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Vall d'Hebron Barcelona Hospital Campus

MRI confirms different position of the vesicourethral anastomosis after rhabdosphincter reconstruction in robotic prostatectomy: cohort analyses from a Randomized Controlled Trial

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Background

Urinary incontinence is the adverse effect with more impact on patient's quality of life after undergoing radical prostatectomy [1]

Technical modifications aimed to improve postoperative continence after RP [2]

Since the original description, the **rhabdosphincter reconstruction** technique has spread worldwide and nowadays it is the technique with more consistent results published in randomized clinical trials [3]

[1] EAU guidelines
[2] Salazar A, Actas Urol Esp et al 2019
[3] Rocco F, et al. Arch Ital Urol Androl 2001, Menon M, et al. J Urol 2008, Sutherland De, et al. J Urol 2011, Hurtes X, et al. 2012

Background

physiology of the mechanisms related to urinary continence following RP

the **functional and anatomical changes** associated with prostate removal coincide with alterations in the urinary sphincter complex and pelvic floor musculature [1]

[1]Novarra G, et al. J Urol 2010

Hipothesis

Is the urethrovesical anastomosis in a different situation after rhabdosphincter reconstruction?

Is this anatomical difference the reason of the early urinary continence recovery?

Objective

The aim of our study was to determine anatomical features of the urethrovesical anastomosis using MRI to compare the differences according to the reconstruction technique and their relationship with continence outcomes

Material and Methods

- 40 patients from **NCT03302169**
- RARP followed by running vesicourethral anastomosis or posterior reconstruction of the rhabdosphincter (PRRS)
- Patients were selected according to the **reconstruction technique** (PRRS vs. non-PRRS) and **functional outcome** (early vs. late continence recovery) and **4 groups** were made
- Continence outcomes were assessed by time to have no leakage (**dry pad first date**), 24-hour pad weights and time until stop using pad/any protection (**pad 0 first date**), ICIQ-SF, EPIC26 and IPSS**questionnaires**
- Good early outcomes in continence recovery were defined as <=1pad/24h and PADtest <150 mL/24h 30d after catheter removal.

Material and Methods

- **2 independent blinded radiologists** assessed predetermined anatomical MRI benchmarks in order to determine the situation of the anastomosis in the pelvis

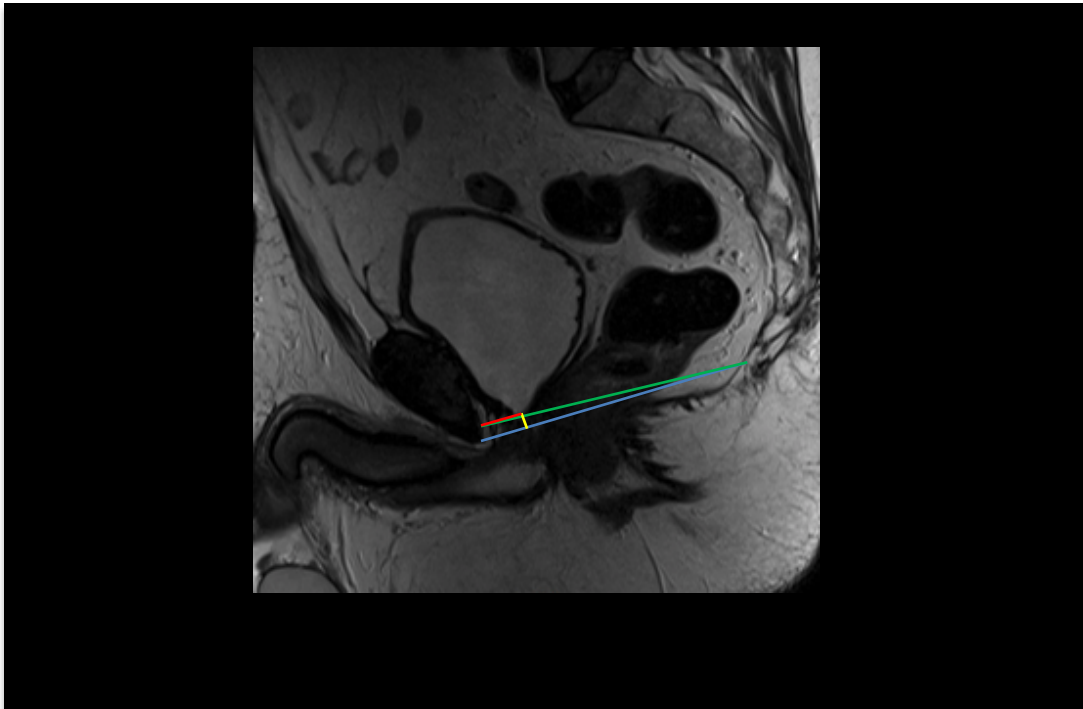


Figure 1. Assesment of MRI measurements.

