

Effect of 4-Week Protocol of Kegel Exercise on Pelvic Floor Strength on a Patient with Ovarian Endometriosis—A Case Report

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Abstract

Purpose: The purpose of this case study was to describe the effects of Kegel exercise in a 4-week protocol for a patient with endometriosis associated with urinary incontinence. **Case description:** A 23-year-old female patient presented with chronic low back pain and also complained of difficulty in holding urine and leakage while doing forceful activities like lifting heavy objects, coughing, and sneezing in the past 6 months. She also complained of pain in her lower abdomen, which aggravated during menstruation along with menorrhagia. She had a past medical history of 1 cesarean section and 2 miscarriages. The patient was diagnosed with endometriosis associated with urinary incontinence by the concerned gynecologist. **Plan of care:** Upon assessment, the patient's pelvic floor muscle strength was found to be 1 and severity of urinary incontinence was 5. Interventions included Kegel exercises modified in different positions for a total of 4 weeks. Outcome measures included Modified Oxford Grading for testing pelvic floor muscles strength and Sandvic Severity Index for urinary incontinence. **Outcomes:** The data was collected pre and post treatment and were computed using SPSS software. It was seen that strength of pelvic floor muscles increased from 1 to 2 after 4 weeks of intervention and the severity score of urinary incontinence decreased from 5 to 3. Wilcoxon signed rank test was done and p value = 0.0023 for pelvic floor muscle strength and $p = 0.001$ for urinary incontinence, which is found to be clinically significant ($p < 0.05$). **Conclusion:** Following 4 weeks of home exercise program, the patient demonstrated increase in the pelvic floor muscle strength and decrease in the severity of urinary incontinence.

Keywords: Endometriosis, urinary incontinence, pelvic floor muscle (PFM), Kegel exercise

INTRODUCTION

Endometriosis refers to the occurrence of endometrial tissue in locations outside its usual site. This can manifest as small lesions in the peritoneal cavity, ovaries, abdominal organs, or bladder. Such lesions may also develop in scar tissue from perineal incisions or cesarean sections and can invade the

muscular wall of the uterus (adenomyosis) [1]. Certain factors may heighten the risk of developing endometriosis, including a family history of the condition, being born prematurely, low birth weight, and experiencing abnormal uterine bleeding in the neonatal period. Additional risk factors encompass stunted growth during childhood, childhood trauma, painful menstruation that impacts daily life, inadequate relief from non-steroidal anti-inflammatory drugs (NSAIDs), migraines, a low body mass index, infertility, cyclical pain that intensifies during menstruation, and discomfort related to digestive or urinary

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systems. Other considerations include issues such as diaphragm, lung, or sciatic pain, as well as fatigue syndrome, insomnia, depression, and workplace stress. Obstetric history, including miscarriages and adverse pregnancy outcomes, previous pelvic surgeries for endometriosis or other gynecological reasons, and autoimmune disorders, may also contribute to the risk [2].

Urinary incontinence (UI) is characterized as the involuntary leakage of urine through the urethra, as defined by the International Continence Society (ICS). It is regarded as a health, social, and hygiene issue, affecting approximately 6% to 10% of the population. UI can be categorized into three subtypes: stress urinary incontinence (SUI), urge urinary incontinence (UUI), and mixed urinary incontinence (MUI), based on symptoms and underlying mechanisms. SUI is the most prevalent form among women, occurring during activities such as sneezing, coughing, or physical exertion. It can present in either pure or mixed forms in about one-third of women. SUI arises from weakness in the urethral sphincter muscles, pelvic floor muscles, connective tissues, and fasciae [3].

Pelvic floor muscle training (PFMT) is recommended as the primary treatment, as endorsed by the International Continence Society, and has been shown to yield positive outcomes for UI. Structured PFMT enhances adherence and fosters self-efficacy among participants. This training supports the pelvic organs and aids in the closure of the urethral sphincter muscles, leading to improved incontinence. Consequently, it is prescribed to enhance strength, endurance, and muscle coordination [3, 4].

OBJECTIVE

To determine the effectiveness of Kegel exercise within a short duration in pelvic floor muscle strengthening in endometriosis.

