



A CASE STUDY TO EVALUATE THE EFFECT OF HYPOPRESSIVE EXERCISE IN WOMEN WITH UTERO-VAGINAL PROLAPSE

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ABSTRACT

Background

The hypopressive exercise also known as hypopressive abdominal gymnastics, is a relatively recent technique used to help in exercising the pelvic floor and toning the abdomen and to increase the endurance of pelvic floor muscle (PFM) and basal tone of PFM subsequently helping in urethral constriction. The purpose of the study to find out the effectiveness of hypopressive exercise in women with utero-vaginal prolapse.

Methods

The exploratory case study was conducted in Aarupadai veedu medical college and hospital. Ten women aged between 25-45years and above and diagnosed with Grade 1 and 2 uterine prolapsed were participated in this study. Hypopressive exercises were encouraged daily for 8 weeks. PFDI-20, perineometer and modified oxford grading system were used pre and post to measure the degree of distress in pelvic organ and strength of the pelvic floor muscles.

Result

The result shows that pre and post mean difference there was statistically significant improvement in perineometer score $t=9.03$ ($p=0.001$), pelvic floor distress inventory $t=8.83$ ($p=0.001$) and modified oxford grading system $t=8.55$ ($p=0.001$) at 1% level of significance.

Conclusion

The study concluded that the hypopressive exercise improves quality of life, PFM function and reduces the POP symptoms and prolapse severity.

Keywords: Utero-vaginal prolapse, Hypopressive exercise, Perineometer, Modified oxford grading system.

1.1 INTRODUCTION

Uterine prolapse (also called descensus or procidentia) means the uterus has descended from its normal position in the pelvis farther down into the vagina due to the weakening of its surrounding support structures.⁽¹⁾ Anterior compartment prolapse(cystocele), Posterior compartment prolapse (rectocele), Enterocele, Apical compartment prolapse (uterine prolapse, uterine vault prolapse), Procidentia. Pelvic organ prolapse is classified under five stages as 0 to 4 according to its level of severity. Risk factors for uterine prolapse are multiple pregnancies or childbirth with normal or complicated delivery through the vagina, improper delivery techniques, heavy work during and soon after pregnancy, heavy lifting.⁽²⁾ Obstetric factors like parity, age at last pregnancy between 30 and 39 years, inadequate birth spacing, home

deliveries, vaginal deliveries, prolonged duration of labor, and heavy work in post-natal period were observed among cases.⁽⁵⁾ The global prevalence of uterine prolapse is 2-20%; uterine prolapse in the hospital admission 20.4%, surgery for prolapse is 16.2%. In lower economic countries, prevalence of uterine prolapse was estimated to be greater than 20%.⁽¹²⁾ In a population-based survey, the prevalence of uterovaginal prolapse has been reported to be 4-10%. The lifetime risk of requiring at least one operation for prolapse has been reported as 11%.⁽¹³⁾ Symptoms of prolapsed uterus include pelvic severity, feeling of heaviness in the vagina, feeling something coming downwards from the vagina, painful sexual intercourse, nodule or protrusion and lumbar pain.⁽¹³⁾ Pelvic floor muscles play an important role to providing active and passive support to abdominal and pelvic organs. Strengthening the pelvic floor muscles can help urinary incontinence, prevent and treat pelvic organ prolapse. The pelvic floor is a cone shaped musculature arrangement. Pelvic floor diaphragm is vital and provides support for pelvic organs and for maintenance of the continence being a component of the anal and urinary sphincters and it provides resistance to increase in intra-pelvic or abdominal pressure during activities such as lifting heavy objects, sneezing or coughing. If these muscles are sagged or deformed due to hormonal and other changes after menopause, body loses tautness and obese or age-related sagging is observed. The muscles of pelvic floor play a vital role in stabilization of lumbar region and helps in unloading the spine.⁽⁷⁾

