

THE FUNCTION OF THE PELVIC FLOOR MUSCLES BEFORE AND AFTER THE RECONSTRUCTIVE PELVIC FLOOR SURGERY

Hypothesis / aims of study

It is well-known, that the urinary continence and undisturbed pelvic floor function in women depends on ability of the coordinated collaboration of the muscles, nerves and ligaments of the pelvic floor. Continence and acceptable function of the pelvic floor will be reached by surgical restoration of the connective tissue by means of slings and vaginal reconstructive surgical procedures. It is unknown, what happens with the pelvic floor muscle function after these surgeries. The aim of this study was to evaluate the pelvic floor muscle function before and after the reconstructive pelvic floor surgery (RPFS).

Study design, materials and methods

Participants of this prospective designed pilot study included 20 women, aged 45 to 81, suffered from stress urinary incontinence and other symptoms of the pelvic floor dysfunction. The examinations of the levator ani muscle function were performed preoperatively and three months after RPFS. Maximal voluntary contraction strength in μV (MVCs) and pressure in cm H₂O (MVCp) vaginally and per anus, resting tonus in μV (RT) and resting pressure in cm H₂O (RP) vaginally and per anus, area under the curve in μV (AUCs) and in cm H₂O (AUCp) vaginally, mean tonus during 10 seconds holding time of a forced voluntary contraction in μV (HTs) and pressure in cm H₂O (HTp) vaginally, endurance of MVCs (Es) and MVCp (Ep) vaginally in seconds were measured by intra-vaginal and intra-anal probe with surface electrodes (sEMG) and by a balloon catheter connected to a pressure transducer.

Results

All measured parameters of the pelvic floor muscles were higher after RPFS than preoperatively. The MVCs and MVCp increased 53,1% ($\pm 72,2\%$, $p < 0.03$) respectively 110,1% ($\pm 125,8\%$, $p < 0.001$) vaginally and 41,8% ($\pm 40,6\%$, $p < 0.4$) respectively 160,8% ($\pm 132,4\%$, $p < 0.01$) per anus. The RT showed no significant differences vaginally and per anus. The RP was increased 350,0% ($\pm 320,8\%$, $p < 0.001$) vaginally and 367,6% ($\pm 149,4\%$, $p < 0.008$) per anus. The AUCs and AUCp increased 70,3% ($\pm 108,4\%$, $p < 0.009$) respectively 145,3% ($\pm 143,4\%$, $p < 0.001$) vaginally. The HTs and HTp increased 54,9% ($\pm 106,0\%$, $p < 0.01$) respectively 140,0% ($\pm 142,8\%$, $p < 0.001$) vaginally. Both Es and Ep showed no significant differences vaginally.

Interpretation of results

The reconstructive pelvic floor surgery in women with symptoms of pelvic floor dysfunction increases the strength of pelvic floor muscles significantly as shown by measurements both with sEMG and with pressure transducer.

Concluding message

These findings support the modern hypotheses of female continence mechanism and may be interesting for the further research concerning the quantification of pelvic floor dysfunction.

Specify source of funding or grant	The technical equipment for surface EMG in this study has been sponsored from industry.
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Local ethical board of the Medical Faculty, Ludwig-Maximilians-University Munich
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes