

Pelvic floor exercises – A clinical study

Manidip Pal

Associate Professor, Obstetrics & Gynecology, College of Medicine & JNM Hospital, WBUHS; Kalyani, Nadia, West Bengal, India

Submitted: 08-11-2014

Revised: 31-01-2014

Published: 10-03-2014

ABSTRACT

Objective: To assess the effectiveness of pelvic floor exercise. **Materials and methods:** Hundred (100) patients of pelvic organ prolapse (POP), stress urinary incontinence (SUI) and overactive bladder (OAB) were included. They were advised pelvic floor exercise in stepwise incremental manner. Each time exercise comprised of 10 seconds holding up and 10 seconds relaxation. To start with it was 5 times each in the morning, noon, evening and night; making it 20 times per day. Every week 5 times increment. So by 5th week it was 25 times each in the morning, noon, evening and night; making it 100 times per day. After 6 months patients were assessed by their subjective feeling of improvement and clinical assessment. **Results:** After 6 months of therapy patients subjective feeling of improvement for POP, SUI and OAB were 73%, 84.1%, 58.3% respectively; though objective assessment did not show this much improvement. **Conclusion:** Pelvic floor exercise is an easy, effective and non-invasive tool that can be considered as first line therapy for these patients.

Key words: Pelvic floor exercise, Pelvic floor muscle training, Kegel exercise, POP, SUI, OAB

Access this article online

Website:

<http://nepjol.info/index.php/AJMS>

INTRODUCTION

Pelvic floor exercise or pelvic floor muscle training (PFMT) is one mode of conservative management for pelvic organ prolapse (mild degree) and many female urinary problems. Arthur Kegel, a German gynaecologist, has started this inventory exercises in 1948 for benefit of restoring the function of pelvic muscles after parturition.¹ Hence it is also known as Kegel exercises. After getting satisfactory result for this condition, it has been widely practiced for other conditions also e.g. pelvic organ prolapse, stress urinary incontinence, overactive bladder etc. Present study aims at evaluating this pelvic floor exercise schedule in a little bit modified form.

MATERIALS & METHODS

Patients attending gynecology OPD with the complaint of pelvic organ prolapse (POP), stress urinary incontinence (SUI) and overactive bladder (OAB) were included. Proper history was taken. Prolapse patients were classified as per the POP-Q systems and only stage I patients were included. For all cases with urinary problems, urine for

culture & sensitivity was sent. According to the report, if infection was present, it was treated with respective antibiotics. After the infection was controlled patients were evaluated again. If urinary complains were still persisting then only they were included in the study. The urinary complain was assessed by asking the patients to do a 3-day frequency/volume bladder diary. The same 3-day bladder diary they performed again at the end of 6 months for improvement assessment. Other illnesses e.g. diabetes mellitus, hypertension etc. are excluded. Total 100 patients were included in the study. Informed consent was obtained. They were asked to do pelvic floor exercises. Proper way of performing the exercises are: squeeze around the urethra, vagina & rectum and inward (cranial) lift, elevating the pelvic floor muscles.² Our hospital is located near to a railway station. So the patients were made understood the exercise by giving a story of galloping local train. Local train has no toilet facility. Suppose you have a desire to pass urine, stool; but you know the train will not stop for coming ½ an hour – Then what you will do? They usually said that they will hold the urine, stool till the train stopped. Next question was asked - how will you hold the urine, stool? They describe in their own ways, but gist of

Address for Correspondence:

Dr Manidip Pal, Associate Professor, Obstetrics & Gynecology, College of Medicine & JNM Hospital, WBUHS; Kalyani, Nadia, West Bengal – 741235, India.

E-mail: manideep2b@yahoo.com; Phone: +919051678490.

© Copyright AJMS

everyone was by pulling up the anus, urethra inside. Then we say that exactly the same thing you do in an exercise manner. Pull anus, vagina, urethra up inside, hold it for 10 seconds and then relax it. After 10 seconds relaxation, again hold it up and go on doing like this. Simultaneously they were also warned that this was an exercise; normal voiding and passing stool should be done as usual. Easy way of lifting it up for 10 seconds was count up to 10 slowly which makes it 10 seconds – this hint was also given to them. Author has personally described the procedure and made them understood it.

