

Role of Interferential Therapy along with Pelvic Floor Exercises in the Management of Stress Incontinence

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Abstract

Background: Stress Urinary Incontinence (SUI) is one of the uncomfortable problems of women. Interferential Therapy with Pelvic floor exercise (Kegel exercise) is said to be effective for the management of SUI. Hence it was tried to see the effects of this method in women of Gujrat, India. **Methods:** A total of 60 females having Stress Incontinence were treated with Kegel exercises along with Interferential Therapy for one month and compared with pretreatment status. **Results:** Statistically significant improvement was observed in comparison to pretreatment cases after Interferential Therapy with Kegel exercise in Perineometry power. **Conclusion:** It can be concluded that Interferential Therapy with Kegel exercise is effective for controlling SUI in the study population.

Keywords: Interferential Therapy, Kegal exercise, Perineometer power, Stress incontinence

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Introduction

The most common type of Urinary incontinence in women is Stress Urinary incontinence. Urinary incontinence is silent disability. Approximately 50% of American women have experienced incontinence.¹ A recent survey of four European countries showed a prevalence of more than 30% in 3 out of 4 nations. The International Continence Society recently defined the stress urinary incontinence as the complaint of involuntary leakage of urine during effort or exertion like sneezing or coughing.² The main cause of Stress urinary incontinence is weakness of pelvic floor muscles supporting the proximal urethra. Hence, the intravesical pressure exceeds the maximal urethral pressure during exertion which results in increased intra-abdominal pressure.³

The phrase 'Stress incontinence' is used to denote a Symptom, a Sign and a Condition Symptom, i.e. involuntary leakage of urine during effort, Sign i.e. An involuntary spurt dribble or droplet of urine is observed to leave

the urethra immediately on an increase in intra abdominal pressure, Condition i.e. Genuine Stress Incontinence (GSI) is the term coined to denote the condition in which there is involuntary leakage of urine when, in the absence of a detrusor contraction, the intravesical pressure exceeds the maximum urethral pressure. Essentially the detrusor activity is normal, but the urethral closure mechanism is incompetent.

Stress urinary incontinence (SUI) affects the quality of life of at least one third of women. This problem is more common in India, where women usually do not seek treatment for their reproductive health problems and do not vocalize their symptoms. There is a "culture of silence" and low consultation rate among Indian women regarding such problems.⁴ SUI also has a large economic impact on health systems necessitating the implementation of simple and cost-effective management plans.⁵

Dr. Arnold Kegel, described a pelvic floor exercise, more commonly called a Kegel exercise, consists of repeatedly contracting and relaxing the muscles that form part of the pelvic

floor, now sometimes colloquially referred to as the "Kegel muscles".⁶ Interferential Therapy is a form of neuromuscular stimulation, which can be applied to pelvic floor muscles. Interferential Therapy may be used as an adjunct or alone in treatment of urinary incontinence.⁷

Both, pelvic floor exercise & Interferential current therapy are effective in conservative treatment of Genuine Stress Incontinence. In clinical practice, Interferential therapy is used as an adjunct to Pelvic Floor Exercises.⁸ Properly designed and documented studies are not available in Indian settings in literature. Hence the present study was conducted.

Material & Methods

Total 60 subjects who volunteered and consented to participate in the trial were included in this study. This study was conducted in Physiotherapy Department of Government Physiotherapy College, Government Spine Institute, Civil Hospital Ahmadabad. Patients were given treatment in Physiotherapy department of Government Physiotherapy College, Patients who stayed far off from Civil Hospital, were given treatment in the clinics, nearer to their residence, where similar Interferential Therapy unit "Ventrodyne" was available. Private Gynecologists also referred many cases of Stress Incontinence, from different area during 2008 to 2012.

Patients received Kegel exercise for one month, and twelve sitting of Interferential therapy on every alternate day. Maximum contraction of Pelvic Floor Muscles (Power) in centimeter of water (cm of H₂O), & Maximum holding capacity of Pelvic Floor Muscles in Seconds (endurance) were assessed by Perineometer before starting the treatment and after finishing the treatment. All subjects are positioned in crook lying with neutral lumbar spine. The vaginal probe covered with condom is inserted into patient's vagina at the level of Levator ani muscles. Patient was instructed to 'squeeze-strongly and 'hold' as long as possible, or they were instructed to contract the muscles as if they were trying to stop midstream urination. All subjects were instructed to relax abdomen, glutei muscles and not to hold the breath, and not to strain during contraction of the perineum. Once they understood the instructions thoroughly, patients relaxed for ten seconds.

