

MR-Guided Transurethral Ultrasound Ablation (TULSA): An Emerging Minimally Invasive Treatment Option for Localised Prostate Cancer

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Dear Editor-in-Chief,

I read with great interest the article by K. F. K. Fung et al., published in CVIR [1], which describes the MR-guided transurethral ultrasound ablation (TULSA) technique as a minimally invasive treatment option for localized prostate cancer (PCa). TULSA, a novel, non-focused ultrasound ablation technique, shows promise in the field of prostate cancer treatment, with potentially significant results expected in the future.

Currently, established treatment strategies for localized PCa include active surveillance and whole-gland treatments such as radical prostatectomy and radiation therapy [2]. The ProtecT trial demonstrated that both treatments had similar 10-year cancer-specific survival compared to active monitoring, though urinary and sexual functions were more adversely affected in treated men [3].

One might expect that interventional radiologists (IRs) currently play a minimal role in this context. However, minimally invasive procedures, both thermal and non-thermal, are changing the game. These include focal therapy, partial gland ablation, and sub-total gland ablation (Fig. 1). The advantage of these procedures is that they provide cancer control comparable to whole-gland standard treatments while preserving urinary and erectile functions [4].

With the emergence of these new techniques, a significant proportion of candidates for active surveillance might shift towards treatments provided by IRs. To be prepared

for such involvement, IRs should understand that treatment evaluation is multiparametric, primarily based on clinical stage, pathologic grade, PSA level, and comorbidity-adjusted life expectancy. They also need to be familiar with basic patient evaluation, biopsy options, and primary prostate cancer, as well as recurrent prostate cancer, considering the differences in treatment strategies. The article covers most of these important aspects effectively.

What I would like to add or highlight for the article's readers are:

1. Most interventional procedures for PCa are local, considered as focal therapy. However, in the case of whole-gland ablation, as we try to save the sphincter and some neurovascular bundle areas, the term "subtotal gland ablation" would be more appropriate.
2. Considering MR-guided procedures with the ability for thermal monitoring during treatment, focal laser ablation, not mentioned in the article, has gained recent attention and shows promise, as evidenced by a recent publication [5].
3. Interventional ablative techniques are progressing towards precise pre-, during, and post-procedure planning and evaluation to achieve a zero ablation margin (A0). In this journey, IRs should familiarize themselves with concepts regularly used in radiotherapy, such as tumour contouring, 3D planning, gross tumour volume (GTV), clinical treatment volume (CTV), internal target volume (ITV), planned tumour volume (PTV), and organ at risk (OAR). These concepts are gradually being integrated into IR procedures. Nowadays, local prostate ablation techniques require precise 3D tumour and/or whole gland and

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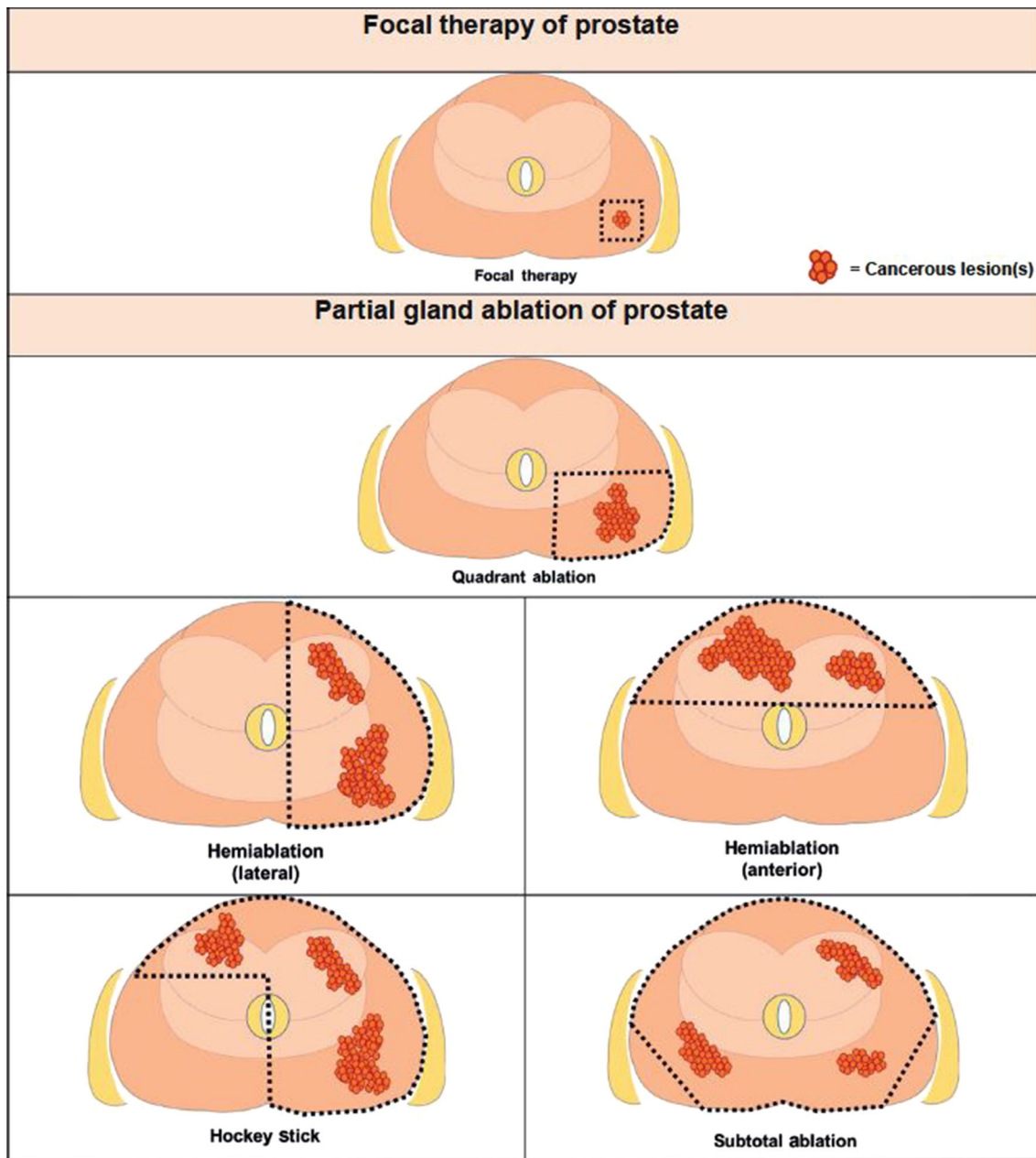


Fig. 1 Demonstrating distinction between focal therapy and templated organ preserving partial gland ablations. (Adapted from Lebastchi AH, George AK, Polascik TJ, Coleman J, et al. Standardized Nomenclature and Surveillance Methodologies After Focal

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organ at risk contouring. Pretreatment planning should be evaluated by the responsible physician.

4. In radiotherapy practice, a boost to the tumour bed involves applying an extra dose of radiation to cover the initial tumour site, where the cancer is most likely to return. Similarly, there is potential for whole prostate gland ablation and a boost ablation in the index lesion by TULSA, which could be a novel strategy in future treatment.

In conclusion, this study offers valuable insights into the treatment of localized PCa, particularly highlighting the unique features and potential of TULSA. Further research is crucial to fully understand the impact of these minimally invasive procedures, especially in more complex scenarios such as salvage therapy.

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Declarations

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