ORIGINAL ARTICLE

Ease in Pain and Functional Activities following Caesarean Delivery by Post Natal Exercises (Pilot Study)

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ABSTRACT

Objective: To determine effectiveness of post natal exercises to improve incision pain and functional activities in female following cesarean section.

Study Design: Experimental, Randomized controlled study design.

Place and Duration of Study: The study was conducted in Gynecology and Physiotherapy department of Pakistan Railway Hospital, Rawalpindi from 01st February 2017 to 31st March 2017.

Materials and Methods: Twenty women who had undergone caesarian section after spinal or epidural anesthesia were included in the study with informed consent. Patients having multiple births, patients with controlled anesthesia, with general anesthesia, operative complications and fetal abnormalities were excluded. Subjects were randomly allocated in two groups; one receiving post-natal exercise plan and the other receiving routine nursing care. Intervention included Deep breathing exercise, Inter-digital technique, Coughing technique, Ankle pumps, Leg sliding, Pelvic rolling, Abdominal wall setting exercise and Postural education. Exercises were repeated twice a day for three days post cesarean section. Patients were evaluated for general pain intensity, difficulty in functional activities, time of ambulation and analgesic intake on 1st and 2nd post-operative day. Results were analyzed on IBM SPSS 20 using independent t test.

Results: Mean age of interventional group (n= 10) was 28.10 ± SD 5.30 and 29.60 ± SD 2.54 years for the control group (n = 10). P value for pain was found non - significant (p = 0.152) on 1st post-operative day but showed a significant difference (p = 0.020) on 2nd post-operative day indicating better outcomes for exercise group. Significant p values were observed in exercise group for difficulty in performing activities like turning in bed (p = 0.001), sitting (p = 0.008), standing (p < 0.001) and walking (p < 0.001).

Conclusion: Post Natal exercises improve mobility and reduce pain in females who had undergone caesarian section after spinal or epidural anesthesia.

Key Words: *Caesarean Deliveries, Functional Activities, Physiotherapy.*

Introduction

Numerous studies are to be assessing different problems as a result of delivery either vaginal or caesarean section, but only few studies are found to focus on physiotherapy care in post natal quality of life among females.[1] However recent researches are focusing on physiotherapy plan for postpartum care and suggest physiotherapy as need of hour.[2]

One of the major obstetric procedures that faced high rate controversies for years is caesarean section. Caesarean section became highly popular with its rate being dramatically increased in recent few decades over the world. This increased rate led to raised maternal morbidity and mortality.[3,4]

According to WHO guidelines 2009 no region in the world can cross a set limit of 10-15% of caesarean deliveries.[5] In Pakistan according to the available data institutional deliveries illustrate increased rate of caesarean section. This raised rate of c-section set mothers at high risk of developing future medical complications.[6] Therefore affecting Quality of Life in females after caesarean delivery.[4]

Common cause of acute obstetric pain is caesarean section. Traditionally opioids and non-steroidal anti-inflammatory drugs (NSAIDs) are used for post operative analgesia management but still

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inadequate relief and patient satisfaction is common in many cases.[6] Literature supports the effectiveness of breathing exercises and respiratory physiotherapy to improve pulmonary functions in females having caesarean section under general anesthesia.[7] A recent study by Juliana Schulze Burti and colleagues found exercise protocol optimistically contributed to the reduction of pain and improvement of general well-being.[8] Other non-pharmacological approaches to manage pain after caesarean deliveries include therapeutic acupressure for reduction in pain perception, anxiety, depression and pain.[9] Several studies suggest transcutaneous electrical nerve stimulation to be effective in treating incision pain in early post caesarean period.[10,11]

Females having caesarean section births experience higher intensities of pain while perform activities & during movements in comparison to females having vaginal delivery births. Consequently females having caesarean section exhibit greater functional limitation for specific movements. Moreover this pain and functional limitation was not associated with parity.[9]

As limited literature is available regarding physiotherapy plan and its outcome in post natal care so the current study was conducted to find out effectiveness of post natal exercises to improve incision pain and functional activities in female following cesarean section.

