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Transperineal robot-assisted radical prostatectomy using the DaVinci Xi surgical system: initial experience and early oncological outcomes - **PE049**

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Introduction

Radical transperineal prostatectomy (RTP) is an alternative surgical choice for patients with contraindications to the transperitoneal approach, such as prior extensive surgery, obesity, or previous renal transplantation. In 2014, Kaouk et al. introduced the first robotic RTP (RRTP) technique using the DaVinci Si platform in a cadaveric model[1], followed by the first clinical series two years later[2].

However, the limited working space and steep learning curve hindered its widespread adoption[3]. Although the single-port robotic platform can overcome these limitations, it is not yet available in many countries. The slim profile of the camera and arms of the DaVinci Xi system are better suited for this purpose compared to the previous generation, and this model is now more widely accessible.

This study presents the intraoperative, early oncological, and functional outcomes of a cohort of patients with localized prostate cancer (PC) who underwent RRTP surgery at our institution.

Table 1 (n=28)

Variable		Median / Frequency	Range
Age (years)		66	49-72
BMI (kg/m^2)		28.05	20.5-44
PSA (ng/dL)		6.85	2.1-22
Gland Volume (cc)		35	17-66
		Frequency	
Biopsy ISUP	1	1	
	2	23	
	3	3	
	4	1	
cT Stage	cT2	26	
	cT3	2	

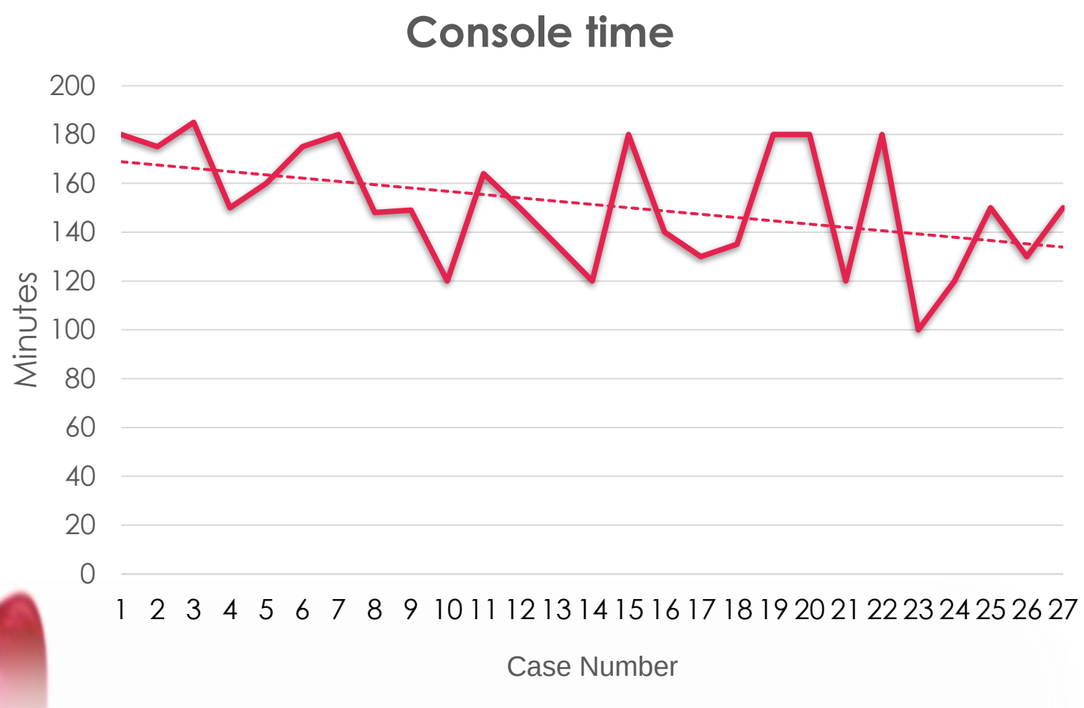
Results

Baseline variables are summarised in Table 1.

RRTP was successfully performed on 27 patients. Surgery was abandoned in one patient before docking due to challenging dissection while creating insufflation space.

Operative and Post-operative variables are summarised in Table 2.

Four postoperative complications were recorded, all Clavien-Dindo ≤2. Positive surgical margins (PSM) were present in 10 patients (38%), but clinically significant margins (>3mm) only in 2. No PC recurrence or need for adjuvant treatment has been reported with a median follow-up of 18 months. 11 (40.7%) patients reported complete continence (no pads) at 6 weeks postoperatively.



