

A review of infection outcomes following HDR prostate brachytherapy at a single centre

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INTRODUCTION

- High-dose rate (HDR) prostate brachytherapy is generally associated with low risk of infection[1]
- The role of antimicrobial prophylaxis remains unclear.
- We present a review of infection outcomes and antibiotic usage for patients receiving HDR brachytherapy for prostate cancer at our centre.

METHODS

- We performed a single-centre retrospective analysis of all patients who underwent HDR prostate brachytherapy in 2025.
- Episodes of pyrexia or sepsis during the hospital stay were recorded, along with antibiotic prescriptions.
- Hospital attendances for infection within one month post-brachytherapy were determined using the London/Summary Care Record.
- Number of fractions, prior neoadjuvant chemotherapy, number of catheters inserted and Charlson Comorbidity Index (CCI) were recorded.
- Statistical analysis was performed using Fisher's exact test

RESULTS

CLINICAL BASELINE CHARACTERISTICS

Characteristic	Total patients
	N = 163
Fractionation	
1 fraction	105 (64.4%)
2 fraction	58 (35.6%)
Neoadjuvant chemotherapy	12 (7.4%)
Charlson comorbidity index	
>= 5	85 (52.1%)
< 5	78 (47.9%)
Average number of catheters inserted	19

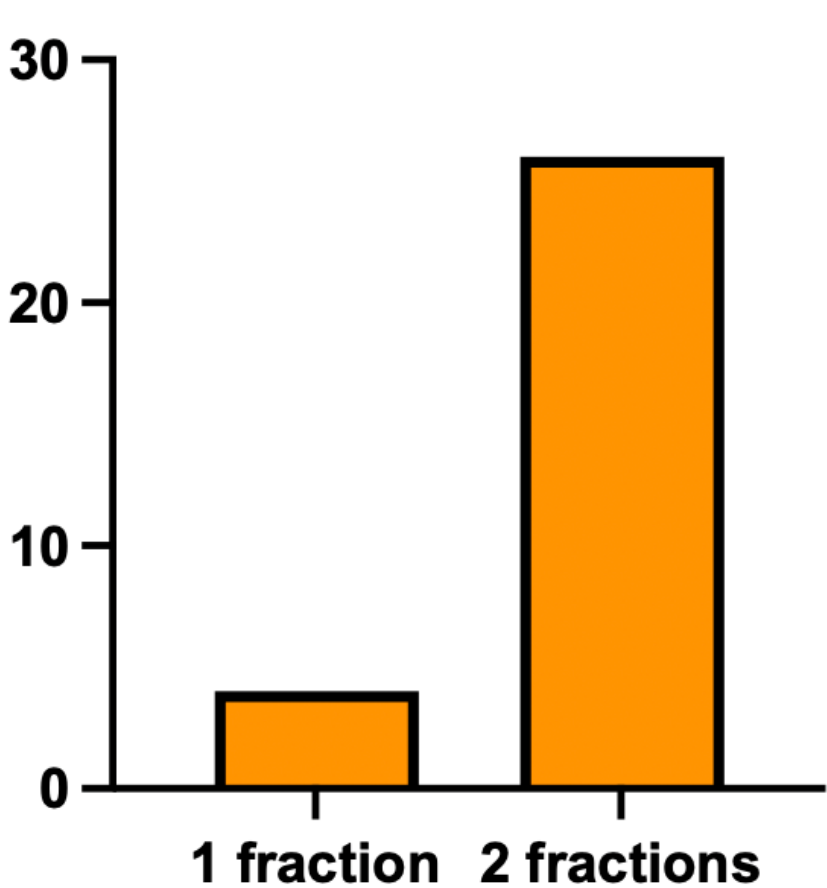
Figure 1: Clinical baseline characteristics

- 163 patients were identified
- 105 (64%) received one fraction (HDR boost- overnight stay with urinary catheter)
- 58 (36%) received two fractions (HDR monotherapy or salvage – overnight stay with implant in-situ, with additional overnight stay with urinary catheter)

PREXIA RATES

- 19 patients (12%) developed pyrexia
- Neoadjuvant chemotherapy, number of catheters inserted and CCI did not influence risk of pyrexia.

Pyrexia rates between fractionation groups (%)



p <0.0001

Figure 2: Pyrexia rates between fractionation groups

15 patients (26%) receiving two fractions developed pyrexia
4 patients (4%) receiving one fraction developed pyrexia

ANTIBIOTIC USAGE

- Antibiotics were administered to:
 - 6 patients with pyrexia (32%)
 - 15 apyrexial patients (10%)
 - The latter received them intraoperatively or post-implant as prophylaxis.

INFECTION OUTCOMES

Infection source	Total patients
	N = 163
Any infection	7 (4.29%)
Urinary tract infection	3 (1.84%)
Chest infection	1 (0.61%)
Urosepsis	1 (0.61%)
Chest sepsis	1 (0.61%)
Unconfirmed infection source	1 (0.61%)

Figure 3: Localisation of infection sources

- Two patients who had not received antibiotics and did not have pyrexia received oral antibiotics within 2 weeks of discharge.
- One patient received oral antibiotics within 2 weeks of discharge despite prophylactic antibiotics.
- Two patients required admission with sepsis after implantation, one of whom passed away despite receiving prophylactic antibiotics.