Marcel caufriez proposed the use of Hypopressive Exercise in the 1980's and named these exercises the "Abdominal Hypopressive Technique". This therapeutic concept serves to improve the pelvic floor muscles, abdominal muscles, posture and general well-being. During each exercise, the whole body is stressed such a way that muscles are strengthened, tense muscles stretched and the pelvic and abdominal muscles built up gently and very efficiently at the same time.⁽⁶⁾ Hypopressive exercise are an ordered series of postural and breathing exercises that are performed rhythmically and controlled with the abdominal muscles at intervals. The technique is mainly achieved by controlling the diaphragm and the opening of rib arches with a brief stop of breathing, which reduces pressure in the abdomen, chest cavity and pelvis.⁽⁶⁾ In hypopression, a negative pressure built up for the organs in the pelvic floor (uterus, bladder and intestine). Together with the controlled posture, this increases the resting tension in the pelvic floor muscles and the abdominal girdle (transversal abdominal muscles) and controls the unconscious reaction in contraction in abdominal overpressure situations (exertion, laughter, coughing, etc.). In addition hypopression improves blood circulation.⁽⁶⁾ Many studies have demonstrated and compared the effect of hypopressive exercise with pelvic floor muscle training. There is an evidence that hypopressive exercise can improve pelvic organ prolapse and its symptoms. Hence, the aim of this study is to improve uterovaginal prolapse (Grade I & II) and its symptoms by hypopressive exercise.

2.1 Methods and Measures

The exploratory case study was conducted in Aarupadai veedu medical college and hospital. Ten women aged between 25-45 years and above and diagnosed with Grade 1 and 2 uterine prolapsed are participated in this study. Prolapsed associated with vaginal delivery, Multiparous women, Primiparous women, Stress Urinary incontinence were included. This study involved with Grade 3 and 4 uterine prolapsed women, Previous history of Tumors of bladder (Neurogenic bladder, Cancer of cervix), Urinary tract infection, Previous history of LSCS, Ovarian cyst, Nulliparous women were excluded. Before collection of data all the subjects were explained about the purpose of the study. The consent and full co-operation of each participant was sought after complete explanation of the condition and demonstration of the procedure involved in the study.

Pelvic floor distress inventory scale (PFDI- 20) was used to measure the degree of distress in pelvic organ prolapsed. To evaluate the strength by perineometer, the probe of the perinometer was placed inside the vagina and the scale was calibrated to zero. Three readings of the perinometer were taken at 6th second, 12th second, 18th second and best out of three was taken and modified oxford grading system using of vaginal palpation by Laycock.

- 0- No contraction, no active muscular contraction.
- 1- Flicker, very slight muscular contraction.
- 2- Weak, full motion overcome the force of gravity.
- 3- Moderate, full motion against gravity.
- 4- Good, full motion against slight resistance.
- 5- Strong, full motion against strong resistance.

HYPOPRESSIVE EXERCISE

Weeks	Position/ Pose	Number of Sets	Repetitions	Hold (in seconds)
1	Supine lying Crook lying	3	3	5-10
2	Standing Cross sitting	3	3	5-10
3	Standing Kneeling Quadruped	3	2	10-15 5-10 5-10
4	Standing Kneeling Quadruped	3	1	10-20 10-15 10-15
5	Standing Kneeling Quadruped	3	1	20-30 15-20 15-20
6-8	Standing Kneeling Quadruped	3	1	20-30 15-20 15-20

These exercise focus on diaphragmatic breathing and transverse activation in various static postures. Follow the Three steps in each position.

