



**EFFECT OF KEGAL EXERCISES ON MUSCLE STRENGTH OF PELVIC FLOOR
MUSCULATURE AFTER EPISIOTOMY**

Muhammad Waqas*¹, Heena Habib¹, Maria Idrees¹, Annam Sarwar², Shoab Asif¹ and Rabbia Tariq¹

¹School of Physical Therapy, Johar Institute of Professional Studies.

²DHQ Hospital Kasur.

*Corresponding Author: Dr. Muhammad Waqas

School of Physical Therapy, Johar Institute of Professional Studies.

Article Received on 10/03/2020

Article Revised on 31/03/2020

Article Accepted on 21/04/2020

ABSTRACT

Any surgical procedure may cause decrease in muscle strength of effected muscle so as in the case of episiotomy, pelvic floor muscles. Worldwide Kegel exercises are used as most effective conservative treatment for pelvic floor muscle weakness. In this study, it was found that Kegel exercises were not only helpful for pregnant ladies and in old age but also produce results in healthy and quick recovery during postpartum phase. Objective of this study was to evaluate the effects of Kegel exercises on muscle strength of pelvic floor musculature after episiotomy. For this Experimental open label comparative study 100 patients were randomly included at the Department of Physiotherapy, Fatima Memorial Hospital Shadman, Lahore. This was a time based study. The patient's overall assessment of muscle strength of pelvic floor muscles was assessed by using the Oxford Scale of MMT. Muscle strength of every patient was re-evaluated after six weeks. After analysis, it was observed that Kegel Exercises had significant effect on muscle power of pelvic. Floor muscles as measured by oxford Scale [p-value = 0.000(Significant p< 0.05)]. It was observed that there is strong significant positive association between improvement of muscle strength of pelvic floor muscles & doing Kegel exercises for six weeks after episiotomy [p-value = 0.000 (Significant p< 0.05)]. According to the present study it is concluded that the Physical therapy with Kegel Exercises is successful treatment for the weakness of pelvic floor muscles caused by Episiotomy.

KEYWORDS: Kegel exercises, pelvic floor muscles, episiotomy, manual muscle testing, pelvic floor muscle training.

INTRODUCTION

Episiotomy also known as Perineotomy, is a surgically planned incision on the perineum and the posterior vaginal wall during second stage of labor. The incision, which can be midline or at an angle from the posterior end of vulva, is performed under local anesthetic and is sutured closed after delivery. It is one of the most common medical procedures performed on women.^[1] An episiotomy can decrease the amount of pushing the mother must do during delivery. It can also decrease trauma to the vaginal tissues and expedite delivery of the baby when delivery is necessary quickly. Doctors who favor episiotomies argue that a surgical incision is easier to repair than a spontaneous irregular or extensive tear, and is likely to lead to a more favorable outcome with fewer complications. Long-term complications after episiotomy repair are common. A large proportion of women suffer short-term perineal pain and up to 20% have longer-term problems (e.g. dyspareunia).^[2] A mediolateral incision (episiotomy) may be preferable to a median (midline) incision, as the latter is associated with a higher risk of injury to the anal sphincter and the rectum.^[3] In the oblique technique, the perineal body is avoided, cutting only the vagina epithelium, skin and

muscles (transversarius and bulbospongiosus). This technique aids in avoiding trauma to the perineal body by either surgical or traumatic means.^[4] Episiotomy has been presumed to be beneficial in preventing fetal anoxia, cerebral hemorrhage, and the possibility of cerebral palsy and mental retardation. Cutting the soft tissues at the vaginal outlet has been thought to reduce direct impact on the fetal head. It has been especially advocated in the delivery of premature infants. Lobb investigated the use of episiotomy in very low birth weight infants and found that when babies of similar weight and age were considered, the routine use of episiotomy appeared to hold a significant advantage.^[5] There is evidence that episiotomy reduces the incidence of early or late postpartum urinary incontinence, and that it moderates the normal loss of pelvic floor muscle strength usually experienced after vaginal delivery. One well-designed study found a marked impairment in pelvic floor muscle strength at eight weeks postpartum in patients with mediolateral episiotomy when compared to those with spontaneous or no laceration.^[6] Kegel exercises were first by Dr. Arnold H. Kegel, who published several papers on the use of exercises for stress incontinence.^[7] Kegel first published his ideas in 1948.^[8]

