Covid-19 Inspired Move to Transperineal Ultrasound-guided Prostate Biopsy Eliminates the Risk of Post-procedural Sepsis

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BACKGROUND

- Transrectal ultrasound guided biopsy (TRUS bx) is currently most common route of prostate biopsy in Ireland and worldwide[1]
- TRUS related sepsis is increasing due to emergence of multi-drug resistant bacteria[2,3]
- 1996-2005: Fourfold increase in risk of hospitalization following TRUS[4]
- 2006-2011: Two-fold increased risk of hospitalisation between the years 2006-2011[5]
- Transperineal prostate biopsy (TP Bx) avoids the 'transfaecal approach' used in TRUS biopsy and has been shown to reduce rates of post-procedural sepsis[6-9]

PURPOSE

- Our department transitioned to provide a solely TP prostate Bx service in April 2020
- This decision was influenced by the need to maintain a cancer diagnosis service during the Covid pandemic, while also reducing hospital admissions secondary to sepsis
- TP Bx complication data over a 12 months period (April 2020- April 2021) was compared to the TRUS Bx service provided the year prior (January – December 2019)
- Audit approval granted through hospital audit committee

<u>Patient population:</u>

- All patients who underwent prostate biopsy over the 12 month period were included
- Patients' mean age was 62, with a median PSA of 6
- 94% of patients had a pre-biopsy bi-parametric prostate MRI

PROCEDURE

TRUS Bx	TP Bx
• Standard TRUS procedure performed with 12 x 18-gauge samples taken • Targeted samples as required	• Coaxial technique with 17/18 gauge needle and 1 needle pass to skin bilaterally • 5 samples of peripheral zone with 1 of transitional zone. • Targeted samples as required
• Local anaesthetic	• Local anaesthetic – 82% of cases • Local anaesthetic and IV sedation – 18% of cases
Antibiotics: PO Ciprofloxacin 750mg or IV Gentamicin 3mg/kg or IM Amikacin15mg/kg depending on patient risk factors	Antibiotics: PO Amoxicillin/clavulanic acid 625mg

Fig 1 – TP Local anaesthesia

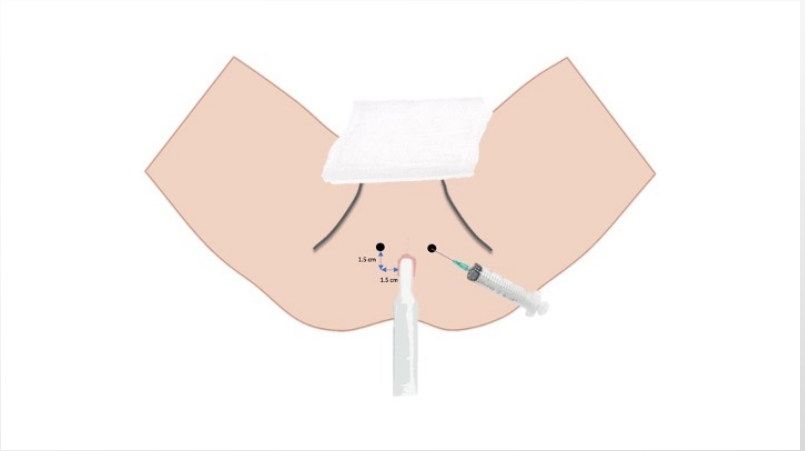

Fig1: Sites of local anaesthetic administration to the perineum prior to co-axial needle insertion during TP Bx

METHODS

- All patients receive letter with instruction and contact details in event of becoming symptomatic post-procedure
- Patients contacted by phone next day and reviewed at urology clinic within 2 weeks
- Reason for presentation/admission and length of admission, if admitted, was recorded

<u>Complications recorded</u>:

- Sepsis (blood culture confirmed or clinical sepsis without positive blood culture)
- UTI A or B (urine culture confirmed or clinical UTI without positive urine culture)
- Severe rectal haemorrhage
- Acute urinary retention

2019 TRUS AUDIT

- 590 TRUS Bx performed over 12 months
- 23/590 (3.9%) diagnosed with sepsis (8 blood culture confirmed, 15 clinically diagnosed)
- 9/590 (1.5%) diagnosed with urinary tract infections requiring oral antibiotics
- 1/590 (0.17%) had acute urinary retention
- 1/590 (0.17%) acute rectal haemorrhage requiring hospitalisation