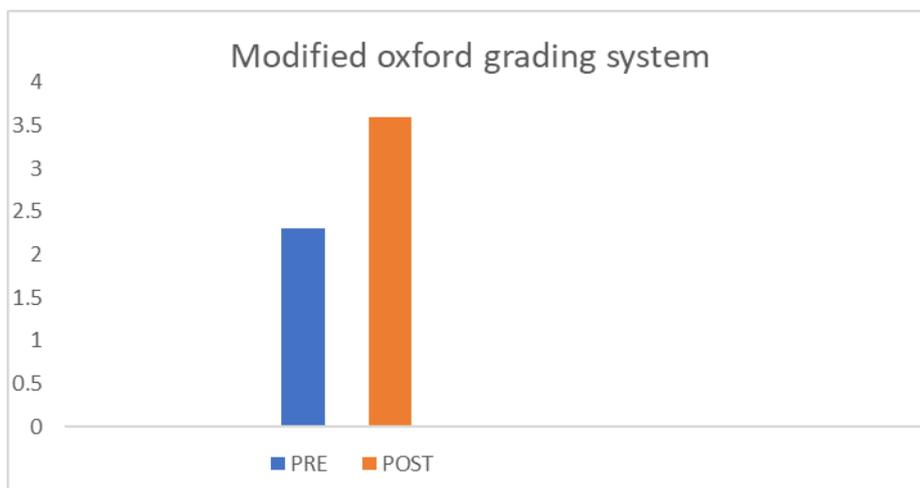
- 1 Slow diaphragmatic inspiration.
- 2 Total expiration.
- 3 Diaphragmatic aspiration.

3.1 STATISTICAL ANALYSIS

Analyses were conducted according to pre and post value for perineometer, pelvic floor distress inventory and modified oxford grading system. Descriptive statistical parameters: mean and standard deviation were calculated.

Test	Mean	Standard deviation	t value	p Value
pre test	2.3	0.67	8.55	0.001
Post test	3.6	0.51		

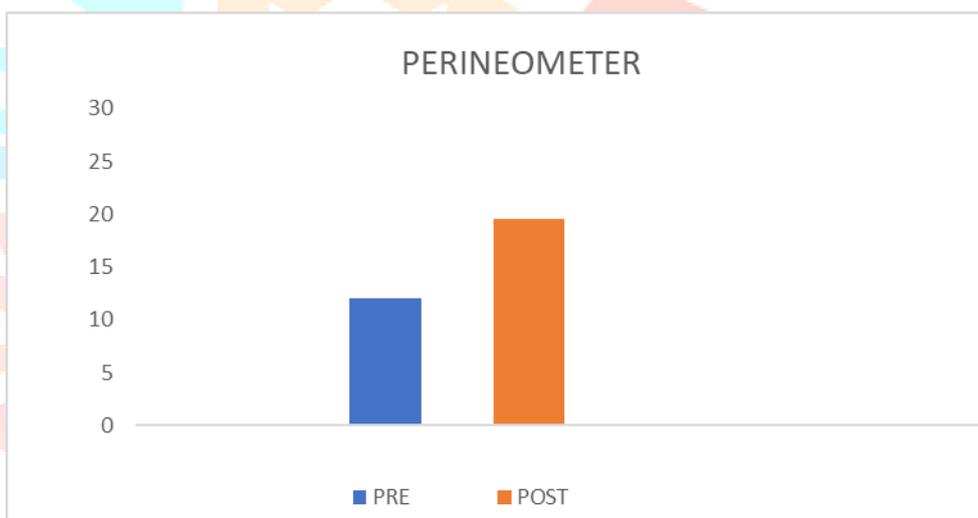
Table 1 shows the pre and post value of Modified oxford grading system



Graph 1 shows pre and post mean value of modified oxford grading system.

Test	Mean	Standard deviation	t value	p Value
Pre test	12	5.37	9.03	0.001
Post test	19.5	5.50		

