



# Evaluation of Cryotherapy for the Treatment of Prostate Cancer Using an Organ-Based Tracking Fusion Technology: Report on the Early Outcome

Bernice CS Cheung, CH Yee, PKF Chiu, KL Lo, HF Wong, JYC Teoh, CF Ng  
*S.H. Ho Urology Centre, Department of Surgery, The Chinese University of Hong Kong*

## Introduction and Objectives

Focal therapies represent the middle ground between active surveillance and radical treatment measures for low-risk and intermediate-risk prostate cancer. Cryotherapy has evolved over the past decades. The study aims to investigate the efficacy of cryotherapy with the use of an organ-based tracking fusion technology.

## Patients and methods

This is a single-centre prospective case-series. Treatment planning was guided by ultrasound with elastic fusion of mpMRI images using Koelis<sup>®</sup> organ-based tracking fusion technology, localizing the target tissue for cryoablation. Focal cryotherapy was performed with the ICEFX<sup>™</sup> Cryoablation System (fig. 1).

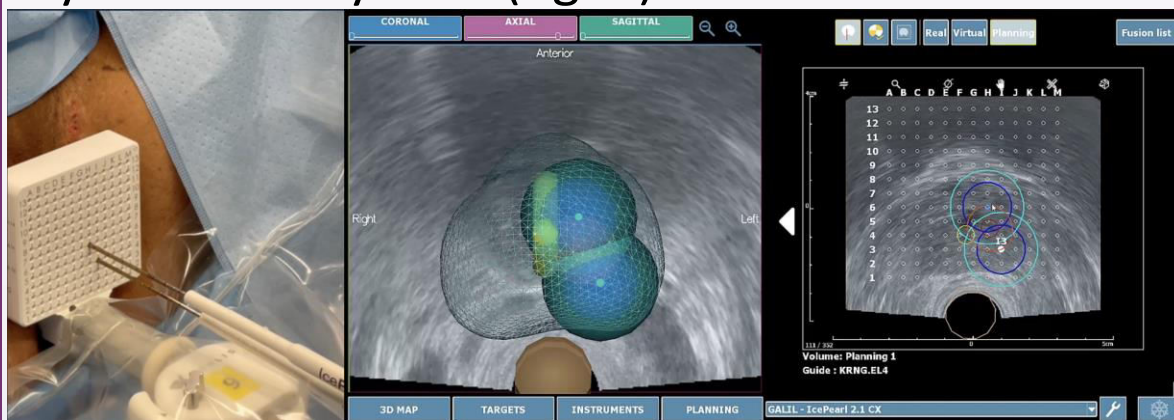


Fig 1: cryoablation with mpMRI images



Fig 2: index lesion on MRI as circled

## Inclusion criteria

- Visible index lesion(s) on MRI (Fig. 2)
- Clinical tumour stage ≤T2
- Gleason score ≤8 on prostate biopsy
- PSA ≤20ng/ml

## Early outcome assessment

1. Peri-operative data
2. Ablation field assessment by post-operative 1-week mpMRI prostate
3. 3-month functional outcomes (use of medications, questionnaires e.g. EPIC-26, IPSS, OABSS, IIEF5) and PSA change

<http://www.hkua.org/>

**Results** Ten patients underwent cryotherapy for a single index lesion.

## Peri-operative outcomes

- Mean total operative time: 114.9 ± 28.4 min.
- Mean post-op pain score: 3±2.4 (out of 10)
- Eight patients were discharged on the same day; two had 1 day of post-op hospital stay
- ✓ **ALL** patients could successfully wean off Foley catheter by day 7 without urinary incontinence.
- ✓ 2 patients had Clavien-Dindo grade 1 complications (urinary frequency and haematuria) → both were managed conservatively

## Ablation field assessment

**ALL** early post-operative MRI showed successful coverage of the index lesion.

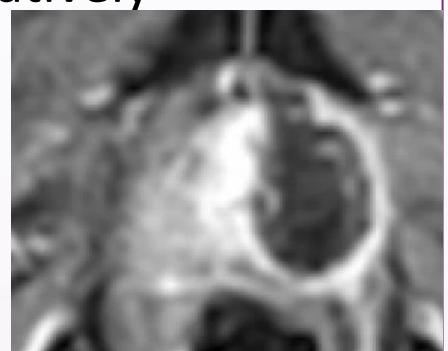


Fig 3: post-cryotherapy MRI

## 3-month functional outcomes and PSA change

- No incontinence was observed in all patients.
- PSA levels decrease by 56% from 6.78 ± 1.30 to 2.98 ± 1.76 (p < 0.001)
- 2 out of 6 patients no longer take BPH medications.

Questionnaires	Pre-op	Post-op	p-value
EPIC-26 Sexual domain (out of 100)	44.97±24.7	32.4±20.0	0.0414
IIEF5 (out of 25)	9.88±10.05	6.13±7.16	0.0732
IPSS (out of 35)	11.9±8.52	11.3± 6.52	0.7923

Uroflowmetry	Pre-op	Post-op	p-value
Max. urinary flow (Qmax) (ml/s)	13.76±4.38	12.69±4.68	0.4629
Residual urine volume (RU) (ml)	27.20±24.89	21.1±16.3	0.4851

## Conclusion

- Cryotherapy is a safe modality in the treatment of localized prostate cancer.
- Organ-based tracking fusion allows an optimal delivery of ablation to index lesions.