One time exercise comprised one bout of lifting up and one bout of relaxation. Initially they were asked to do 5 times in the morning, 5 times in the noon time, 5 times in the evening and 5 times in the night – making it 20 times per day. After one week they were doing 10 times in the morning, 10 times in the noon time, 10 times in the evening and 10 times in the night – making it 40 times per day. Like this way they were increasing 5 times during each session every week till they reached 25 times in each session. So in the 5th week they were doing 25 times in the morning, 25 times in the noon time, 25 times in the evening and 25 times in the night – making it 100 times per day. Once they reached 100 times per day, no more increment was advised. Patients were followed up at 1 week, 1 month, 3 months and 6 months. One week & one month visit was mainly to know whether they could do the exercise properly or not. In subsequent follow up visits information about their prolapse and urinary problems were sought. Patient’s subjective response was assessed by asking them to category their feeling as 1) very much improved, 2) improved, 3) no improvement, 4) worse than before. Objectively patients were assessed by POP-Q staging and bladder diary.

RESULTS

Total 100 patients with the diagnosis of POP-Q stage I, SUI, OAB were included. Seventy four (74)% of patients were in between 46-65 years with highest parity was seen P₃ (59) (Table 1). Among the 100 patients 66 patients were suffering from POP (POP-Q stage I), 21 patients had SUI and 13 had OAB.

At the end of 6 months therapy patient’s subjective response showed that in POP category 73% patients felt that they had improvement; in SUI category 84.1% patients felt that they had improvement; and in OAB category 58.3% patients felt that they had improvement (Table 2); though objective assessment did not corroborate so much improvement (Table 3a, b, c). In OAB patients’ where improvement was noticed, frequency (both day & night time) was improved by about 50%.

Table 1: Age & Parity

Age	No.	Parity	No.
<35	4	P ₀	0
35-45	19	P ₁	1
46-55	49	P ₂	17
56-65	25	P ₃	59
>65	3	P ₄	16
Total	100	P ₅	7
		Total	100

DISCUSSION

Weak or damaged pelvic floor muscles can predispose to prolapse. Recent evidence suggests pelvic floor exercises may help improve a mild prolapse or limit the progression of mild prolapse and related symptoms.^{3,4} Pelvic floor muscle training resulted in significant anatomic improvement of anterior and posterior vaginal wall prolapse and better muscle strength, endurance & electromyography parameters.⁵ USFDA also quoted pelvic floor exercises as one of the non-surgical treatment modality for the pelvic organ prolapse.⁶ The women doing these muscle training were significantly more likely to have an improved prolapse stage (45% versus 0%, p = 0.038) and were significantly more likely to say their prolapse was better(63% versus 24%, p = 0.012) than the control.⁷ Cochrane database review 2011 revealed that PFMT increases the chance of an improvement in prolapse stage by 17% compared to no PFMT.⁸ In present study 73% POP patients had a subjective feeling of improvement and clinically stage I POP became stage 0 in 14% cases.

In treating stress urinary incontinence, role of Kegel’s exercise is already been proved.⁹ It works in many ways - (1) women learn to consciously pre-contract the pelvic floor muscles before and during increases intra-abdominal pressure to prevent leakage, (2) strength training builds up long-lasting muscle volume and thus provides structural support and (3) abdominal muscle training indirectly strengthens the pelvic floor muscles.¹⁰ Subjective improvement rate of Kegel’s exercises in SUI are reported as 65%¹¹, 85%¹² etc. In a randomized trial 50 patients with genuine SUI were subjected to either Kegel’s exercises or surgery. During follow up, in pelvic floor exercise group subjective improvement was like this - 3 patients felt cured, 14 felt improved and 7 were unchanged. At 1 year follow up, 42% of Kegel’s group did not want surgery anymore. Extended follow-up up to 4-8 years showed that everybody in this group was satisfied with their improvement.¹³ In present study 84.1% SUI patients felt improvement. Pelvic floor exercise is least invasive and without any undesirable side effects, which leads to either improvement or complete cure of SUI in 80-85% of cases.¹⁴

Table 2: Effect of Kegel exercises after 6 months (Subjective effect)

Patient's subjective feeling	Subjective effect					
	POP	Percentage	SUI	Percentage	OAB	Percentage
Very much improved	14	22.2%	4	21%	1	8.3%
Improved	32	50.8%	12	63.1%	6	50%
No improvement	17	27%	3	15.8%	5	41.6%
Worse than before	0	-	0	-	0	-
Total	63		19		12	
Did not turn up for follow up	3		2		1	

Table 3a: Effect of Kegel exercises after 6 months – Objective assessment-Pelvic organ prolapse

Objective effect				
POP-Q staging	At the beginning		After 6 months	
Stage I	All	Stage 0	9 (14%)	
		Stage I	50 (79.4%)	
		Stage II	4 (6.3%)	
*3 lost to follow-up				