Materials and Methods

A randomized controlled pilot study was conducted on females who had caesarean delivery in gynecological department, Pakistan Railway Hospital in collaboration with physiotherapy department from 01st February 2017 to 31st March 2017. Sample consisted of females who had epidural anesthesia for caesarean section. Patients having multiple births, patient controlled anesthesia, C-Section with general anesthesia, operative complications and females who were identified having any fetal abnormality according to the anomaly scan were excluded from the study. Using purposive sampling techniques 20 female patients were included in the study. Patients falling on the criteria were informed and written consents were taken. Only 2 patients refused to participate and 20 females completed the study. It was an assessor blinded trial. Patients were randomly assigned in both groups according to even and odd dates of C-section. Interventional group (n=10) received physiotherapy session on zero post-operative day and first post-operative day. The control group (n=10) received routine nursing care. Both groups were given routine analgesics for post-operative pain management.

Physical characters recorded include age, height, weight and body mass index. Number of pregnancies, history of past gynae & obstetrical surgeries and complications in gestation were recorded. Time taken for first ambulation after transfer to obstetric ward was calculated. Intensity of pain was recorded using numeric rating scale. Difficulty in functional activity including turning in bed, sitting, standing and walking were marked on numeric rating scale (zero = no pain, 10 = maximum pain). Data was obtained at 1st post-operative day after 1st ambulation and 2nd post-operative day after the physiotherapy session. Patients were observed for adverse effects of physiotherapy but no such effects were reported by the patient.

Interventional group was given post-natal exercises with 10 repetitions of each exercise. These exercises included deep breathing exercise (to improve exchange of gases), Inter-digital technique for chest expansion (to improve circulation and promote exchange of gases), protected Huffing technique (to remove secretions), Ankle pumps (to improve blood circulation and relaxing calf muscles), Leg sliding (to improve circulation), Pelvic rolling and abdominal wall setting exercise (to stimulate intestinal activity, contract abdominal muscles and prevent or control gas pain). Patient was also educated regarding postural adjustments and advised to repeat the exercises twice a day. Control group was given routine nursing care by the nursing staff of the gynae ward and postural education was guided by the physiotherapist.

Statistical analysis was done using IBM SPSS 20. Independent t-test was applied on pain and difficulty in all four functional activities on 1st and 2nd post-operative day separately. Tool used was Numeric Pain Rating Scale. Data was normally distributed according to the test of normality and hence the test of choice was independent-t test.

Results

Female participants included in the study were equally divided in two groups. Mean age for

interventional group was 28.10 ± 5.30 and 29.60 ± 2.54 for the control group. Mean body mass index for the interventional group was 23.84 ± 2.90 and for control group it was 22.07 ± 5.66. Independent t test was applied to assess the difference in the ambulation of groups and was found non-significant with p value of greater than 0.05 (p = 0.230).

Mean Value of pain among both groups is shown in the figure below. As the figure shows that mean value for pain at 1st post-operative day exhibits difference among the two groups but statistical analysis do not show a significant p value (p = 0.152). However significant p value (0.020) was found at 2nd post-operative day.

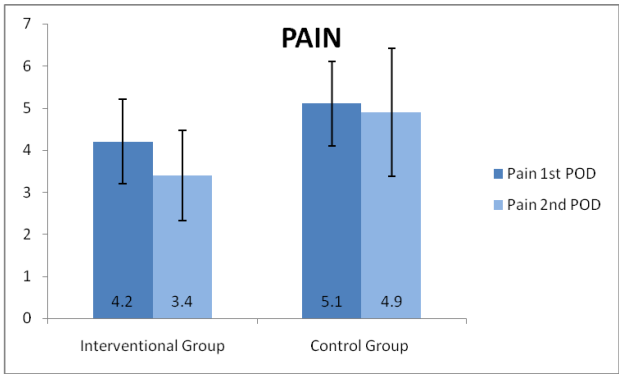

Fig 1: Comparison of Pain (Numeric Pain Rating Scale) at 1st & 2nd Post-Operative Day in both groups

A significant difference was found among both groups regarding reduction in difficulty and pain while performing functional activities. After both sessions given at zero post-operative day and first post-operative day results were significant in interventional group but more obvious results appear at 2nd post-operative day.