CASE PRESENTATION

A 23-year-old female who was seen in the Department of OB&G of Jorhat Medical College and Hospital, Jorhat, Assam presented with difficulty in holding urine and leakage while lifting heavy objects, coughing, and sneezing in the past 3 months. She also complained of low back pain and pain in the abdomen which aggravated during menstruation in the past 6 months. She also had a past medical history of 2 miscarriages and 1 live child through lower segment C-section. She also complained of menorrhagia along with intermenstrual bleeding over the past 8 months. The patient was then diagnosed with bilateral ovarian endometriomas with deeply infiltrating endometriosis which was associated with urinary incontinence by the concerned gynecologist based on various radiological (transvaginal ultrasonography) and pathological examination. She is a homemaker by profession and also lifts heavy weight during her work. Upon assessment, her pelvic floor muscles had a strength of grade 1 which is flicker. She was non-diabetic and non-hypertensive and was under NSAIDs and hormonal birth control medications.

MANAGEMENT AND OUTCOME

Physiotherapy intervention was given in the form of Kegel exercise, which aims to strengthen the pelvic floor muscle (Table 1). The exercises were taught to the subject by the therapist and was asked to continue at home. The initial assessment was done on Day 0 and follow ups were done on Days 7, 14, and 21 via phone calls. The final assessment was done on Day 28. It was given as a home program.

The following are the pre-intervention and the post-intervention and the results are shown in Tables 2 and 3.

- *Outcome:* The evaluation of PFM strength using manual muscle testing (MMT) after 4 weeks of intervention indicates that there is an increase of pelvic floor muscle strength. Also, her urinary incontinence associated symptoms decreased.
- *Outcome:* The evaluation of the severity of urinary incontinence measured using the Sandvic Severity Index showed that there was a decrease in the severity of urinary incontinence (Tables 4 and 5).

Table 1. Physiotherapy treatment.

Intervention: Kegel Exercise	Dose				Information
	Frequency	Intensity	Type	Time	
In crook lying	5 times a week	5 reps × 2 sets	Hold and relax	Hold 10 s Relax 10 s	2-min interval before starting the new one
In supine lying	5 times a week	5 reps × 2 sets	Hold and relax	Hold 10 s Relax 10 s	2-min interval before starting the new one
Along with bridging	5 times a week	5 reps × 2 sets	Hold and relax	Hold 10 s Relax 10 s	2-min interval before starting the new one
Along with cat and camel	5 times a week	5 reps × 2 sets	Hold and relax	Hold 10 s Relax 10 s	2-min interval before starting the new one

Table 2. Pre-intervention measurement of pelvic floor muscle (PFM) strength using Modified Oxford Grading System.

Strength of PFM	Pre-intervention (Day 0)	Interpretation
	1	The fibrillation of the muscle is felt (flickering contraction)

Table 3. Post-intervention measurement of pelvic floor muscle (PFM) strength using Modified Oxford Grading System

Strength of PFM	Post-intervention (Day 28)	Interpretation
	2	Incomplete contraction of the muscle is felt (weak)

Table 4. Pre-intervention measurement of severity of urinary incontinence (UI) with Sandvic Severity Index.

Severity of UI	Pre-intervention (Day 0)	Interpretation
	5	Moderate incontinence

Table 5. Post-intervention measurement of severity of urinary incontinence (UI) using Sandvic Severity Index.

Severity of UI	Post-intervention (Day 28)	Interpretation
	2	Mild incontinence

Statistical Analysis and Results

The data was collected and pre and post treatment values were computed using SPSS software. It was seen that strength of pelvic floor muscle increased gradually from an initial 1 to 2 after 4 weeks of treatment. It was also observed that the severity score of urinary incontinence gradually decreased from 5 – moderate incontinence to 3 – mild incontinence. Wilcoxon signed rank test was done. For pelvic floor muscle strength; $p = 0.0023$, and for severity of urinary incontinence, $p = 0.001$. Statistical significance was kept at $p < 0.05$.

DISCUSSION

This case study highlights the significant impact of a structured Kegel exercise regimen on pelvic floor muscle strength and urinary incontinence in a young female patient with endometriosis. The findings suggest that targeted pelvic floor rehabilitation can yield measurable improvements in both muscle function and urinary symptoms, even in the context of complex conditions like endometriosis. The connection between endometriosis and urinary incontinence is well-documented; endometriotic lesions can affect surrounding structures, leading to pelvic floor dysfunction. A study conducted by Gabriel et al. found that there is a strong association between endometriosis and lower urinary tract symptoms [5, 6]. In this case, a 4-week home program of modified Kegel exercises (Figure 1) was designed to enhance the patient's pelvic floor muscle strength. The progression from a score of 1 to 2 on the MMT scale suggests a notable improvement in muscle function, demonstrating that even a brief intervention can yield beneficial outcomes [7]. The exercise protocol likely facilitated neuromuscular

re-education, increased awareness of pelvic floor activation, and ultimately contributed to the patient's improved ability to manage urinary incontinence (Figures 2 and 3).