vertical situation: the distance to the line coccyx-inferior pubic margin
(ACPv: Yellow line)
antero-posterior situation : the distance from the pubis at the line from coccyx to pubis through the anastomosis
(AAP: Red line)

Results
NCT03302169

	Non-PRRS	PRRS	P value
Days to dry pad, p50	49 (14-116)	23 (9,5-75,5)	0,08
Days to no pad, p50	81 (26,5-141)	34 (17,8-81,8)	0,012

At the multivariate analysis PRRS as the only independent predictor of dry pad status and use of any protection at 1 month (pad 0),p=0.03

Brief RCT partial conclusions

- **PRRS showed a clear benefit in early urinary continence**
- To determine **the date of dry pad and pad 0** seems to be **more reliable** than apply validated uestionnaires in established time frames in order to assess continence status after radical prostatectomy

Results

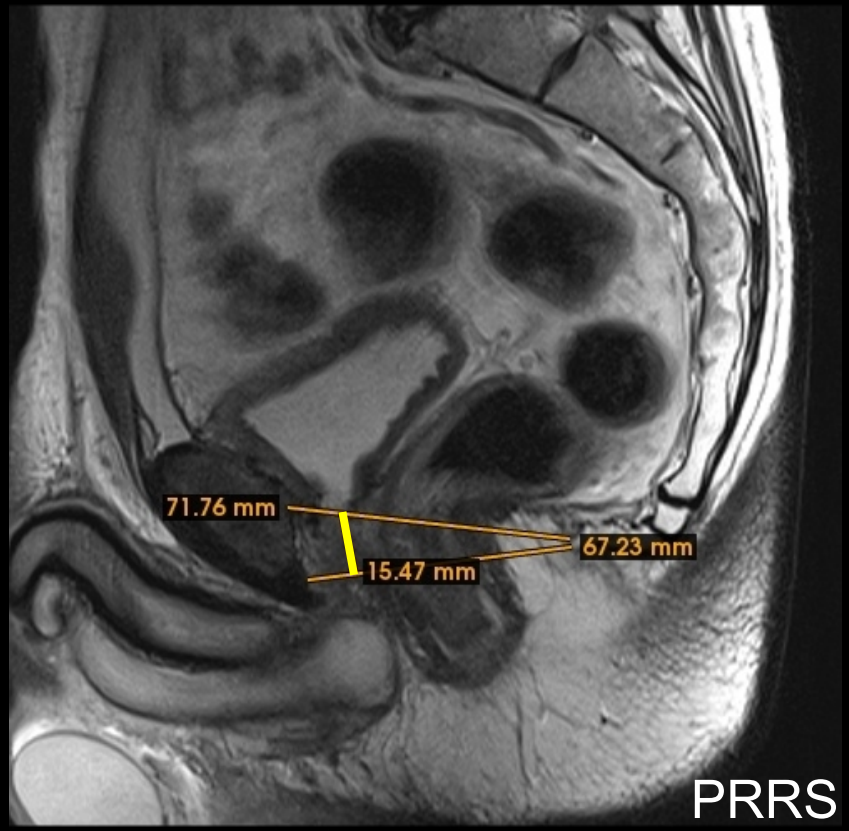
Table 1. Characteristics of cohort

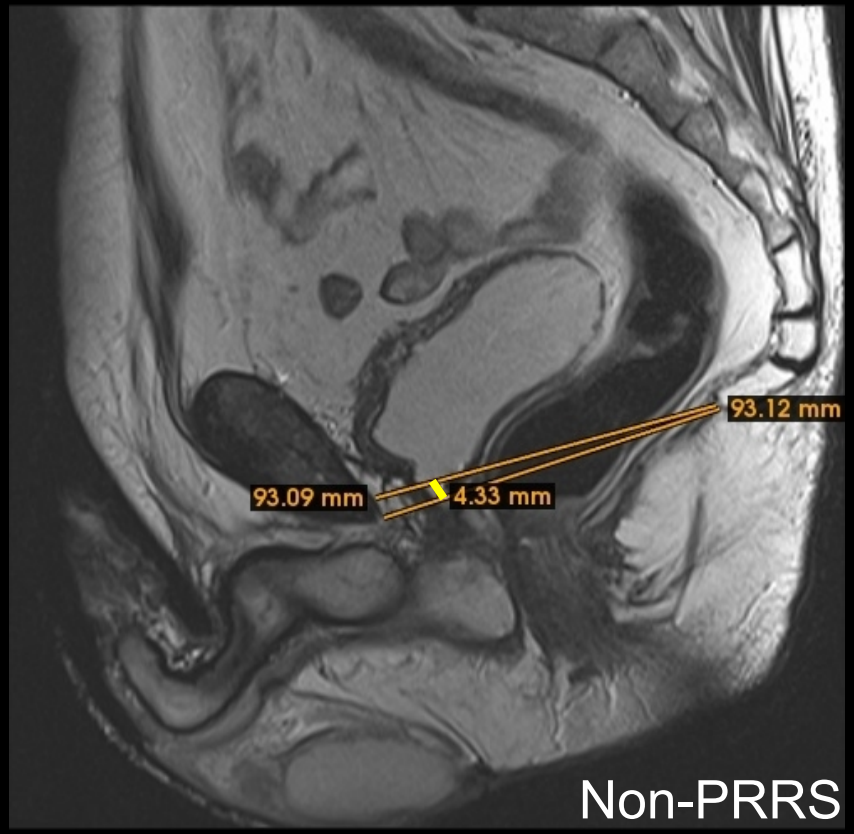
VARIABLE	OVERALL
Age, years, mean (range)	66,08 (51-77)
BMI, kg/m2, mean (range)	26,39 (21,2-37)
PSA level, ng/mL, mean (range)	6,90 (3,77-14,43)
Prostate volume, cc, mean (range)	44,59 (20-94)

Table 2. Correlation between radiologists

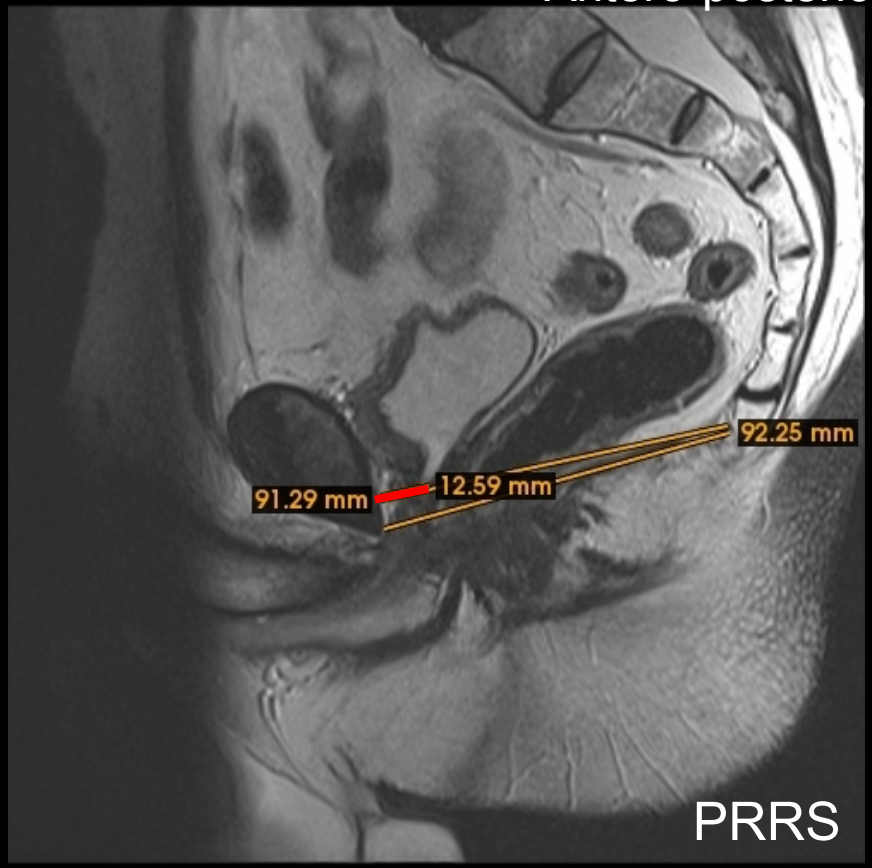
	Pearson correlation	P value
ACPv	0,975	0,001
AAP	0,333	0,046

