

COMPARISON OF PELVIC MUSCLE TRAINING OUTCOMES IN URINARY INCONTINENCE FOLLOWING RADICAL PROSTATECTOMY AND HIGH-INTENSITY FOCUSED ULTRASOUND (HIFU) ABLATION OF PROSTATE CANCER

Hypothesis / aims of study

The prevalence of urinary incontinence after radical prostatectomy (RP) is up to 87 percent while the incidence of UI following HIFU ablation for prostate cancer is up to 34.3 percent.

Pelvic floor muscle training is aimed at increasing the pelvic muscle strength and tone while developing the perineal reflex –the ability of the patient to contract muscles in response to an abrupt increase in intra-abdominal pressure. The use of biofeedback technology enhances the efficacy of training.

Study design, materials and methods

Pelvic muscle training via EMG biofeedback was employed in 119 patients (83.2%) who have undergone radical prostatectomy and in 24 patients (16.8%) who underwent transurethral resection of the prostate (TUR-P) and single –session HIFU. The age of patients in the first group was 64 (54-72)¹¹ years and in the second group—70 (49-79) years ($p=0,001$)². Clinical investigation included answering all the items of the ICIQ-SF questionnaire, clinical urinalysis and estimation of the amount of residual urine. The ICIQ-SF score after RP was 17 (10-21), in the group where TUR-P and HIFU were performed -16 (10-21) ($p=0.763$)². The median time of urine incontinence after RP at the onset of training was 2 months (1-23), after TUR-P and HIFU—2 months (1-43) ($p=0.610$). The primary efficacy endpoint of treatment was a decrease in frequency of UI episodes, longer intervals between voidings, an increase in excreted urine volume and fewer pads used.

Results

The median time to retrogression of urinary incontinence after RP was 5.1 months. In patients with urinary incontinence after TUR-P and HIFU the median time to worsening of UI was 23.1 months ($p=0,08$)³, The median time to recover urinary continence after RP as well as TUR-P and HIFU in patients aged under 65 years was 5.1 months and in those aged 65 years and over -- 13.2 months ($p=0,018$).

Interpretation of results

Recovery of urinary continence in patients after RP tends to proceed faster than after TUR-P and HIFU. This may be due to HIFU-specific effect in the focal zone –coagulation necrosis whereby not only tumor cells are damaged but also possibly the surrounding organs that are involved in mediating reflex connections between the CNS and pelvic muscles. Recovery of urinary continence was also found to occur at a slower pace in patients aged 65 years and older. Patients in the older age groups require more time for training to perform corrective pelvic floor exercises. Damage to surrounding tissues and age may be prominent contributing factors to increased duration of urinary incontinence after TUR-P and HIFU as compared to RP and a longer continence recovery period.

Concluding message

Muscle training is based on the concept of plasticity of the nervous and muscular system and their capacity to acquire new abilities and reinforce the new motor skill. The preservation of anatomical structures surrounding the area of operative intervention and the ability to acquire the skill of pelvic floor muscle training tend to enhance the effectiveness of using biofeedback PFMT.

Disclosures

Funding: N/A **Clinical Trial:** No **Subjects:** HUMAN **Ethics Committee:** Ethics Committee of Sechenov First Moscow State Medical University **Helsinki:** Yes **Informed Consent:** Yes

¹ Hereinafter the median, 5th and 95th percentiles are shown

² Hereinafter the Mann-Whitney test is used

³ Hereinafter the long-rank test is used