Figure 1. Physiotherapy intervention: Kegel exercises for pelvic floor strengthening.

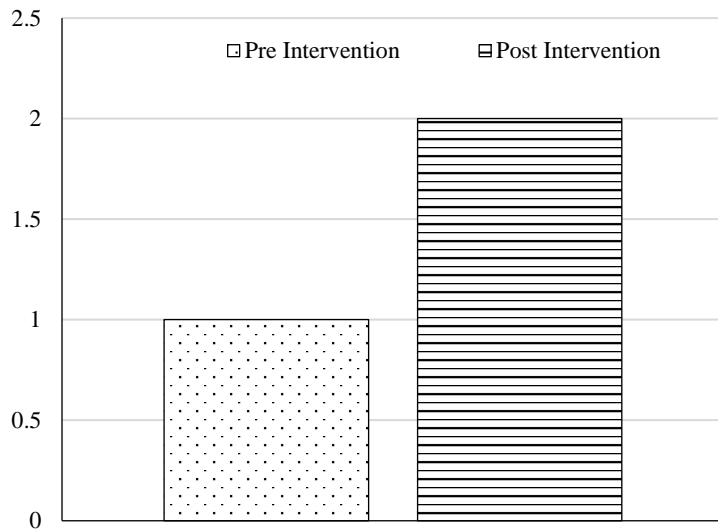


Figure 2. Pelvic floor muscle strength.

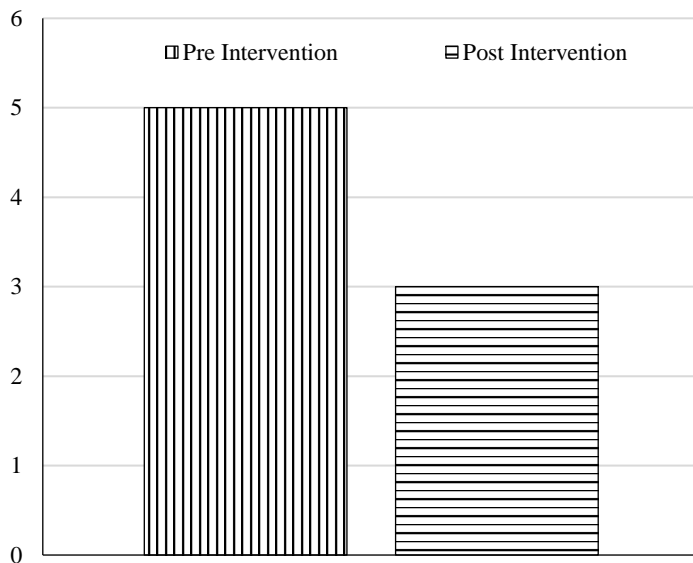


Figure 3. Severity of urinary incontinence.

The reduction in the severity score of urinary incontinence from 5 to 3 indicates a clinically meaningful change, reinforcing the role of pelvic floor exercises in alleviating symptoms. A study conducted by Riani et al. revealed that Kegels exercise acts a beneficial treatment for conditions like urinary incontinence along with other interventions [8]. The statistical significance of the results, supports the efficacy of Kegel exercises in this patient population. This aligns with existing literature that advocates for pelvic floor muscle training as a first-line conservative treatment for urinary incontinence. The findings of our study concludes that a duration of 4 weeks is beneficial for strengthening pelvic floor muscles. Studies have reported that pelvic floor muscle requires at least 6 to 12 weeks to strengthen [9, 10].

Despite the positive outcomes observed in this case study, it is essential to acknowledge its limitations. The findings are based on a single patient case, which limits the generalizability of the results. Future studies should include larger sample sizes and control groups to validate these findings and assess long-term benefits. Additionally, it would be beneficial to explore the potential for incorporating other modalities, to enhance pelvic floor rehabilitation in patients with endometriosis.

CONCLUSION

The 4-week Kegel exercise protocol in different modified positions appears to positively impact pelvic floor strength and reduce symptoms like urinary incontinence in a patient with ovarian endometriosis. These findings underscore the importance of integrating pelvic health rehabilitation into the management plan for women with complex gynecological conditions, providing a conservative approach that can improve quality of life. While further research is needed to validate these findings, Kegel exercises may represent a safe and effective non-invasive treatment option for individuals suffering from pelvic floor dysfunction related to endometriosis. Integrating such interventions into comprehensive care could enhance patient outcomes and quality of life.

Declaration of Patient Consent

Verbal consent was taken from the subject.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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