

Research article

Effects of Kinesiotaping along with abdomen and pelvic floor exercise on diastasis recti abdominis for postpartum women in normal delivery versus LSCS

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ABSTRACT

Introduction and Aim: Women are prone to massive stretching on the abdomen at postpartum period. Hence, the need for the study is to determine the prevalence of diastasis recti abdominis at postpartum period. The aim of the study is to increase the abdominal strength among postpartum women with DRAM (Diastasis Recti Abdominis Muscle) by abdominal and pelvic floor exercise along with Kinesiotaping (KT).

Methodology: A total of 50 subjects with diastasis recti were selected based on selection criteria, divided into two groups – group A with 25 subjects who have undergone Normal Vaginal Delivery (NVD) and group B with 25 subjects who have undergone Lower Section Caesarian Section (LSCS). The reason for the review was disclosed to the patient and definite concern was acquired, in view of particular testing technique. Pre-tests were done using Vernier calipers, followed with pre-test intervention procedures started with abdomen exercises (Abdominal tuck-in), SLR (Straight Leg Raise) and pelvic floor exercise (pelvic bridging and Kegel's exercises). The activities were done for 30 minutes each day 2 meetings for a considerable length of time. After the end of treatment, post-test was finished utilizing a similar result measure. In view of the information gathered from every one of the examples, measurable examination was finished.

Results: On looking at pre and post-test inside group A and group B values, it showed identical distinction between group A and group B. Group A (KT with practice for NVD), showed better improvement. Additionally, group B (KT with practice for LSCS) showed a decent improvement yet not that as group A.

Conclusion: This study concludes that abdominal exercises along with Kinesiotaping among postpartum women undergone NVD had considerable effects in reducing diastasis recti abdominis. It assists with increasing the abs strength and reestablishing post pregnancy stomach productivity.

Keywords: NVD; LSCS; Kinesiotape; diastasis recti; postpartum women.

INTRODUCTION

D iastasis recti abdominis (DRA) has been characterized as a debilitation described by the partition of the two rectus abdominis muscles along the linea alba, diastasis of the rectus abdominis muscle (DRAM) is normal during and after pregnancy and is related to lumbo-pelvic instability and pelvic floor weakness (1). The increased inter rectus distance may be seen congenitally, but most commonly develops during pregnancy and in early post pregnancy period (2). Uterus expands from pre-pregnant size of 5 by 10cm to 25 by 36cm; it expands 5 to multiple times in size, before the finish of pregnancy, each muscle cell in the uterus increments roughly multiple times over its pre-pregnancy length. When uterus extends upwards and leaves the pelvis, it turns into an abdominal organ rather than the pelvic organ. Women with diastasis recti abdominal muscle are commonly referred to physiotherapy for non-surgical management but reporting ranging from 66% to 100% during third trimester of pregnancy and up to 53% immediately after delivery (2-4).

The causative elements for diastasis recti during pregnancy are high level of relaxin, progesterone and estrogen hormones that causes softening of connective tissues and debilitating of the linea alba. Tendinous raphe flowing from xiphoid cycle to symphysis pubis combined with hormonal relaxing of linea alba hence the ceaselessly expanding stretch put on the abdominal wall by developing embryo (5, 6). Thus, measure of pressure on an all-around debilitated structure produces inclination to division and results in diastasis recti (7-10). DRA can happen in changing degrees during pregnancy and may not resolve precipitously in the post pregnancy period. The abs, especially the two sides of results are extended to the reason behind pregnancy, prompting more prominent diminishing the muscles capacity to create solid stomach withdrawal (11). The manifestations of diastasis recti in ladies with diastasis recti for the most part see no aggravation very still, while inconvenience, torment, undergarment precariousness and swelling of the stomach divider are indications showing up during

proactive tasks (12). The risk factors of diastasis recti are age, women, over the age of the 35, high birth weight of kid, different birth pregnancy, cesarean area, and gigantic weight reduction happening unexpectedly or after bariatric medical procedure, past or rehashed stomach a medical procedure (13). Diastasis recti can be amended safely and precisely. In outrageous cases, diastasis recti are rectified during the corrective medical procedure methodology known as abdominoplasty, commonly referred to as the 'tummy tuck' (14). Abdominal exercise and KT can be utilized as locally situated practices routine separated from normal abdominal works out (15). Abdominal exercises are very effective in reducing diastasis recti in early postpartum women and inter recti distance. What's more help the remedy of abdomen practice customized for post pregnancy women and valuable in lessening entanglements of it (16). One RCT revealed a decrease in diastasis of the rectus abdominis muscle width with post pregnancy abdominal work out. Two investigations revealed a decrease in diastasis width with joined abdominal practice and a tubigrip/girdle as well as stance/back care schooling (17). The Kinesiotaping is generally a new strategy utilized in restoration program even though it has been utilized in muscular and sports setting, progressively turned into a subordinate treatment choice for the outer muscle disabilities. Rectifying muscles and further developing flow of blood and lymph by disposing of tissue liquid or draining underneath the skin by moving the muscles, diminishing torment through neurological concealment, and repositioning subleashed joint by mitigating unusual muscle strain assisting with returning the capacity of belt and muscle (18). Shortcoming in the abdomen divider related with DRA disrupts the capacity of the muscular strength to balance out the storage compartment, which thus can prompt unfortunate stance and umbilical hernia (19-21). DRAM is normal during and after pregnancy and is related to lumbopelvic flimsiness and pelvic floor shortcoming (22). As trunk control is the significant limitation in personal satisfaction, cross over stomach muscles reinforcing practices is powerful for trunk control (23). Various sorts of flexible tapes caused fluctuated impacts during exercise action. The design and level of versatility would create different biomechanical results (24). Diastasis recti abdominis is generally normal among post pregnancy females. Many exercises are used to reduce and manage the diastasis recti abdominis. Hence, the need for the study is aimed to find the effects of abdominal and pelvic floor exercises along with Kinesiotaping on diastasis recti abdominis for postpartum women in normal delivery vs C-section. The aim of the study was to increase the abdominal strength among postpartum