TP BIOPSY UNDER LOCAL ANAESTHETIC APRIL 2020- APRIL 2021 RESULTS

- 510 TP Bx performed
- 0/510 cases of post procedural sepsis
- 0/510 cases of UTIs
- 2/510 (0.4%) cases of urinary retention – both managed via ED and community
- 0/510 cases of severe rectal haemorrhage requiring hospitalisation
- 1/510 (0.2%) cases of prolonged haematuria
- 0/510 hospital admissions

Fig 2 – Targeting a lesion on TP Bx

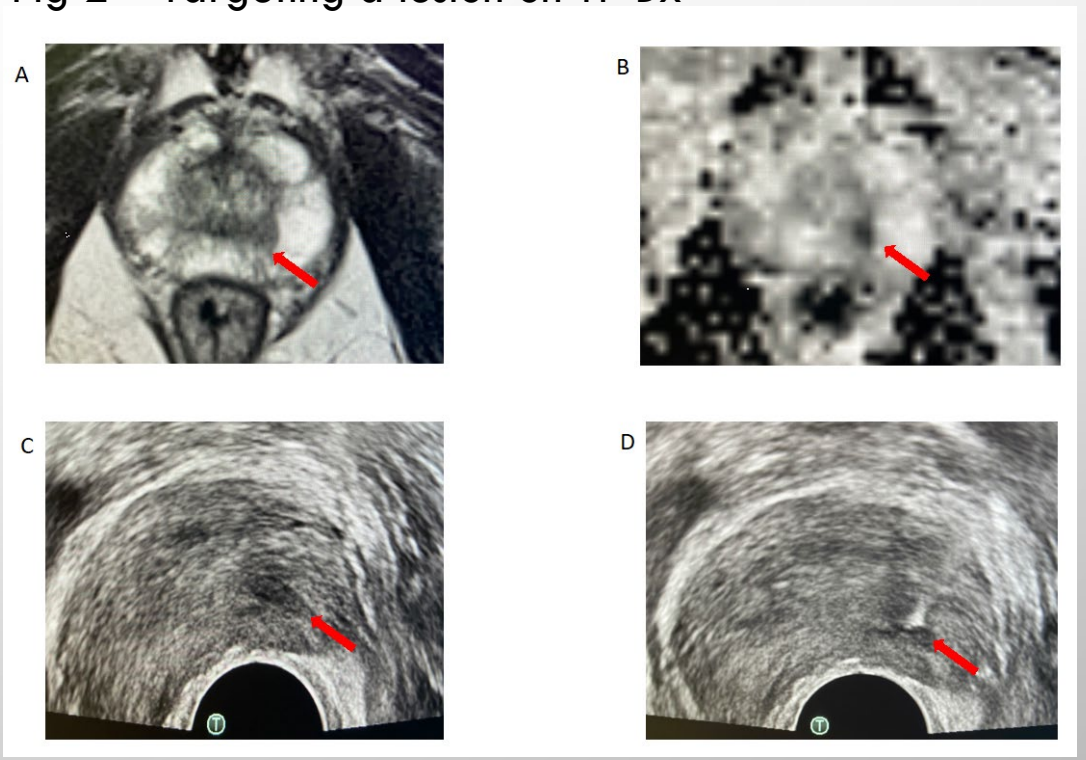

Fig 2: A PIRADS 4 lesion (A and B), with a US correlate (C) and the biopsy needle within the lesion (D)

DISCUSSION

- A total of 73 days was spent in hospital due to sepsis secondary to TRUS bx including 2 admissions to HDU
- With an average ‘bed cost’ of €947 per day, the cost to health service was approximately €69,131 ($80,397) not including further costs such as laboratory investigations, radiological imaging, and IV antibiotics
- Transition from TRUS to TP Bx eliminated post procedural infection and sepsis, abolishing admissions related to complications of prostate biopsy during the COVID pandemic while maintaining a prostate cancer diagnosis service

CONCLUSION

- TP Bx is a safer alternative to TRUS Bx
- Our experience shows that a transition from TRUS to TP Bx can be undertaken in a short time frame
- Over a 3 month period, we transitioned completely to TP Bx and now have 5 radiology consultants leading a prostate biopsy service that has replaced TRUS Bx
- Overhead costs are relatively small, with only a modified lithotomy chair and biplanar ultrasound probe required (approximate cost of $35,000)
- This study has shown that sepsis related to prostate biopsy can be eliminated by transitioning to a TP route.
- We believe that TP Bx should now be the method of choice for tissue diagnosis in those with suspected prostate cancer

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