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#297

The role of perineal ultrasound in the assessment of pelvic floor function and outcomes of pelvic floor muscle training in postprostatectomy incontinence.

Goedl-Purrer B[1], Sammer A[2], Spreitzhofer E[3], Alber T[3], Dalpiaz O[3]

1.Physiotherapy Department, UAS Joanneum Graz, Austria 2.Insitute of Macroscopic and Clinical Anatomy, Medical University of Graz, Austria
3. Department of Urology, Hochsteiermark Hospital, Department of Urology, Leoben, Austria

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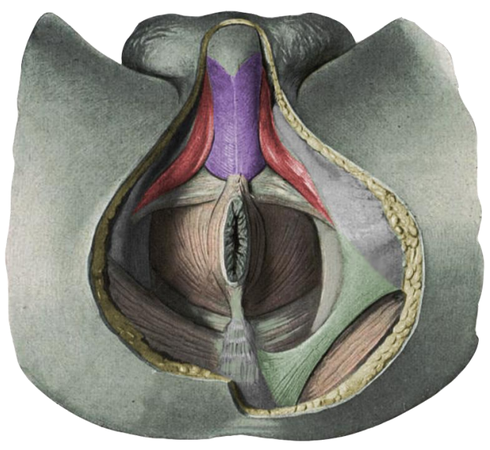
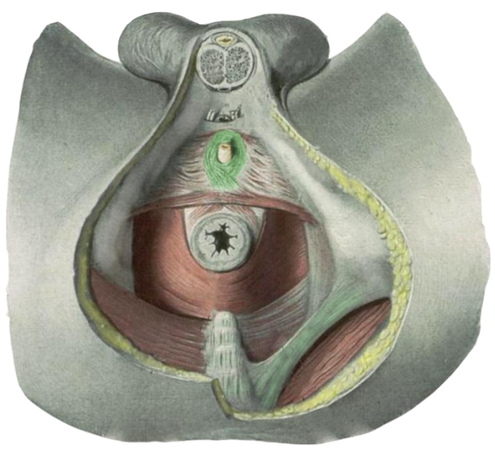
Introduction

Pelvic floor muscle training (PFMT) represents the first-line conservative treatment of postprostatectomy incontinence but its value remains questioned. There is increasing evidence that with reference to urinary continence selective recruitment of the **bulbospongiosus (BS), striated urethral sphincter (SUS)** and **ischiocavernosus (IC)** muscles seem to be of high importance . Thus training should not predominantly focus on activation of the **puborectalis** (**PR**) muscle.



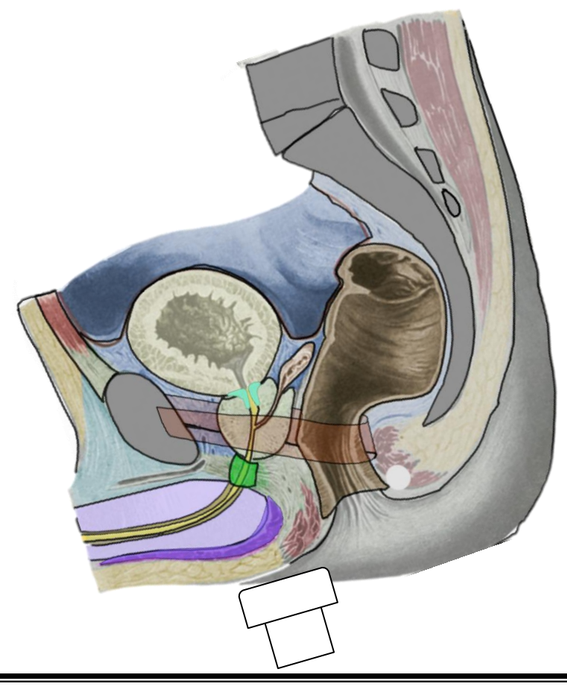


In this pilot study we investigate PFM function and activity patterns in male patients with persistent urinary incontinence after postprostatectomy. We were particularly interested to detect specific recruitment patterns in patients who received PFM rehabilitation. We also looked at selectivity of muscle recruitment patients perform with standardized instructions.

We hypothesized that

• the patterns of PFM function taught in rehabilitation are inhomogeneous

• patterns learned do not predominantly address selective recruitment of **BS**, **SUS**, and **IC** muscles.



