and then MDT. We send a minimum of 2 separate containers from right and left peripheral zone along with targets if these are separate areas; for mapping biopsies this can increase to 12 separate pots.

Imaging

There is no access to multi-parametric MRI or PSMA PET in Zambia. In our practice, MPMRI is used in almost all cases. If a suspicious lesion is identified the patient is offered a MRI-TRUS fusion targeted trans-perineal prostate biopsy.

CT scanning was available in Zambia, but at the time of the visit there was no nuclear medicine bone scanning available; although this could also be related to the worldwide shortage of technetium⁹⁹ at the time.

Management

Limited options compared to the UK, with no radical prostatectomy, focal therapy, brachytherapy or active surveillance program. Whole gland treatment is only possible with external beam radiotherapy in Zambia. Patients who are suitable for a radical prostatectomy are referred abroad, usually to India if they can self-fund treatment, for a robotic procedure.

Patients with metastatic disease are offered a sub-capsular orchidectomy. Bicalutamide is available, but no LHRH agonists are or any other androgen deprivation or second-line therapy.

MDT

There is no regular or formal MDT between surgeons and either the pathologists or radiologists. An informal meeting is organised approximately once every two to three months to discuss complex cases.

Discussion and Lessons learned

Key challenges

There were initial challenges in implementing the procedure due to differences in equipment:-

Ultrasound probe. The main challenge was the ultrasound probe available was “end fire”, rather than a “side fire”. This makes it difficult to visualise the needle as it approaches the area for biopsy in the prostate and changes the angle required to access the anterior lobe. It did not have biplanar functionality, making it more technically challenging to visualise and orientate the prostate anatomy.

Positioning. Positioning was also a challenge using vertical pole leg stirrups, which the patients found uncomfortable, and it was difficult to position in extended lithotomy, which is important for the procedure and especially to access the anterior lobe.

Analgesia. In the UK the learning curve is helped by starting initially with GA biopsies, but it was not easy access to GA in Zambia at the time of visiting. Pain scores were reduced using pre-procedure diclofenac.

Some of the other challenges were:

Training a large team. Training a large and changing team under local anaesthesia can add to the patient’s anxiety and dilute the training and rapport.

Interpreting ultrasound anatomy: The trans-perineal approach requires a good understanding of prostate anatomy as seen with the ultrasound probe. More training sessions with videos and simulations, as well as having an anatomy map nearby during the biopsies, may have helped.

Data collection. There is no regular system for data collection, which would be helpful to understand the procedure, including pain scores, biopsy quality, and cancer detection rate to improve technique.

Lessons learned

Implementing a new service in the LMIC. Pre-trip planning was very important in making this workshop possible and achievable. Despite this, challenges were found with the end fire probe and positioning without leg gutters and Urolink is looking at possible funding to donate this equipment in the future. It would have been helpful to practice before going to prepare for this difference. Unfortunately, this was not anticipated in the trip planning and there was no access to other equipment once there.

Performing procedures in an LMIC under local. The patient's comfort and dignity are a priority in this procedure. Therefore ideally learning the procedure is best under GA, but unlikely to change in this setting. We found pre-procedure analgesia helpful to improve the patients' comfort. Respecting privacy and dignity is difficult in the shared space allocated, we did our best by minimising the numbers of our group around the patient and shielding the area from view with mobile screens.

Teaching in an LMIC setting. There was a large, changing group of trainees with varying experience. All were keen to participate, but this resulted in diluting the training and more progress was made by focussing on one trainee per day.

Cultural gain. The local team were very welcoming, keen to learn and had a positive attitude, and were a pleasure to work with, adding to this a rewarding experience. As above, training in large teams is their local experience, but as mentioned above this was challenging. Although there did not appear to be offence taken at reducing the training to one person, this may have been different to locally accepted practice.

Anything would help you in the NHS practice? This experience has helped me improve and understand the challenges of training and helps me do this in my practice and improves my understanding of different cultures and healthcare systems. This helps relate to others and adapt to local challenges.

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Shekhar Biyani @shekhar... · 2h ...

The first [#Urolink](#) [#TP](#) biopsy training course in [#Lusaka](#), Zambia. [@nishbedi](#) facilitated the perfect way to start a new service at the University Teaching Hospital, a short talk on the technique, [#simulation](#) & then a real-life demonstration. [@BAUSurology](#) [@SuzieVenn](#) [@COSECSA](#) [@BXTA](#)

