Evolution of Treatment Strategies in High-Intensity Focused Ultrasound for Localised Prostate Cancer: a Decade of Experience in a High-Volume Centre

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PURPOSE / OBJECTIVES

Over the past decade, advances in multiparametric MRI, targeted biopsy techniques, and increasing operator experience have reshaped the paradigm of focal therapy in prostate cancer.
As diagnostic accuracy and confidence in treatment delivery improved, our centre progressively shifted from whole-gland ablation to more selective approaches. This study aimed to describe the evolution of HIFU strategies —whole-gland, hemi-ablation, and focal— in a single high-volume centre over recent years.

MATERIAL & METHODS

All patients treated with Focal One® HIFU between 2018 and 2025 were extracted from a prospective institutional registry comprising more than 1,900 procedures overall.
The analysis focused on temporal trends in treatment strategy (whole-gland, hemi, focal) across consecutive years. Radiological workflow included systematic preoperative mpMRI interpreted by a dedicated high-volume team (>2,000 prostate MRIs per year) and targeted biopsies routinely integrated into the diagnostic pathway. Data were analysed using descriptive statistics and Chi-square tests for trend.

RESULTS

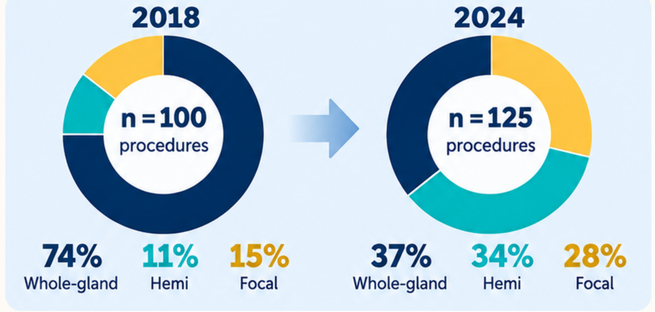
A total of **731 HIFU procedures** were performed from 2018 to 2024, including **297 whole-gland**, **128 hemi-ablation**, and **306 focal treatments**. Over time, the proportion of focal and hemi procedures markedly increased. In 2018, whole-gland ablations represented **74 %** of cases versus 1**1 %** hemi and **15 %** focal. By 2024, focal and hemi-ablation together accounted for **63 %** of all procedures, while whole-gland dropped to **37 %** ($p < 0.001$ for trend). This evolution paralleled the consolidation of a multidisciplinary workflow combining systematic high-quality mpMRI interpretation, routine fusion- targeted biopsies, and growing operator experience.

Figure 1 illustrates this continuous and significant shift towards more selective HIFU strategies over time.

AT A GLANCE

FROM WHOLE-GLAND TO PRECISION ABLATION

A MAJOR SHIFT TOWARDS MORE SELECTIVE HIFU TREATMENT STRATEGIES



26% → 63%
PARTIAL ABLATIONS
(Hemi + focal) from 2018 to 2024

Growing experience, better MRI interpretation and targeted biopsies have accompanied a significant shift towards **personalised, tissue-sparing HIFU strategies.**

731 procedures analysed · 2018–2024 · p < 0.001 for temporal trend

RESULTS

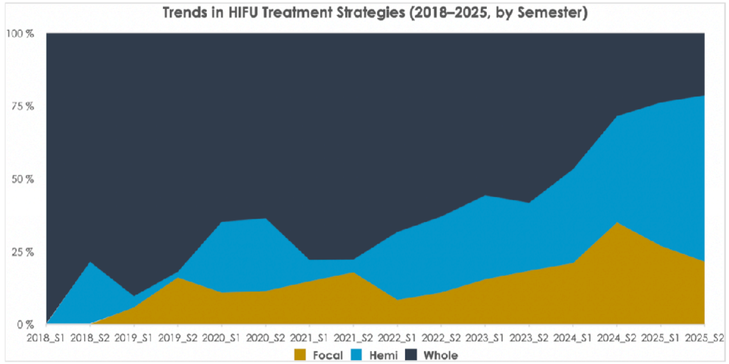


Figure 1 – Trends in HIFU treatment strategies (whole-gland, hemi-ablation, focal) by semester from 2018 to 2025, showing a progressive shift toward more selective ablations over time.

SUMMARY / CONCLUSION

In this high-volume HIFU centre, treatment strategies evolved substantially toward more selective ablations as experience, imaging quality, and diagnostic accuracy improved.
The shift from whole-gland to focal and hemi-HIFU highlights the maturation of focal therapy into a tailored, image-guided approach balancing oncologic control and functional preservation.
These findings illustrate the natural learning curve of high-volume focal therapy programmes and may serve as a benchmark for centres developing similar pathways.