women with DRAM by abdominal and pelvic floor exercises along with Kinesiotaping.

MATERIALS AND METHODS

A total of 50 postpartum female's aged between 21-40 years, with urinary incontinence, DRAM, diastasis recti distance above 2.7cms, primiparous, multiparous, normal vaginal delivery with or without episiotomy, LSCS were included. Pregnant women (according to ACOG guidelines), recent spinal injury, anemia, recent abdominal surgery (except LSCS), hypertensive patient, any cardiac problems, patients under psychological treatment, paralysis (labor induced epilepsy) and non-co-operative subjects were excluded. The study was explained and informed; subjects were selected by selective sampling method. A group of 50 subjects were partitioned into two gatherings specifically group A and group B. The task was performed in OBG division, ACS Medical College and Hospital, Chennai. Pre-test was finished by estimating diastasis recti distance using Vernier calipers. Group A with NVD and group B with LSCS were treated with pelvic bridging, Kegel's exercise, abdominal tuck-in and SLR along with KT taping. Inter Recti Distance (IRD) were measured using Vernier calipers at three levels namely, above umbilicus, below umbilicus and at umbilicus. Data were noted in the pre-test. After 12 weeks of treatment IRD were measured and noted in the post-test. The treatment protocol for each exercise was done 30 minutes per day 2 sessions for 12 weeks, in between the treatment session rest time was given.

The study is endorsed by the Institutional Review Board of Faculty of Physiotherapy (REF NO D-46/PHYSIO/IRB/2019-2020).

Instrumentation

Vernier calipers

Vernier calipers is a handheld device used to quantify length, profundity, or thickness of the article precisely between the jaws, down to thousandth of an inch or a negligible portion of a millimeter. The 'Vernier' alludes to the scale on the instrument that duplicates the accuracy of the estimation.

Estimation of diastasis recti in Vernier calipers

The intra recti distance was estimated when the finish of the review for every women in the two groups (A and B). Every woman was approached to accept crook lying position and touched at the average edge of the two recti muscle borders and put the arms of the vernier caliper opposite to the recti borders simply above umbilicus: 4.5 cm over the umbilicus midpoint and 4.5 cm underneath the umbilicus midpoint. Every member folded her arms over the chest and raised the head until spine of scapula was off the table surface. The members were kept up with

fractional twist up and touching at the average lines of both ways rectus abdominis muscle guts at checked area. Within estimation jaws of the advanced nylon caliper were situated at the area of touching fingers, opposite to bearing of muscle and acclimated to apparent bury recti distance width. Then, at that point, request the subjects to raise her head and shoulders from the plinth, now the distance between the two recti was estimated to the closest centimeters. This point was set apart with a solvent marker to guarantee normalization with repeated measures. Three preliminaries were taken for every evaluation and the mean was recorded.

Finger palpation

Two kinds of estimations were taken for each group resting (rectus abdominis at rest) and active (rectus mid-region contracted during a twist up). Subjects were situated in crook lying on a compact floor mat with a pad under their head and their knees flexed to 90 degrees. The estimations were taken at three levels in the accompanying requests, at the prevalent line of the umbilicus: 45mm over the umbilicus, and 45mm beneath the umbilicus. A 9cm long tape was utilized with the essential issue set at the unrivaled line of the umbilicus. Skin markings were made with the pen at the two closures of the tape for resting estimations. Subjects were told to lift their heads up tenderly touched the average rectus borders with the fingers.

Evaluation of diastasis recti

With the fingers in situ, the subjects were approached to bring down the head and unwind, and the estimation was taken by involving vernier calipers for dynamic estimation, the subject was told to keep the jawline to chest and play out an incomplete twist up until the sub-par point of the scapulae were simply off the mat as touched. Subjects maintained the curl-ups for three seconds while the measurements were taken. Completion of resting and active measurements was considered as one trial. Three preliminaries were taken at the umbilical level at first, and afterward repeated at 45mm above and 45mm beneath the umbilicus. A rest time of one moment was permitted between every preliminary, to stay away from muscle weakness.