Dr. Kegel reported a 93% cure rate in over 300 women using his method, which included biofeedback and an intensive exercise regime.^[9] The aim of Kegel exercises is to improve muscle tone by strengthening the pubococcygeus muscles of the pelvic floor. Kegel is a popular prescribed exercise for pregnant women to prepare the pelvic floor for physiological stresses of the later stages of pregnancy and vaginal childbirth.^[10] Kegel exercises are a series of pelvic floor muscle (PFM) exercises designed to strengthen the muscles of the pelvic floor (transversarius, bulbospongiosus, & most importantly pubococcygeus, etc).^[11] The American Pregnancy Association (APA) states that Kegel exercises can help prevent two common side effects of pregnancy. The first side effect is hemorrhoids, which are inflamed veins around the anus or lower rectum. The second is bladder leaks, which are common near the end of pregnancy. Women who practice Kegel exercises before and after pregnancy have found that childbirth is easier. The American Pregnancy Association explains that this is because strengthening Kegel muscles can help you develop the ability to control your muscles during labor and delivery.^[12] Kegel exercises are recommended by the National Institutes of Health for women with urinary stress incontinence, men who have urinary incontinence after prostate surgery and people who have fecal incontinence. Kegel exercise helps improve these conditions by preventing pelvic organ prolapse.^[13] The most common method used to assess pelvic floor muscle strength is digital palpation. To assess pelvic floor muscle strength, an examiner places two fingers into the posterior vagina at least 2 to 4 cm above the hymenal ring with the patient in lithotomy position.^[14] The patient is asked to relax and the levatorani muscles are palpated bilaterally to assess bulk and spasticity. The patient is then asked to contract the pelvic floor muscles maximally for as long as possible. Instructing the patient to "squeeze around my fingers" and/or "squeeze the muscles you would use to hold your urine or to avoid passing gas" will assist the patient in appropriately identifying the levatorani muscles. Patients should be encouraged to avoid contracting their rectus abdominus, adductor, or gluteus muscles. The presence of a contraction, the strength and duration of any contraction, and the ability of the levator muscle to elevate the examiner's fingers should all be assessed. Muscle function is then quantified using one of several scales. A 0 to 5 rating scale similar to that used for rating other skeletal muscles is used commonly.^[15]

MATERIAL AND METHODS

Study design: It was an Experimental open label comparative study. The study was conducted at the Department of Physiotherapy, Fatima Memorial Hospital Shadman Lahore. Data of 100 patients with episiotomy is included in this study. Systematic sampling was used in which data was taken on every Thursday for three months and every fifth patient was included in this study.

Sample Selection Criteria

Patients with Episiotomy, up to 35 years of age.
Both prima gravida and multi gravida.
Patients who came for follow up after Episiotomy for removal of stitches.

Exclusion Criteria

Patient above 35 years of age
Patient with previous history of C-section.

Methodology: After taking the necessary data, the muscle strength of pelvic floor muscles was noted by using oxford scale of manual muscle testing.^[15]

Score	Levatorani
0/5	No contraction
1/5	Flicker, barely perceptible
2/5	Loose hold, 1 to 2 sec
3/5	Firmer hold, 1 to 2 sec
4/5	Good squeeze, 3 to 4 sec, pulls fingers in and up loosely
5/5	Stronger squeeze, 3 to 4 sec, pulls in and up snugly

The Physiotherapy management was included

Strengthening exercises- of pelvic floor muscle (levatorani all parts). Demonstration about proper posture while breast feeding and baby handling. Cryotherapy was advised on wound site in case of soreness. The intensity, duration, and frequency of exercise should be specified and graded to allow for progression. The frequency of type of episiotomy done is as follows.

Type of Episiotomy	Frequency	Percent
Median	9	9.0
Medio-lateral	91	91.0
Total	100	100.0

Frequency of "Manual Muscle testing at baseline"

MMT at Delivery	Frequency	Percent
Gravity eliminated (G2)	4	4.0
Against gravity (G3)	92	92.0
Sub-maximal power (G4)	4	4.0
Total	100	100.0

At Follow up the assessment was done at baseline and at six weeks later. After six weeks the patient was asked about the complications she had reported earlier in the data. Any positive or negative change was noted down as a feedback of treatment given in the form of Kegel exercises. The patients were asked that whether they had performed their exercises regularly. After that muscle strength of pelvic floor muscles was assessed manually by using oxford scale of MMT.

RESULTS AND DISCUSSION

The Purpose of this study was to investigate the effects of KEGEL exercises on short and long term complications of episiotomy and strength of pelvic floor muscles. The KEGEL exercises was an effective method in terms of minimizing the pain and other complications due to episiotomy done at second stage of labor. It is approved that KEGEL exercises technique is more effective method so, this treatment method is suggested for the management of complications of episiotomy and strength of pelvic floor muscles.