Patients instructed to contract the same muscles on command. The maximum power (cm H₂O) was recorded when patient contracts as hard as possible. Patient is allowed to rest for 10 seconds before testing for endurance. Then during the sustained contraction, endurance was recorded in sec.^{3,6}

Interferential Therapy

Interferential Therapy was administered using "Ventrodyne" – model of Interferential Therapy to all the cases. Carbon electrode of size (4x10 cm) after applying conducting gel is used. The output current used was 0–90MA. The output frequency consisted of channel I with 4000Hz – 4250 Hz and Channel II with 4000 Hz (constant). Interferential consisted of base with 0 to 100 Hz and spectrum with 0 to 150 Hz. Position of the patient is lying in comfortable position with the area to be treated adequately supported, exposed and relaxed.

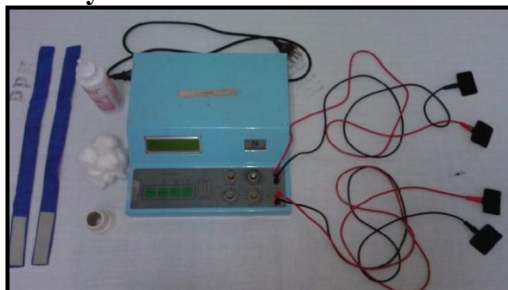
Four electrodes placed according to Savage position. Two electrodes placed on the lower abdomen just above the outer half of the inguinal ligament. The other two electrodes placed on the upper part of inner aspect of thigh near the origin of adductor muscles to direct the current through pelvic floor muscles with the interference point at the urethral sphincter. Electrodes secured with adhesive tapes. After setting the precise frequencies, the intensity control switched on. Intensity increased till patient felt prickling sensation. After the completion of treatment, the intensity knob turned to zero. Electrodes removed from the treatment area. Vector–90 technique intended to increase the area where effective stimulation occurs. The intensity of one circuit changes very slowly with respect to other. Triangular pulse used to avoid nerve accommodation. A rhythmic sweep frequency of 10 to 50 hertz applied for 20 minutes on every alternate day to avoid early fatigue of pelvic floor muscles and perineal muscles.^{2,6,7,8}

Kegel exercise^{2,6,7,8}

Subject is advised to start and stop midstream flow of urine. Not to repeat it frequently. When urination is complete the patient is advised to do the same movement again and hold for 2 sec. Moreover, they were also asked to attempt to draw vagina and anus upward and inward. Contract pelvic floor muscle and hold the

contraction for 5 second and relax for 5 second repeat this for 5 times. Increase this regime up to 10 sec contraction hold and 10 sec relaxation.

Photograph -1: Interferential Therapy Unit “Vectrodyne”



Photograph -2: Treatment with Interferential Therapy



Results

Mean PRM (Perineometer power) increases after treatment with Kegel exercise with IFT up to 22%. The mean perineometer power increased from 20.58 ± 3.43 to 25.02 ± 3.31 . It indicates improvement in mean of power by 4.43 (Figure -1). The improvement was highly significant ($p < 0.05$) and the correlation was positive (0.88). Endurance time mean increased 92% after Treatment. Mean endurance increased from 4.25 ± 0.91 to 8.18 ± 1.87 which was statistically highly significant ($p < 0.05$). The improvement in endurance time was 3.93. It indicates that Kegel + IFT treatment doubled mean endurance time (Figure -2).

Figure -1: Pre and post treatment PRM

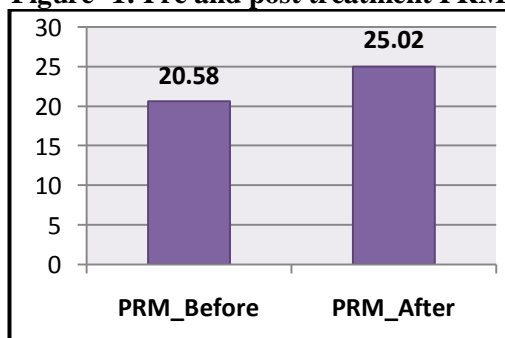
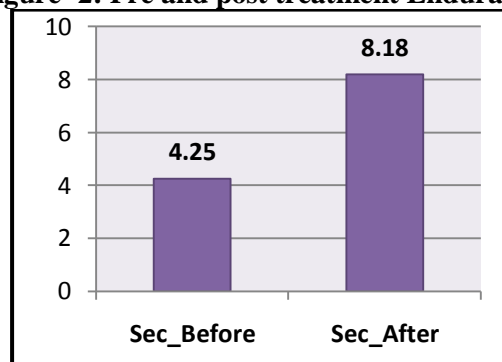


Figure -2: Pre and post treatment Endurance



Discussion

Physiotherapy is a dynamic and ever growing branch of modern medicines with varied clinical application in treatment and rehabilitation of patients suffering from various diseases. This study aimed for assessing the effect of Interferential therapy with Kegel exercises in the management of Genuine Stress Incontinence in women. Present study shows improvement in power and endurance time of pelvic floor muscle in patients who were treated with Kegel exercises along with Interferential Therapy.

