



Contents lists available at ScienceDirect

European Journal of Obstetrics & Gynecology and
Reproductive Biology

journal homepage: www.elsevier.com/locate/ejogrb



Bladder-neck effective, integrative pelvic floor rehabilitation program: follow-up investigation



Baerbel Junginger*, Elisa Seibt, Kaven Baessler

Charité University Hospital, Department of Gynaecology, Pelvic Floor Centre Charité, Berlin, Germany

ARTICLE INFO

Article history:

Received 12 March 2013

Received in revised form 2 September 2013

Accepted 12 December 2013

Keywords:

Bladder neck

Incontinence

Pelvic floor rehabilitation

Perineal ultrasound

Sub-maximal contraction

Visual biofeedback

ABSTRACT

Objective: To evaluate the effectiveness of a pelvic floor rehabilitation program consisting of pelvic floor (PF) and transverse abdominal muscle (TrA) pre-contraction, coordination training and sustained submaximal contractions employing a validated pelvic floor questionnaire.

Study design: Fifty-five consecutive women with stress urinary incontinence ($n = 9$), overactive bladder ($n = 9$) or mixed symptoms ($n = 37$) were invited to participate. The German version of the Australian pelvic floor questionnaire was completed by all women before and after treatment, and additional validated improvement and satisfaction scales assessed patient-centered outcome. Individual treatment programs were selected according to the dysfunction evaluated by vaginal palpation and perineal ultrasound. Bladder-neck effective pelvic floor contraction was ensured using perineal ultrasound. Co-contraction of TrA was incorporated. Active integration of the pelvic floor contraction into daily life and individual incontinence triggering activities was practiced (duration, submaximal contraction, maintenance, pre-contraction before breathing, getting up and urgency).

Results: Of 46 women with stress urinary incontinence symptoms, 67% and of 46 women with OAB symptoms 78% were improved or cured. Bladder, bowel and sexual function domain scales improved significantly after 1–6 sessions (median 2). Pre-contraction of PF and TrA was routinely performed by 39 of 55 women (71%) resulting in less incontinence.

Conclusion: The bladder-neck effective, integrative pelvic floor rehabilitation program is highly effective for SUI and OAB. Although PF strengthening with maximal contractions was omitted, these results are comparable with strength programs in the literature. Due to the integration of submaximal PF contractions into daily life and individual incontinence situations, life-long strength training might be unnecessary, and this has to be studied further.

© 2013 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

There is no doubt that pelvic floor rehabilitation should be offered to most patients complaining of urinary and/or anal incontinence [1,2]. The best treatment regime, however, is not known [1]. Most treatment programs consist of pelvic floor muscle (PFM) strengthening and many do not involve integration of pelvic floor (PF) activity into daily life [1]. These programs are based on principles of regular skeletal muscle strength training resulting in an increased cross-sectional area (hypertrophy) of muscles with type II muscle fibers [3]. Up to 80% of the PFM, however, consists of type I muscle fibers (slow-twitch fibers) [4] mainly responsible for tonic activity and endurance. The PFM is part of the abdominal

capsule, a muscle cylinder that stabilizes the trunk, together with the transverse abdominal muscle (TrA), the multifidi muscles and the diaphragm [5]. In healthy women, the TrA co-contracts with a PFM contraction [6–8]. There is also a PFM pre-contraction as a postural response before trunk perturbation [9], but this pre-contraction might get lost in incontinent women [9]. In a clinical study it has been demonstrated that teaching a PFM pre-contraction (the so-called “Knack”) [10], e.g. in advance of a cough, can prevent urinary leakage [10] and reduces bladder neck (BN) descent [11]. Significant reductions in urine loss were achieved within one week, which is too early to be a result of PFM strength increase and hypertrophy [12].

Taking the above findings into account, we developed a specific pelvic floor rehabilitation program. Perineal ultrasound is used to assess PFM function, to teach a BN effective PFM contraction and especially a pre-contraction (“Knack”). Abdominal ultrasound is employed to ensure the physiological co-contraction of the TrA and to avoid pathological co-activity of the oblique abdominal muscles. Maximal PFM contractions are omitted to prevent undue increases

* Corresponding author at: Charité Universitätsmedizin Berlin, Department of Gynaecology, Pelvic Floor Centre Charité, Hindenburgdamm 30, 12203 Berlin, Germany. Tel: +49 172 7325794; fax: +49 30 8445 4205.
E-mail address: baerbeljunginger@charite.de (B. Junginger).