Table 3b: Effect of Kegel exercises after 6 months – Objective assessment-Stress urinary incontinence

Objective effect				
Incontinence episode frequency (IEF)	At the beginning		After 6 months	
1-2/day	3 (14.3%)	No SUI	2 (10.5%)	
2-3/day	8 (38.1%)	0-1/day	8 (42.1%)	
3-4/day	10 (47.6%)	1-2/day	6 (31.6%)	
*2 lost to follow-up		3-4/day	3 (15.8%)	

Table 3c: Effect of Kegel exercises after 6 months – Objective assessment-Overactive bladder

Objective effect		
OAB symptoms	At the beginning	After 6 months
Urgency	13	Present-4 (33%) No urgency-8 (66%)
Urgency urinary incontinence (UUI)	9	Present-1 (12.5%) No UUI-7 (87.5%)
*1 lost to follow-up		

Regarding overactive bladder evidence suggests that physiotherapy techniques may be beneficial.¹⁵ Pelvic floor exercises decrease the intensity of detrusor contractions without changing the maximum urethral closure pressure.¹⁶ Bladder retraining and pelvic floor muscle exercises are first-line treatments for persons without cognitive impairment who present with urge incontinence.¹⁷ Cochrane database review 2010 also recommended PFMT as first-line conservative management programmes for women with stress, urge, or mixed urinary incontinence.¹⁸ Symptomatic

improvement was noted in 61% urgency, frequency & 75% in nocturia.¹⁹ In present study 58.3% OAB patients felt that they have improvement (subjective) and objectively frequency (both day & night time) was improved in 50% patients, urgency was reduced in 66% patients and urgency urinary incontinence was reduced in 87.5% patients.

One of the short-fall of the present study is that there is no control group. In future larger trial may be multi-centric, can be conducted along-with the control group.

To get the optimum results, this exercises need to be performed correctly. Proper way of performing the exercises are: squeeze around pelvic openings and inward (cranial) lift, elevating the pelvic plate.² Schedule of the exercise is 45 to 50 exercises per day that has to be spaced across in 2 to 5 sessions to avoid muscle fatigue.⁹ It can be done as 6-8 seconds perineal muscle contractions with 6 seconds rest in between, 15 minutes session, twice daily.²⁰ Another trial said pelvic floor muscle exercises twice a day, in the morning and in the evening, with 15-20 contractions.¹⁴ Initially practice in the lying position and later on in the sitting or standing position. In present study patients were asked to achieve 100 times exercises per day by 5th week in an incremental manner. This was spaced in 4 sessions in a day – 25 times in each session. Patient could tolerate this jolly well without any complaint.

It is better to do the Kegel exercise under supervision of a physiotherapist as correct technique of exercise to strengthen the responsible muscle is necessary to get the required result. Performing the exercise without supervision resulted in 30% improper exercises.²¹ Six months of supervised PFMT has benefits in terms of anatomical and symptom improvement immediately post-intervention.⁷ In a randomized control trial SUI patients were initially taught the PFMT by physiotherapist and then they followed the advice at home which was supervised intermittently over 12 weeks period. Result after 12 weeks showed reduced bladder neck mobility during coughing and increased cross-sectional area of the urethra as assessed by ultrasonography.²² Primipara women with urinary incontinence, 10-16 weeks after term vaginal delivery was subjected to home based PFMT and it was found to be effective.²³ In our setup we don't have

the facility of trained physiotherapist, hence home-based exercises with intermittent supervision was done.

CONCLUSION

Pelvic floor exercise is an easy and effective treatment modality for the urogynecologic (POP, SUI and OAB) patients. It is to be advised as first line of treatment and this holds true for the resource poor countries.