Cavkaytar S et al conducted study to assess Kegel exercise. They observed 41.2% improvement in women suffering from mixed urinary incontinence while in case of stress urinary continence the percentage of improvement was 68.4%. They concluded that even home based Kegel exercise if suitably trained is useful for the management of stress urinary incontinence and there is no need of supervision.⁹ Bo K, Talseth T and Holme I in a single blind, randomized controlled trial of the pelvic floor exercises, electrical stimulation, vaginal cones and no treatment category for the management of genuine stress incontinence observed that pelvic floor muscle training was better than other methods.¹⁰ Rodrigo A Castro also had the similar conclusion and recommended that pelvic floor muscle exercise should be offered as the first choice of treatment for the management of stress urinary incontinence.¹¹ Lagro-Janssen et al observed 85% cure rate after pelvic floor muscle training but as far as complete dryness is concerned the success rate was only 21%.¹² Above studies indicates usefulness of Kegel exercise for the management of urinary incontinence and we

also observed the utility of Kegel exercise with added improvement if Interferential Therapy is used.

Conclusion

Combination of IFT and Kegel exercises is associated with increase in strength and endurance in pelvic floor muscles. Increase in endurance translates in to better holding capacity and less or no episode of leakage. It can be concluded that Interferential Therapy with Kegel exercise is effective for controlling SUI in the study population.

Conflict of Interest: None declared

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Ethical Permission: Obtained

References

1. Melville JL, Katon W, Delany Newton K. Urinary incontinence in US Women. Arch Intern Med. 2005;165,537-542. [PubMed] <http://dx.doi.org/10.1001/archinte.165.5.537>
2. Dutchman M, Wustler M. Stress urinary incontinence in women: Diagnosis and medical management. International Urogynaecology Journal. 2002;9(4):210-3.
3. Deborah HT Chou, Cara Adams, R Edward Varner, Betty Denton. Pelvic floor muscle exercises in treatment of Anatomical Urinary Stress Incontinence. Phys Ther. 1988;68:652-655. [PubMed]
4. Baranitharan R, Mahalakshmi V. Prevalence of type of urinary incontinence and their association with types of delivery. Indian Journal of Physiotherapy and Occupational Therapy. 2009;3(4):28-36.
5. Wagner TH, Hu TW. Economic costs of urinary incontinence in 1995. Urology Dysfunct. 1998;51:355-61. [PubMed] [http://dx.doi.org/10.1016/S0090-4295\(97\)00623-7](http://dx.doi.org/10.1016/S0090-4295(97)00623-7)
6. Kegel AH. Progressive resistance exercises in the functional restoration of the perineal muscles. Am J Obstet Gynecol. 1948;56(2):238-48. [PubMed]
7. Choarelli PE and Kafe DRO. Physiotherapy for the pelyic floor. Aust J Physiother. 1981;27(4):103-108. [PubMed] [http://dx.doi.org/10.1016/S0004-9514\(14\)60750-9](http://dx.doi.org/10.1016/S0004-9514(14)60750-9)
8. Dumoulin C, Seaborne DE, Quirion-DeGirardi C, Sullivan SJ. Pelvic-floor rehabilitation, part 2: Pelvic-floor reeducation with interferential current and exercise in the treatment of genuine stress incontinence in postpartum women—a cohort study. Phys Ther 1995 Dec; 75(12):1075-81.
9. Cavkaytar S, Kokanali MK, Topcu HO, Aksakal OS, Doğanay M. Effect of home-based Kegel exercises on quality of life in women with stress and mixed urinary incontinence. J Obstet Gynaec.2014;29:1-4. [PubMed]<http://dx.doi.org/10.3109/01443615.2014.960831>
10. Hay-Smith EJ, Bø Berghmans LC, Hendriks HJ, de Bie RA, van Waalwijk van Doorn ES. Pelvic floor muscle training for urinary incontinence in women. Cochrane Database Syst Rev. 2007;(1):CD001407. [PubMed] <http://dx.doi.org/10.1002/9780470692127.ch4>
11. Castro RA, Arruda RM, Zanetti MR, Santos PD, Sartori MG, Girão MJ. Single-blind, randomized, controlled trial of pelvic floor muscle training, electrical stimulation, vaginal cones, and no active treatment in the management of stress urinary incontinence. Clinics (Sao Paulo). 2008;63(4):465-72. <http://dx.doi.org/10.1590/S1807-59322008000400009>
12. Lagro-Janssen TL, Debruyne FM, Smits AJ, van Weel C. Controlled trial of pelvic floor exercises in the treatment of urinary stress incontinence in general practice. Br J Gen Pract. 1991;41:445–49. [PubMed]