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TITLE: A Systematic Review: The Effects of Preoperative Pelvic Floor Muscle Training on Men with Urinary Incontinence After Prostatectomy

BACKGROUND: Prostate cancer is the most prevalent cancer in men worldwide with 1.4 million new cases diagnosed in 2020. Approximately 50% of men with prostate cancer will have a radical prostatectomy procedure as the primary intervention. The prevalence of urinary incontinence following this procedure is as high as 80%. Loss of bladder control is known to have negative physical, emotional, psychosocial, and economic consequences following prostatectomy. Pain and surgical trauma, including damaged nerves, following radical prostatectomy has an inhibitory effect on the motor cortex, resulting in difficulty activating muscles in the pelvic floor that function to maintain urinary continence. Current research shows that enhancing the neurologic pathways that activate these muscles before surgery may prime the patient to return to continence more rapidly. Due to the high prevalence of this pervasive side effect, the effect of pre-operative pelvic floor muscle training (PFMT) on urinary incontinence is investigated. The current protocol for managing post-operative urinary incontinence focuses on post-operative PFMT. This systematic review compares the use of preoperative PFMT and PFMT provided only post-operatively following radical prostatectomy.

MATERIALS & METHODS: A literary search was conducted to find articles published after 2012 with level 3 evidence or greater. Meta-analyses, systematic reviews, randomized control trials, literature reviews, pilot studies, and case studies were among the types of articles included. Keywords used were prostatectomy, urinary incontinence, pelvic floor muscle training, and pre-operative. Articles with any conflicts of interest or not written in English were excluded. EBSCOhost, NCBI, PubMed, and Cochrane Library databases were used to identify relevant articles.

RESULTS: 28 articles met the inclusion criteria. Pre-prostatectomy PFMT programs included the use of electromyographic studies and real-time ultrasound biofeedback. Continence was measured via several outcome measures including the 24-hour pad test, the 1-hour pad test, and several validated questionnaires. Outcomes were compared in patients that participated in PFMT only pre-operatively, only post-operatively, and both pre- and post- operatively. Patients who participated in pre-prostatectomy PFMT alone did not demonstrate satisfactory improvements in urinary incontinence while those who underwent only postoperative PFMT experienced meaningful outcomes. Urinary continence was gained substantially faster in patients who received both pre- and post- operative PFMT compared to those who only received PFMT after surgery. Quality of life surveys were scored highest among patients receiving PFMT both before and after surgery.

CONCLUSIONS: Urinary incontinence in men following prostatectomy significantly decreases quality of life. Based on this systematic review, the standard of care for men facing radical prostatectomy should include the addition of PFMT six weeks prior to the surgical procedure in addition to the standard protocol of postoperative PFMT. The inhibitory effects of surgery on the pelvic floor muscles appear to best be mitigated with PFMT provided both before and after surgery, restoring continence faster and minimizing the negative impacts on quality of life.