In order to explore the effects of KEGEL exercises on short and long term complications of episiotomy and strength of pelvic floor muscles. Experimental open label comparative study design was used. Findings of this study were showed large improvements in management of complications of episiotomy by the scores of oxford scale. This study was the first to assess objectively the effect of KEGEL exercises on standardized measures of pelvic floor muscles severity due to episiotomy. It is found that that 58 % of reported cases had improved their muscle strength to G4 & 37% had gained normal muscle power after doing Kegel exercises for one month after Episiotomy as shown in **Table 1** and **Figure 1**.

The American Pregnancy Association states that Kegel exercises can help prevent two common side effects of pregnancy. The first side effect is hemorrhoids, which are inflamed veins around the anus or lower rectum. The second is bladder leaks, which are common near the end of pregnancy. Women who practice Kegel exercises before and after pregnancy have found that childbirth is easier. The American Pregnancy Association explains that this is because strengthening Kegel muscles can help you develop the ability to control your muscles during labor and delivery.^[12] The aim of a strength training regimen in regular skeletal muscles is to change muscle morphology by increasing the cross-sectional area, improve neuromuscular function by increasing the number of activated motor neurons and their frequency of excitation, and to improve muscle tone.^[16] The PFM are regular skeletal muscles and, therefore, recommendations for effective PFM training should be no different from that of other skeletal muscles. The theoretical rationale for intensive strength training (exercise) of the PFM is that strength training may build

up the structural support of the pelvis by elevating the levator plate to a permanent higher location inside the pelvis and by enhancing hypertrophy and stiffness of the PFM and connective tissue. This would facilitate a more effective automatic motor unit firing (neural adaptation), preventing descent during increase in abdominal pressure.^[17]

In our study, Relationship of “Parity Status” with “Muscle Strength” after six weeks of doing Kegel Exercises is calculated by Chi-Square Tests. 76% of female included in this study was multi paris and most of them gained muscle strength of G4 after six weeks of doing Kegel exercises as shown in Table 2 and Figure 2, Bar chart further elaborate the results. The p value (p value= 0.005) shows that there is significant positive association between Parity Status & muscle strength of pelvic floor muscles after performing Kegel exercises for six weeks.

The most common conservative intervention used for the prevention and treatment of UI in pre- and postnatal women is pelvic floor muscle therapy (PFMT). PFMT can be used alone, or in combination with therapies such as electrical stimulation, biofeedback, behavioral training, and vaginal cones. In a recent study in the UK, it was found that a combination of conservative interventions was often the most cost-and clinically effective approach in the management of UI.^[18]

Difference between “MMT before delivery” & “MMT after six weeks of doing Kegel Exercises” is calculated by Paired Samples Statistics for T-test. **Table 3** shows that the average muscle strength of females after doing six weeks of Kegel exercise is greater than their muscle strength reported after delivery.

Paired sample T test shows that there is significant difference in MMT after delivery and MMT after six weeks of doing Kegel exercise (p value=.000) i.e. the muscle strength of females is significantly improved after doing exercise as in **Table 4**.

Table 4 and **Figure 3** shows a significant positive correlation between MMT after delivery and MMT after doing one month of Kegel exercise as presented in **Table 5**.

Table 1: Frequency of “Manual muscle testing after six weeks.

MMT after six weeks	Frequency	Percent
Against gravity (G3)	5	5.0
Sub maximal power (G4)	58	58.0
Normal (G5)	37	37.0
Total	100	100.0

Table 2: Relationship of “Parity Status” with “Muscle Strength” after six weeks of doing Kegel Exercises.

Parity Status	MMT after six weeks			Total
	Againstgravity (G3)	Sub-maximal power (G4)	Normal (G5)	
Prima Gravid	2	7	15	24
Multi Gravid	3	51	22	76
Total	5	58	37	100
Chi-Square Tests				
	Value	Df.	Asymp.Sig(2-sided)	
Pearson Chi –Square	10.778	2	.005	
Total	100			

Table 3: Relationship between “MMT before delivery” & “MMT after six weeks of doing Kegel Exercises.

Paired Samples Statistics for T-test				
	Mean	N	Std. Deviation	Std. Error Mean
MMT after delivery	3.00	100	0.284	0.028
MMT after six weeks	4.32	100	0.566	0.057

Table 4: Paired sample T –test.