Methods

We compiled a standardized protocol for assessment of selective Pelvic Floor Muscle Function (PFMF) and used it in routine follow-up postprostatectomy screening. 2-D perineal ultrasound was performed in a convenient sample of 15 men using a convex abdominal transducer 3.0 to 6.0 MHz. Voluntary activity of PFM was observed during standardized verbal instruction as

“activate PFM as learned”,

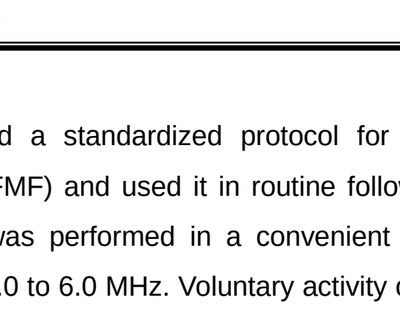
“tighten around the anus”

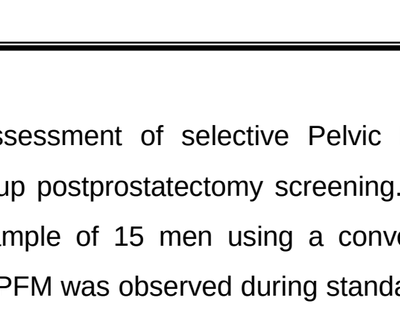
“elevate the bladder”.

“shorten the penis”,

“stop urine”,

Specific activity (timing and predominance) of PFM, particularly of the **PR**, **SUS**, **BS** and **IC** muscles was observed.





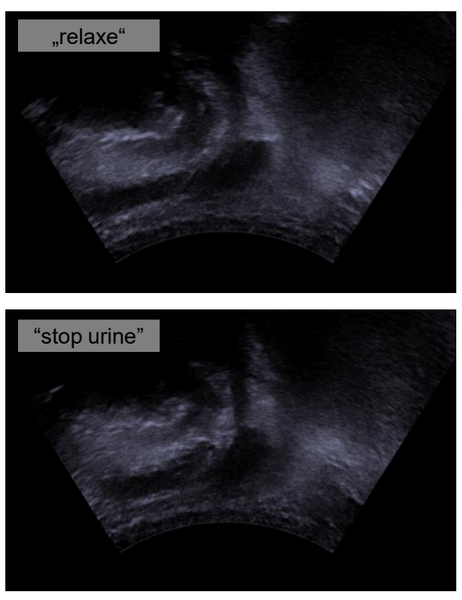
Instruction	Muscle activity	Subjective perception of muscle activity	Endurance in sec
Activate PFM as learned	SUS □, BS □, IC □, PR □, SA □	excellent □, good □, none □	Sec :
Tighten around the anus	SUS □, BS □, IC □, PR □, SA □	excellent □, good □, none □	Sec:
Elevate the bladder	SUS □, BS □, IC □, PR □, SA □	excellent □, good □, none □	Sec:
Shorten the penis	SUS □, BS □, IC □, PR □, SA □	excellent □, good □, none □	Sec:
Stop urine	SUS □, BS □, IC □, PR □, SA □	excellent □, good □, none □	Sec:

Results

Recruitment patterns observed with standardized instructions

- **“activate as learned”:**
  patients showed varying activity patterns .
- **“tighten around the anus”:**
  all patients (15) were familiar with the instruction and showed contraction of the **PR**.11 /15 also showed coordinated activity of the **SUS** and **BS**.
- **“elevate the bladder”:**
  9 /15 men showed **PR** contraction coordinated with **SUS** and **BS** activity .
- **“shorten the penis”/ “stop urine”:**
  11 patients were familiar with these instructions and showed selective activity of the **SUS** and **BS** but the **IC** was recruited only in 3 /15 patients.

These two instructions (shorten the penis; stop urine flow) also showed co-activation with **PR** in 7 patients, but in a different timing and intensity of activity than with the other instructions. **SUS**, **BS** and **IC** were recruited first and **PR** activity was less dominant. That pattern seems to significantly contribute to the ventral displacement of the basis of **bladder neck** and closure as well as angulations of lower **urethra** (membranous to bulbar).



Interpretation of the results

In our small sample the activation patterns identified were not homogenous. Recruitment of the **PR** muscle was predominantly seen, indicating that muscle training programs focus on instructions that lead to **PR** activation.

During the instruction “shorten the penis” and “stop urine flow” we could best assess the activity of the **SUS**, **BS**, **IC** and also coordinated recruitment of the **PR** muscle. This pattern seems to support closure and stability of the bladder neck and thus contribute highly to urinary continence.

We stress the concept of a standardized training and standardized instructions focusing on the pattern of **BS**, **SUS**, **IC** muscle recruitment.

Regular screening with ultrasound imaging techniques is a feasible tool to asses PFM in postprostatectomy men in a routine follow up setting. It can lead to early detection of failure in specific muscle recruitment competency and could help to develop individually tailored rehabilitation programs in postprostatectomy PFM rehabilitation.

Conclusions

Perineal ultrasound imaging allows dynamic evaluation of PFM functions and can be used to control and counsel postprostatectomy incontinent men. PFMT should use specific instructions and give feedback using perineal ultrasound early in rehabilitation to guarantee selectivity of PFM control

References

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