Infection outcomes between fractionation groups

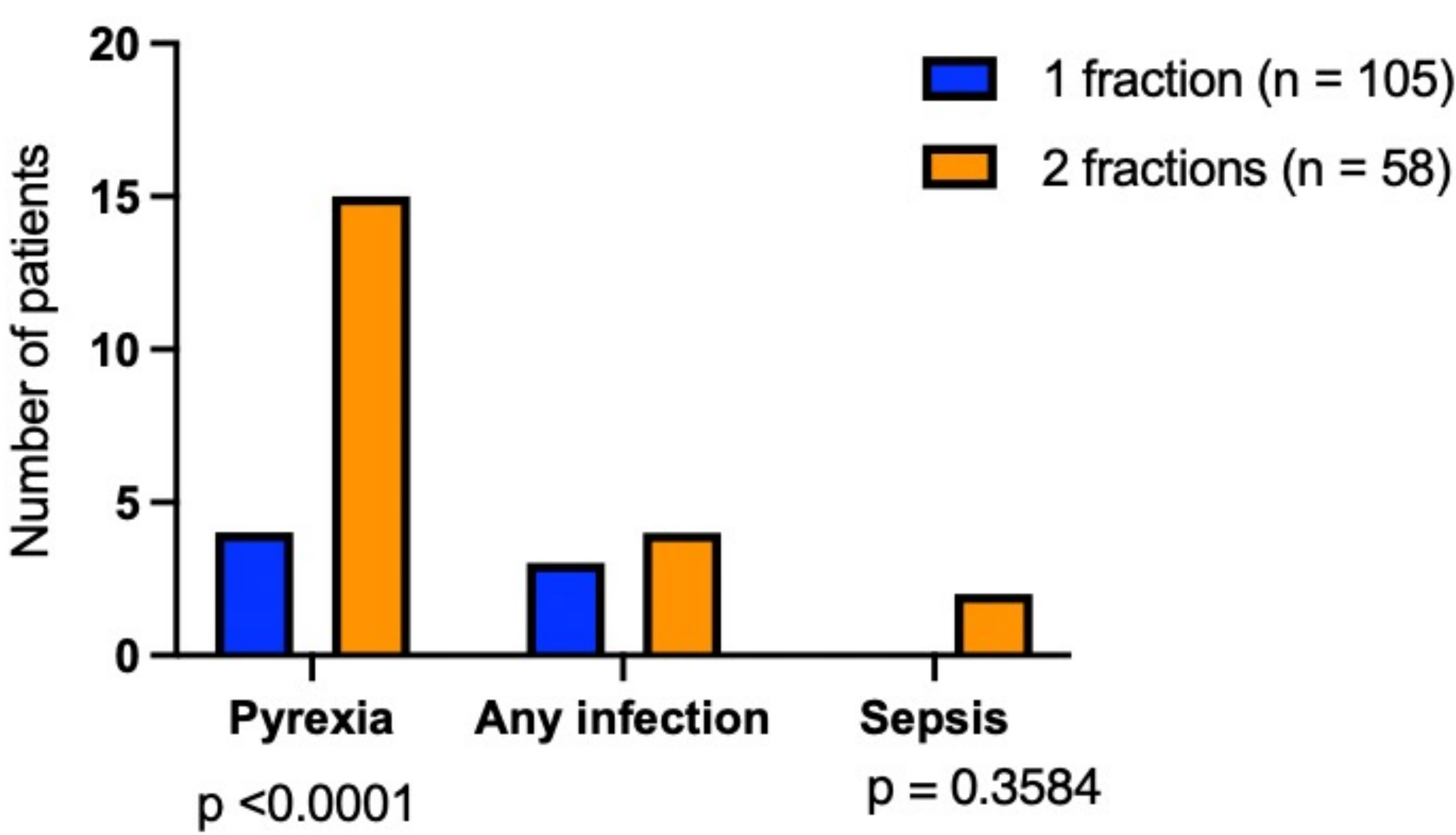


Figure 4: Infection outcomes between fractionation groups

CONCLUSION AND FUTURE DIRECTIONS

- We report low rates of clinically significant infection related to HDR prostate brachytherapy.
- Pyrexia was significantly more common in patients receiving two fractions, however this did not translate into increased antibiotic usage, sepsis or infection-related hospital admissions.
- Our data suggests routine administration of prophylactic antimicrobials may not be indicated, however further prospective evaluation is needed to guide optimal antimicrobial strategies in prostate brachytherapy.
- Consider reducing length of stay with catheter in situ after implant removal with earlier trial without catheter.

References

1. Lee PL, Ruth K, Lee DY, et al. Comparison of perioperative and subacute postoperative complications between LDR and HDR monotherapy brachytherapy for prostate cancer. *Brachytherapy* 2024; 23: 559–568.