	Paired Differences			95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
MMT after delivery – MMT after six weeks	1.320	.490	.049	-1.417	-1.223	-26.944	99	0.000

Table 5 Paired Samples Correlations

	N	Correlation	Sig.
MMT after delivery & MMT after one month	100	0.502	0.000

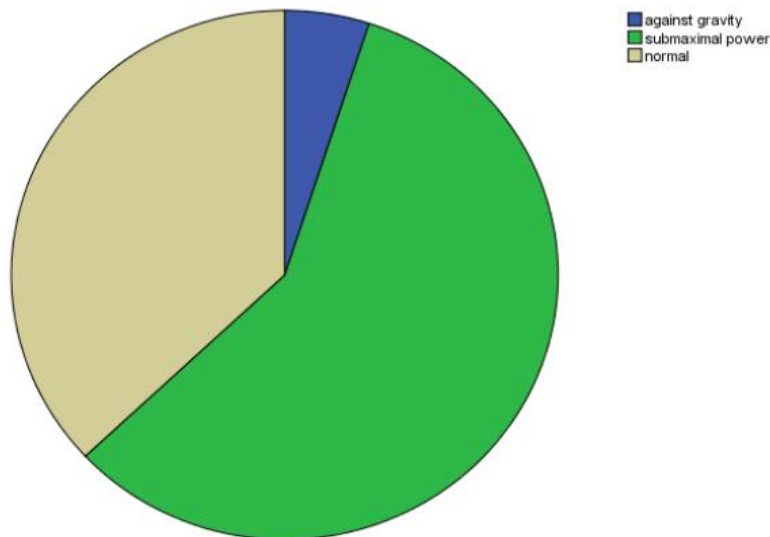


Figure 1: MMT after six weeks.

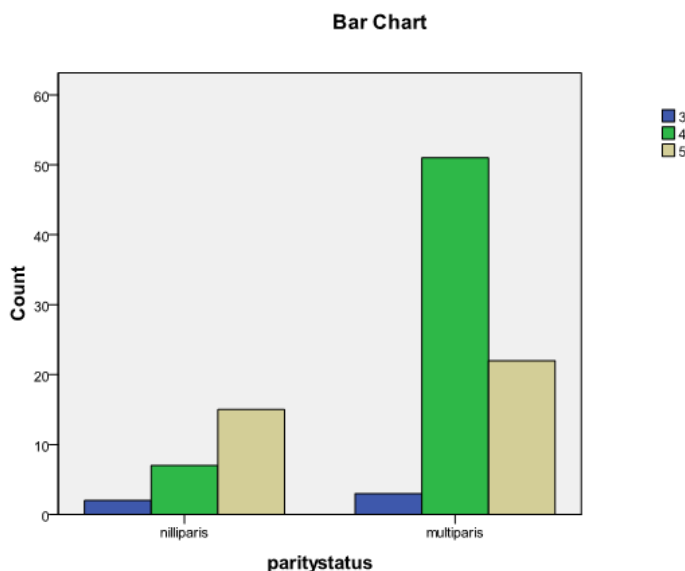


Figure 2: Bar chart showing Relationship of “Parity Status” with “Muscle Strength” after six weeks of doing Kegel Exercises.