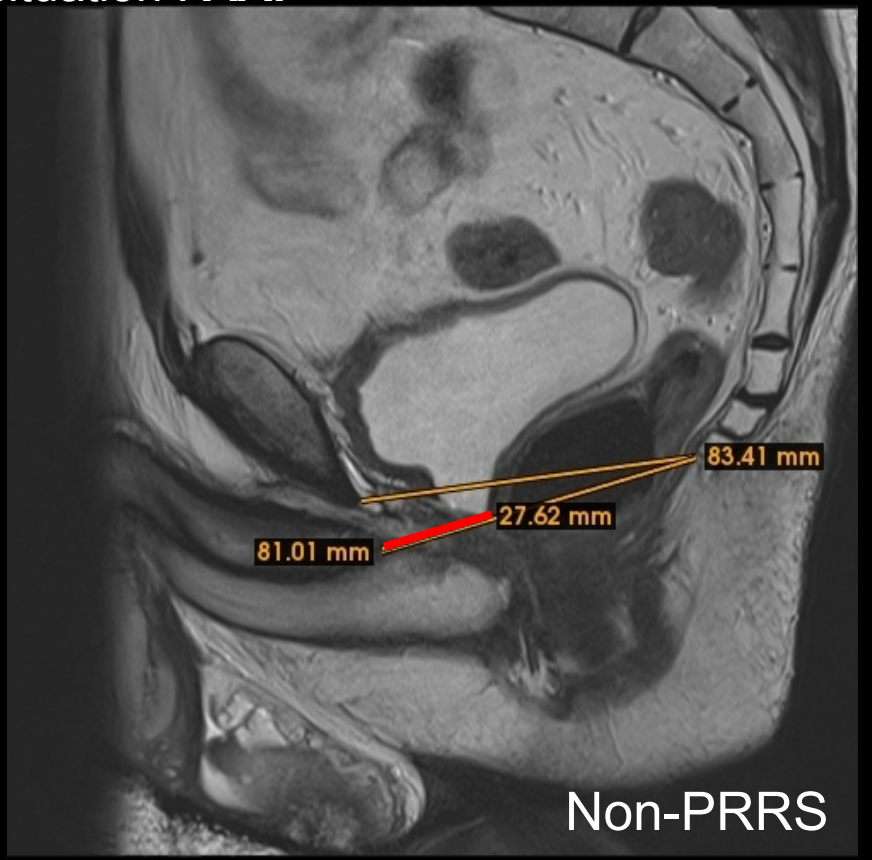
Vertical situation : **ACPv**





Antero-posterior situation : **AAP**





Results

Concordance between Radiologists measurements with the Hypothesis that the urethrovesical anastomosis is more anterior and in a higher vertical situation

	PRRS	Non-PRRS
Early Continence Recovery		
Late Continence Recovery		

Results

-**PRRS** group patients with <u>better early recovery</u> had a **more anterior and superior situation of the anastomosis** (higher ACPv and lower AAP), p<0,05

-No differences were found between groups using >1 pad/24h 30 days after the catheter removal

-No differences were found analyzing separately the no PRRS group

Conclusions

This is the first study that confirms positional differences according to the type of reconstruction after RP.

It seems that the early continence improvement of PRRS is due to more superior and anterior situation of the urethrovesical anastomosis after this technique.

Discussion

Anathomical changes after the radical surgery promote:

- Sphincter viability
- Pelvic structures stability
- Pelvic muscles integrity

Clinical outcomes[1]

[1]Porpiglia F et al. Eur Urol. 2016.

Discussion

Preexisting unmodifiable factors such as age, prostate volume, bladder dysfunction, and other morbidities can influence the achievement and timing of urinary continence recovery after RP

Several technical modifications aimed to improve postoperative continence:

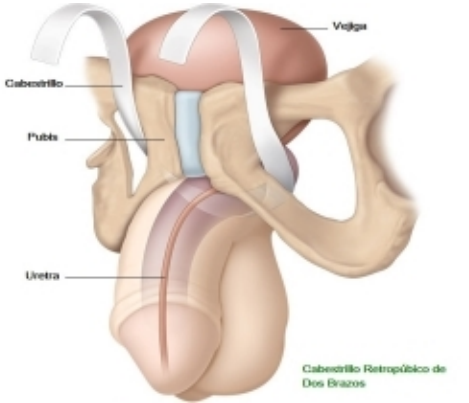
To preserve continence	Reconstruction techniques	Reinforcement techniques
•Bladder neck preservation •Neurovascular bundles preservation •Apical dissection •Pubo-prostatic ligaments preservation •Membranous urethral preservation •Seminal vesicles preservation	•Bladder neck reconstruction •Posterior reconstruction •Anterior stitch •CORPUS (Complete reconstruction of the posterior urethral support)	•Urethral sling

Discussion

Anatomical changes in Urinary Incontinence correction surgery after PR

With the the **rhabdosphincter reconstruction** the anastomosis is **more anterior and it is in a higher vertical situation** in the group of **PRRS** with **early urinary recovery**

Is this anatomical difference the reason of the early urinary continence recovery?



Limitations

Sample size

Study design

Urodynamic Study to assess established parameters after surgery

The anastomosis probably is not static and its situation can change during the late recovery time

Take Home Mensage

- The reconstruction technique seems to change early urinary continence as a consequence of a different situation of the urethrovesical anastomosis

- These results are manly found in patients with PRRS and early continence recovery