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COMPARING HIFU HEMIABLATION TO ROBOTIC PROSTATECTOMY IN THE MANAGEMENT OF UNILATERAL PROSTATE CANCER: A MATCHED PAIR ANALYSIS

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Introduction: Although still experimental, focal treatment is being increasingly implemented in the management of prostate cancer (PCa). Aim of the current study was to compare functional and oncologic outcomes of High Intensity Focal Ultrasound (HIFU) hemiablation of the prostate to robotic-assisted laparoscopic prostatectomy (RALP) in the management of unilateral prostate cancer.

Materials: 55 men with unilateral, clinically localized PCa were prospectively enrolled and underwent HIFU hemiablation of the affected prostatic lobe between 2007 and 2015. All patients were diagnosed with unilateral disease on the basis on full concordance between multiparametric MRI and MRI-guided biopsies. These patients were matched 1:1 with patients who underwent RALP for PCa in which pT2a-b disease (unilateral) was found on final pathologic analysis. Treatment failure was defined as the need for salvage external beam radiotherapy or systemic androgen deprivation therapy (ADT) due to disease progression. Kaplan Meier curves and log-rank tests were constructed to assess differences in salvage treatment free survival across surgical techniques.

Results: Matching was successful with no significant differences across the two groups (table1), although men treated with HIFU were older ($p < 0.001$). Median follow-up was 36mo (IQR 16-56). HIFU was associated to better and faster recovery of continence, with most men (82%) showing no signs of urinary incontinence even just after surgery. Moreover, the risk of de novo erectile dysfunction was significantly lower after focal HIFU. No significant difference was found in the need for salvage EBRT or ADT across the two surgical approaches (figure1): 6/55 men underwent salvage therapy in the HIFU vs 5/55 in the RALP group ($p = 0.76$). Nonetheless, 7 more patients in the HIFU arm required a complementary treatment on the contralateral lobe during follow-up, after developing a contralateral PCa. No patient died of PCa on follow-up, while 6 men died of other causes (5 HIFU vs 1 RALP, $p = 0.11$).

Conclusion: In this matched pair analysis, HIFU hemiablation was comparable to RALP in controlling localized, unilateral PCa, with no significant differences in the need for salvage therapies. HIFU was also associated with significantly better functional outcomes. Accurate patient selection remains vital and larger prospective trials are needed to confirm our findings.

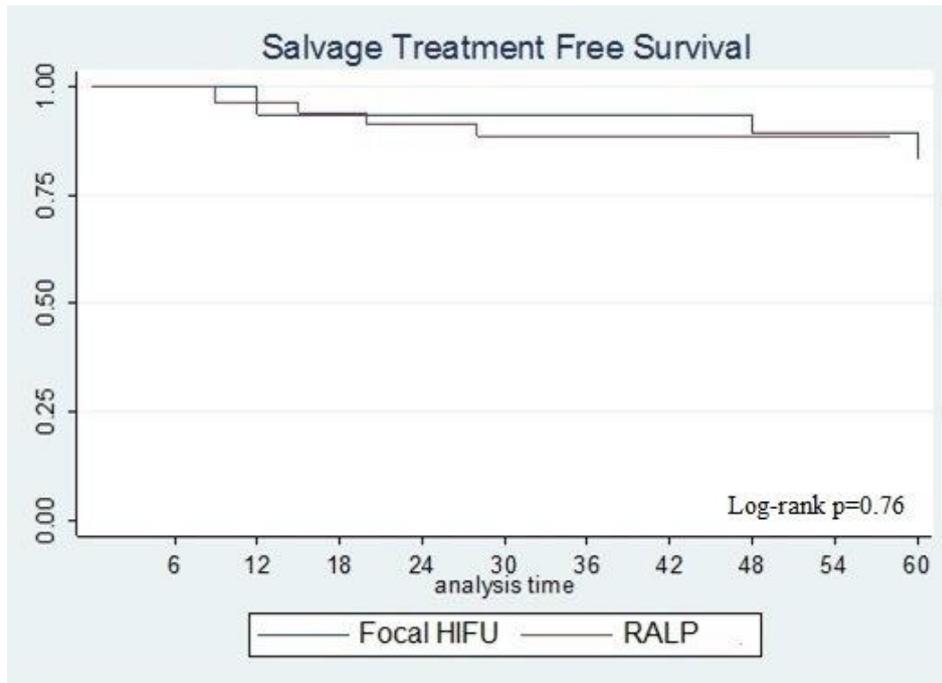


Figure 1



Table 1. Patient characteristics after matching

	Focal HIFU	RAL P	p-value
Number of patients	55	55	
Age (yrs)	73 (70-77)	63 (57-68)	<0.001*
Median (IQR)			
Mean±SD	73±7	63±7	
PSA (ng/ml)	6.9 (4.5-9.5)	6.5 (4.5-9.3)	0.98°
Median (IQR)			
Mean±SD	7.4±4.8	7.8±5.3	
Biopsy Gleason			0.89*
=6	36 (65%)	36 (65%)	
3+4	13 (24%)	13 (24%)	
4+3	4 (7%)	2 (4%)	
=8	2 (4%)	4 (7%)	
DRE			0.70°
Negative	23 (42%)	25 (45%)	
Positive	32 (58%)	30 (55%)	
D'Amico risk score			0.28°
Low	26 (47%)	32 (58%)	
Intermediate	26 (47%)	18 (33%)	
High	3 (6%)	5 (9%)	
Hospital stay (days)	4 (3-5)	7 (7-8)	<0.001*
Mean±SD	4±1	8±2	
Early complications	8 (15%)	11 (20%)	0.45°
Grade early complications			0.71°
Clavien I	7	7	
Clavien II	1	2	
Clavien III	0	0	
Clavien IV	0	1	
Continence			<0.001°
1mo	45 (82%)	22 (40%)	
3mo	3 (5.5%)	8 (15%)	
6mo	1 (2%)	9 (16%)	
12 mo	3 (5%)	9 (16%)	
24mo	0 (0%)	2 (4%)	
Incontinent	3 (5.5%)	5 (9%)	
Erectile Dysfunction			0.03°
Preop potent and active	48 (87%)	30 (54%)	
De Novo ED	21 (43%)	6 (20%)	
Late complications	14 (25%)	7 (13%)	0.09°
Grade Late complications			0.35°
Clavien I	0	0	
Clavien II	7	5	
Clavien III	7	2	
Clavien IV	0	0	

*Mann-whitney
 ° χ^2