Discussion

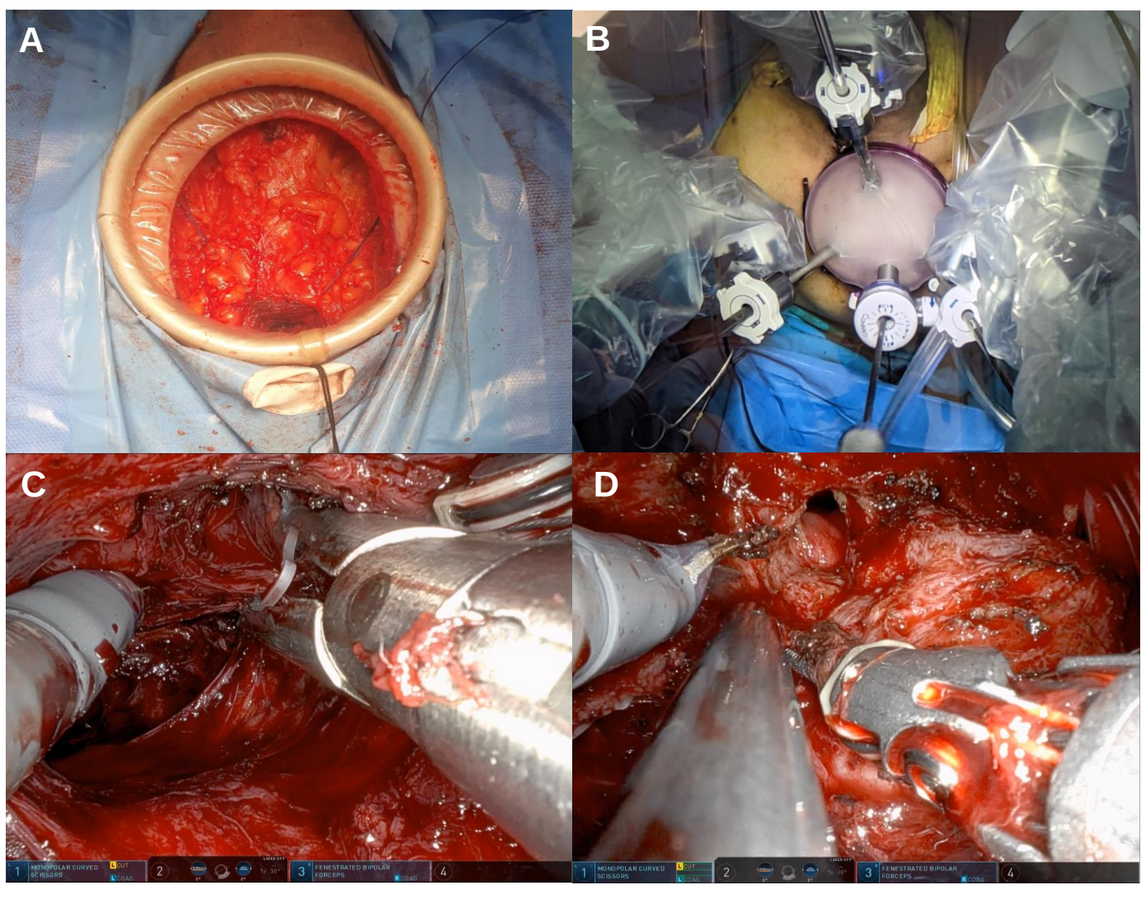
RRTP proved to be a challenging procedure, justified for patients with limited therapeutic options. Our findings mirror those in the study by Carbonara et al.[4], where the mean operative time averaged 275 minutes, with a PSM rate of 35%. Notably, our PSM rate and console time exhibited a noticeable decline as our experience advanced. In the most recent 15 cases, a solitary significant PSM occurred. This trend aligns with the observations made by Yu et al[6]. in their research, wherein the learning curve appeared to improve significantly after 20 cases.

Table 2 (n=27)

Variable		Median / Frequency	Range
Total OR time (min)		257.5	150-360
Console time (min)		150	100-185
Blood loss		100	50-300
Hospital stay		1	1-3
		Frequency	
Final pathology ISUP	2	22	
	3	2	
	4	1	
cT Stage	pT2	17	
	pT3a	5	
	pT3b	2	

Methods

Between March 2019 and August 2023, a single surgeon performed RRTP on 28 patients. All had clinically significant prostate cancer and were deemed unsuitable candidates for transperitoneal surgery or external beam radiotherapy during preoperative multidisciplinary team meetings. RRTP was offered as an experimental procedure, and all patients provided informed consent. Baseline clinical characteristics, intraoperative, pathological, and postoperative data were prospectively collected and analyzed.



Surgical steps: A) Initial open dissection B) Docking C) Right pedicle control D) Bladder neck dissection

Conclusions

Our results suggest RRTP using the DaVinci Xi surgical system is a viable alternative that can be offered to carefully selected patients with limited therapeutic options and acceptable oncological and functional outcomes.

Acknowledgements

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Scan the QR code to see a video of the procedure

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