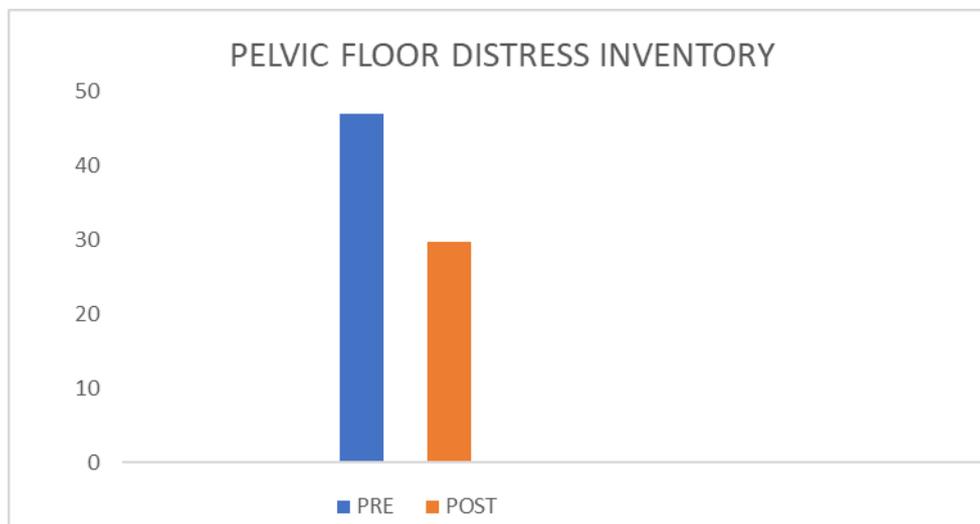
Table 2 shows the pre and post value of perineometer



Graph 2 shows pre and post mean value of perineometer

Test	Mean	Standard deviation	t value	p Value
Pre test	46.9	10.8	8.83	0.001
Post test	29.6	9.37		

Table 3 shows the pre and post value of pelvic floor distress inventory questionnaire



Graph 3 shows pre and post mean value of pelvic floor distress inventory

4.1 RESULT

The result shows that pre and post mean difference there was statistically significant improvement in perineometer score $t=9.03$ ($p=0.001$), pelvic floor distress inventory $t=8.83$ ($p=0.001$) and modified oxford grading system $t=8.55$ ($p=0.001$) at 1% level of significance.

5.1 DISCUSSION

The study was conducted to identify the effectiveness of hypopressive exercise in women with uterovaginal prolapse. Ten patients diagnosed as UV prolapse and the patient underwent the hypopressive exercise. Amongst 10 subjects, 70% ($n=7$) had grade 2 prolapse whereas 30% ($n=3$) had grade 1 prolapse. Majority of participants were multiparous ($n=9$) whereas one participant was nulliparous. All participants had obstetric history of Full Term Normal Delivery (FTND). Pre and post treatment data were analyzed. It showed significant effect on symptoms, pelvic floor muscle strength and quality of life. Pelvic floor distress inventory scale 20 had three subscale inventory namely POPDI-6 for prolapsed symptom, CRAD-8 for colorectal and symptoms and UDI-6 for urinary symptoms. In post evaluation assessment, improvement of symptoms was seen in all the three subscale of PDFI-20 indicating overall improvement in symptoms of prolapse.

According to Caufriez, these exercises lead to pelvic floor toning, abdominal wall toning, the and normalization of tension structures and muscle-aponeurotic antagonists. Due to the vacuum effect seen in hypopressive exercise during which both abdominal muscles and pelvic floor muscles are trained through a reflex mechanism. During the exercise no internal pressure is exerted over abdomen and pelvic floor. As a result organs don't descend during the technique but rather the opposite. We observe increasing strength and reducing symptoms. Thus this muscle group prevent loss of urine or rectal contents.

Bernardes B stated that hypopressive exercise produced improvement in the cross-sectional area of the levator ani muscle and significantly increase pelvic floor muscle function. These exercises are also supposed to decrease intra-abdominal pressure. Because of these effects, the author proposed that the main indications for using this technique are to treat POP, urinary incontinence, rehabilitation in the post-partum period and to decrease lower back pain. Vacuum effect seen in hypopressive exercise during which both abdominal muscles and pelvic floor muscles are trained through a reflex mechanism. During the exercise no internal pressure is exerted over abdomen and pelvic floor. Hence, we observe increasing strength and reducing symptoms.

Based on analysis the pre and post-test value showed improvement on PFDI, perineometer and modified oxford grading system with significant difference between the pre and post values.

The strength of this study was that we included a different technique to treat UV prolapse. Hypopressive exercises are used around the world, especially in some countries of Europe and South America, and until now, there is limited evidence of its effect on pelvic floor dysfunction. To the author's knowledge, only two studies have used HE in their protocol to treat POP.

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