Interventions

Fifty subjects with diastasis recti among postpartum females were selectively allocated into 2 study groups: Group A: (NVD) and Group B: (LSCS)

Abdominal tuck-in exercise

When the patient is in crook lying, ask her to contract the abdomen tightly. The procedure should contract the lower abdominal muscles and hold it for 8

seconds and relaxes this procedure is done for 10 times.

Pelvic bridging

The subjects are positioned in crook lying and asked to lift their pelvis by flexing the knees hold it for 5 counts and relax. This was done for 10 minutes which helped in increasing the stability of the pelvis.

Single leg raises

The subject was in supine lying position and raised the alternate arm and leg and holds it for 5 seconds it was done 10 times alternatively.

Kegel's exercise

- When the patient was in crook lying, asked to contract the pelvic floor muscles and hold for 8 seconds.
- Loosen their muscle for 3 to 5 seconds.
- Repeated for 10 times and 3 times a day.

Kinesiotaping technique

Both groups received same types of exercises along with Kinesiotaping technique.

Preparation step

The women lay on supine lying position and sterilization is done on the abdominal area. Umbilical patching: A small cotton patch was put on the umbilicus before taping was applied.

Application of Kinesiotape

Applied two inches width tape in strips laying down herringbone or crisscross design, begin from just below the breast and extend to superior pubis. With the tape set up the patient can quickly inhale, move with less trouble. The extra foremost abdomen support additionally utilized in reducing complaints of low back pain. The patient would be permitted to give skin the appropriate breaks and cleaning to forestall bothering and became unfit to wear the tape.

Data analysis

The gathered information was arranged and investigated utilizing both descriptive and inferential insights. All the parameters were assessed using the statistical package for social science (SPSS) version 17. Combined t-test was embraced to observe the factual contrast inside the gatherings and autonomous t test (Student's t-test) was taken on to track down the measurable distinction between the groups.

Table 1: Correlation of DRAM above umbilicus level between group A and group B in pre and post-test

DRAM above umbilicus	Group A	Group B	t -Test	Significance
	Mean± S.D.	Mean± S.D.		
Pre-test	3.36±0.589	3.65±0.536	17.855	0.073
Post-test	2.15±0.602	2.65±0.536	24.208	0.004

Table 1 reveals the mean, standard deviation (S.D.), t-test, degree of freedom (df) and p-value of measure above umbilicus level between group A and group B in pre and post-test. This table shows that there is no significant difference in pre and post-test mean values between group A and group B (**P≤0.00112).

Table 2: Comparison of DRAM below umbilicus level between group A and group B in pre and post-test

DRAM Below Umbilicus	Group A	Group B	t -Test	Significance
	Mean ± S.D.	Mean ± S.D.		
Pre-test	3.272±0.413	3.10 ±0.544	39.63	0.220
Post-test	1.882±0.413	2.07 ±0.544	22.79	0.181

Table 2 uncovers the Mean, Standard Deviation (S.D), t-test, level of opportunity (df) and p-value of measure below umbilicus level between group A and group B in pre and post-test. This table shows that there is no huge contrast in pre and post-test values between group A and group B.

RESULTS

On contrasting the mean value estimations for intra recti distance of group A and group B on Vernier calipers, it showed huge reduction in post-test mean qualities, yet group A (NVD) showed 2.15 cm, group B (LSCS) showed 2.65 cms. Hence, null hypothesis is rejected. On comparing the mean value measurements for intra recti distance of group A and group B on Vernier calipers, does not show significant decrease in the pre-test and post-test values. Group A (NVD) showed 1.882 cm, group B (LSCS) showed 2.07cm. Hence, alternative hypothesis is rejected.

DISCUSSION

A study by Khandale *et al.*, (15) has shown that stomach exercise are exceptionally compelling in lessening diastasis recti in early post pregnancy woman in impacts of stomach exercise on decrease of diastasis recti in post pregnancy woman. Also, in the study of Mahalakshmi *et al.*, (16) DRA restorative activities performed by the primiparous women with DRA in their post pregnancy period quickly

following NVD or a month after the LSCS for a very long time were viewed as successful in lessening DRA. According to Pascal *et al.*, (9) the inter rectus distance was essentially higher in post pregnancy women contrasted and controls, and altogether lower during isometric withdrawal of the abs (abdominal crunch) contrasted and rest. Motainter-rectus distance in post pregnancy ladies can be decreased by isometric constriction of the muscular strength: a preliminary case control study. However, from the analyzed statistical mean values, it showed that Kinesiotaping technique along with exercises reposted significant improvement on Diastasis Recti Abdominis which are more effective on group A (NVD) than that of group B (LSCS).

CONCLUSION

This study concludes that abdominal and pelvic floor exercises along with Kinesiotaping among postpartum women undergone NVD had considerable effects in reducing diastasis recti abdominis. It assists with expanding the abdominal strength and reestablishing post pregnancy abdomen proficiency. This activity could be compelling in restricting their bury recti distance, supporting the remedy of an activity program for counteraction or decrease of diastasis recti in post pregnancy women and helpful in diminishing complexity of diastasis recti. However, the other group performed the same exercises along with Kinesiotaping who have undergone LSCS has lesser improvement in reducing the diastasis recti distance and management of muscles than the postpartum women undergone NVD.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest involved in the study.

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