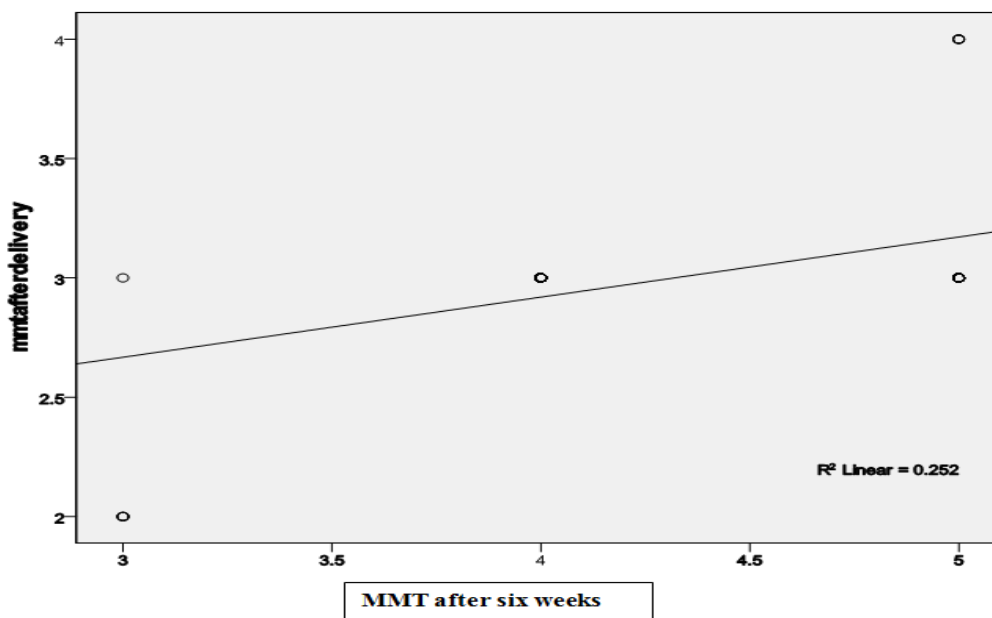


Figure 3: Scatter Diagram showing Relationship between “MMT before delivery” & “MMT after six weeks of doing Kegel Exercises”

CONCLUSION

According to the present study it is concluded that the Physical therapy with Kegel Exercises is successful treatment for the weakness of pelvic floor muscles caused by Episiotomy. The Physical therapy with Kegel Exercises is an effective method in terms of improvement in wellbeing & health and most importantly increase in muscle strength of effected muscles. So this treatment method is suggested for the management of pelvic floor muscle weakness especially caused by Episiotomy.

REFERENCES

1. Chang SR, Chen KH, Lin HH, Chao YM, Lai YH. Comparison of the effects of episiotomy and no episiotomy on pain, urinary incontinence, and sexual function 3 months postpartum. A prospective follow-up study. *Int. J. Nurs. Stud.* 2011; 48(4): 409-18.
2. Buhling KJ, Schmidt S, Robinson JN, et al. Rate of dyspareunia after delivery in primiparae according to mode of delivery. *Eur. J. Obstet. Gynecol. Reprod. Biol.* 2006; 24: 42-46.

3. American College of Obstetricians-Gynecologists ACOG Practice Bulletin. Episiotomy. Clinical Management Guidelines for Obstetrician-Gynecologists. 2006; 107(4): 957-62.
4. Carroli G, Mignini L. Episiotomy for vaginal birth. Cochrane Database Syst. Rev. 2009; 21(1):CD000081.
5. Thacker SB, Banta HA. Benefits and risks of episiotomy: An interpretative review of the English language literature, 1860–1980. *Obstet. Gynecol. Survey.* 1980; 38: 322.
6. Rockner G, Jonasson A, Olund A. The effect of mediolateral episiotomy at delivery on pelvic floor muscle strength evaluated with vaginal cones. *Acta. Obstet. Gynecol. Scand.* 1991; 70: 51-54.
7. Kegel A. Stress Incontinence and Genital Relaxation: A non-surgical Method of Increasing the Tone of Sphincters and Supporting Structures. CIBA Symposium, 1952; p. 35.
8. Kegel AH. The nonsurgical treatment of genital relaxation; use of the perineometer as an aid in restoring anatomic and functional structure. *Ann West Med Surg.* 1948; 2(5):213-6.
9. Jones E.G. and Kegel AH. Treatment of urinary stress incontinence with results in 117 patients treated by active exercise of pubococcygeal. *Surg Gynecol Obstet.* 1952; 94(2): 179-88.
10. Kegel AH, Arnold H. Progressive Resistance Exercise to the Functional Restoration of the Perineal Muscles. *Am. J. Obst. & Gynecol.* 1948; 56 (8): 238-248.
11. Rogers RG. Clinical practice. Urinary stress incontinence in women. *N. Engl. J. Med.* 2008; 358:1029-1036.
12. American Pregnancy Association: Kegel Exercises.
13. National Institute of Health: Kegel Exercise.
14. Toglia M, DeLancy JOL. Anal incontinence and the obstetrician-gynecologist. *Obstet. Gynecol.* 1994; 84:731-740.
15. Sampselle CM, Brink CA, Wells TJ. Digital measurement of pelvic muscle strength in childbearing women. *Nurs. Res.* 1989; 38:134-138.
16. DiNubile NA. Strength training. *Clin Sports Med.* 1991; 10:33–62.
17. Kari Bø. Pelvic floor muscle training is effective in treatment of female stress urinary incontinence, but how does it work. *Int. Uro. gynecol. J.* 2004; 15: 76–84.
18. Imamura M, Abrams P, et al. Systematic review and economic modeling of the effectiveness and cost effectiveness of non-surgical treatments for women with stress urinary incontinence. *Health technology assessment.* 2010; 14: 40.