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

RSNA 2021

Dr J. Power, Dr C. Cronin, Dr B Hutchinson, Dr BD Murphy, Prof M. McNicholas, Prof J Murray.

MATER MISERICORDIAE UNIVERSITY HOSPITAL
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

Patient population:
- 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

<table>
<thead>
<tr>
<th>TRUS Bx</th>
<th>TP Bx</th>
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<tbody>
<tr>
<td>• Standard TRUS procedure performed with 12 x 18-gauge samples taken</td>
<td>• Coaxial technique with 17/18 gauge needle and 1 needle pass to skin bilaterally</td>
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<tr>
<td>• Targeted samples as required</td>
<td>• 5 samples of peripheral zone with 1 of transitional zone.</td>
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<tr>
<td></td>
<td>• Targeted samples as required</td>
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<tr>
<td></td>
<td>• Local anaesthetic – 82% of cases</td>
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<td>• Local anaesthetic and IV sedation – 18% of cases</td>
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**Antibiotics:**

**PO Ciprofloxacin 750mg or IV Gentamicin 3mg/kg or IM Amikacin 15mg/kg depending on patient risk factors**

**Antibiotics:**

**PO Amoxicillin/clavulanic acid 625mg**
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

**Complications recorded:**

- 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
REFERENCES