REFERENCES

1. Kegel AH. Progressive resistance exercise in the functional restoration of the perineal muscles. *Am J Obstet Gynecol* 1948; 56(2):238-248.
2. Kegel AH. Stress incontinence and genital relaxation; a nonsurgical method of increasing the tone of sphincters and their supporting structures. *Ciba Clin Symp* 1952; 4(2):35-51.
3. <http://www.nhs.uk/Conditions/Prolapse-of-the-uterus/Pages/Treatment.aspx>
4. Gleason JL, Richter HE, Varner RE. Pelvic organ prolapse. In: Berek KJS, ed. *Berek & Novak's Gynecology*. 15th edn. Philadelphia: Lippincott Williams & Wilkins, 2012, pp 906-939.
5. Stüpp L, Resende AP, Oliveira E, Castro RA, Girão MJ and Sartori MG. Pelvic floor muscle training for treatment of pelvic organ prolapse: an assessor-blinded randomized controlled trial. *Int Urogynecol J* 2011; 22(10):1233-1239.
6. <http://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/ImplantsandProsthetics/UroGynSurgicalMesh/ucm262299.htm>
7. Hagen S, Stark D, Glazener C, Sinclair L and Ramsay I. A randomized controlled trial of pelvic floor muscle training for stages I and II pelvic organ prolapse. *Int Urogynecol J Pelvic Floor Dysfunct* 2009; 20(1):45-51.
8. Hagen S and Stark D. Conservative prevention and management of pelvic organ prolapse in women. *Cochrane Database Syst Rev* 2011; 12:CD003882.
9. Hay Smith J, Berghmans B, Burgio K, et al. Adult conservative management. In: Abrams P, Cardozo L, Khoury S, et al, (eds.) *Incontinence, 4th international consultation on incontinence*. Paris: Health Publications Ltd; 2009, 1025-1120.
10. Bo K. Pelvic floor muscle training is effective in treatment of female stress urinary incontinence, but how does it work? *Int Urogynaecol J Pelvic Floor Dysfunct* 2004; 15(2): 76-84.
11. Henalla SM, Kirwan P, Castleden CM, Hutchins CJ and Breeson AJ. The effects of pelvic floor exercises in the treatment of genuine urinary stress incontinence in women at two hospitals. *Br J Obstet Gynecol* 1988; 95(6):602-606.
12. Largo-Janssen TL, Debruyne FM, Smiths AJ and van Weel C. Controlled trial of pelvic floor exercises in the treatment of urinary stress incontinence in general practice. *Br J Gen Pract* 1991; 41(352):445-449.
13. Klarskov P, Belving D, Bischoff N, Dorph S, Gerstenberg T, Okholm B, et al. Pelvic floor exercise versus surgery for female urinary stress incontinence. *Urol Int* 1986; 41(2):129-132.
14. Parezanović-Ilić K, Jeremić B, Mladenović-Segedi L, Arsenijević S and Jevtić M. Physical therapy in the treatment of stress urinary incontinence. *Srp Arh Celok Lek* 2011; 139(9-10):638-644.
15. Greer JA, Smith AL and Arya LA. Pelvic floor muscle training for urgency urinary incontinence in women: a systematic review. *Int Urogynecol J* 2012; 23(6):687-697.
16. Deffieux X, Billecocq S, Demoulin G, Rivain AL, Trichot C and Thubert T. Pelvic floor rehabilitation for female urinary incontinence: mechanisms of action. *Prog Urol* 2013; 23(8):491-501.
17. Hersh L and Salzman B. Clinical management of urinary incontinence in women. *Am Fam Physician* 2013; 87(9):634-640.
18. Dumoulin C and Hay-Smith J. Pelvic floor muscle training versus no treatment, or inactive control treatments, for urinary incontinence in women. *Cochrane Database Syst Rev* 2010 Jan 20;(1):CD005654.
19. Petros PP and Skilling PM. Pelvic floor rehabilitation in the female according to the integral theory of female urinary incontinence. First report. *Eur J Obstet Gynecol Reprod Biol* 2001; 94(2):264-269.
20. Kashanian M, Ali SS, Nazemi M and Bahasadri S. Evaluation of the effect of pelvic floor muscle training (PFMT or Kegel exercise) and assisted pelvic floor muscle training (APFMT) by a resistance device (Kegelmaster device) on the urinary incontinence in women: a randomized trial. *Eur J Obstet Gynecol Reprod Biol* 2011; 159(1):218-223.
21. <http://physiotherapy.org.nz/your-health/blogs/your-pelvic-floor-and-physiotherapy/pelvic-organ-prolapse-what-is-it-and-how-can-physio-help/>
22. McLean L, Varette K, Gentilcore-Saulnier E, Harvey MA, Baker K and Sauerbrei E. Pelvic floor muscle training in women with stress urinary incontinence causes hypertrophy of the urethral sphincters and reduces bladder neck mobility during coughing. *Neurourol Urodyn* 2013; 32(8):1096-1102.
23. Ahlund S, Nordgren B, Wilander EL, Wiklund I and Fridén C. Is home-based pelvic floor muscle training effective in treatment of urinary incontinence after birth in primiparous women? A randomized controlled trial. *Acta Obstet Gynecol Scand* 2013; 92(8):909-915.

Authors Contribution:

MP – Data acquisition, designed and conducted the study, manuscript preparation, editing, proof reading and approval.

Source of Support: Nil, Conflict of Interest: None declared.