Table I: Comparison of Functional Activities at 1st & 2nd Post-Operative Day in Both Groups

Variable	Mean ± SD (Interventional Group)	Mean ± SD (Control Group)	P - Value
Turning in Bed Day 1 Day 2	 6.0 ± 1.4 3.7 ± 0.8	 7.3 ± 1.5 5.1 ± 0.7	 0.073 0.001
Sitting Day 1 Day 2	 6.3 ± 0.8 4.6 ± 0.9	 7.5 ± 1.3 5.9 ± 0.9	 0.030 0.008
Standing Day 1 Day 2	 6.9 ± 0.7 4.1 ± 0.9	 8.3 ± 0.9 6.0 ± 0.8	 0.002 0.000
Walking Day 1 Day 2	 7.2 ± 0.8 4.0 ± 1.1	 8.4 ± 1.1 6.0 ± 0.7	 0.011 0.000

Discussion

Many studies have been conducted to assess the problems associated with cesarean section, but physiotherapy aspect and its effects after caesarean still require attention of the researchers.

The results of this study show that pain after caesarean section can be reduced by physiotherapy including mobility exercises, breathing techniques and postural care. Both interventional and control groups were taking analgesics three times a day and the pain experienced with medication was assessed. Non-significant results were found on 1st post-operative day regarding general pain but on 2nd post-operative day a significant reduction in pain was observed. Similar results were found in a study conducted by Ãlkim ÇÂtak Karakaya et al using transcutaneous electrical nerve stimulation as a part of physiotherapy management along with exercises.[12] Another recent study by Juliana Schulze Burti and colleagues also shows similar result that exercise protocol optimistically contributed to the reduction of pain and improvement of general well-being.[8]

Breathing exercises are found to be helpful in improving circulation and healing thereby inducing relaxation by mild muscular activity in abdominal area.[12] Breathing exercises should be considered while planning physiotherapy exercising for post cesarean patients.

Vermelis and colleagues conducted a study in 2010 on prevalence and predictors of chronic pain after labor and delivery. According to this study rate of chronic low back pain after delivery is more in cesarean section (6-18%) as compared to vaginal deliveries (4-10%).[13] Several techniques are considered to overcome pain after delivery Lena Nilsson-Wikmar et al in their study found that post-partum back pain effects activities related to movements and requires special attention.[14]

Physical therapy is considered to be an important intervention that requires to be initiated in early post natal period to reduce pain and improve mobility status of the patient. Emily Norman, Margaret Sherburn, Richard H. Osborne and Mary P. Galea in their study in 2010 evaluated effectiveness of physiotherapy regimes and health care educational programs on well-being of post natal females. Physiotherapy is found effective not only in

improving well-being scores but also reduces depressive symptoms.[15] In 2004 another study also suggested that specific physiotherapy exercises are helpful in reducing pelvic girdle pain after pregnancy. So physiotherapy is essential part of treatment regarding post natal well-being by reducing pain after delivery especially cesarean section.[16]

Sample size for the current study was small as it was pilot study and tools assessing mobility should also be applied to measure outcomes more precisely. Though findings of this study are limited but contribute to the existing literature. However further studies should be conducted with longer duration of treatment and to design a standard protocol for post cesarean patients to achieve optimal results.

Conclusion

Current study concludes that post natal exercises are effective in improving intensity of pain and functional status in terms of ambulation and ease in movement, in comparison to patients who receive only nursing care.

REFERENCES

1. Shah D, Parikh H, Verma M, Tyagi R. Postnatal quality of life in women after normal vaginal delivery and cesarean section with and without physiotherapy care. Journal of Clinical & Experimental Research. 2014; 2: 89-94.
2. Chauhan R, Sahu B, Singh N, Malviya R, Tiwari P. Enhancing normal labour by adopting antenatal physiotherapy: a prospective study. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2017; 5: 2672-6.
3. Lee SI, Khang YH, Lee MS. Women's attitudes toward mode of delivery in South Korea—a society with high cesarean section rates. Birth. 2004; 31: 108-16.
4. Tampakoudis P, Assimakopoulos E, Grimbizis G, Zafrakas M, Tampakoudis G, Mantalenakis S, et al. Cesarean section rates and indications in Greece: data from a 24-year period in a teaching hospital. Clinical and experimental obstetrico & gynecology. 2004; 31: 289-92.
5. Press A. C-section rates around globe at "epidemic" levels. HANOI, Vietnam: Associated Press; 2010; Available from: http://www.nbcnews.com/id/34826186/ns/health-pregnancy/t/c-sectionrates-around-globe-epidemic-levels/#.WPRg9WnyvIU.
6. Belizán JM, Althabe F, Cafferata ML. Health consequences of the increasing caesarean section rates. Epidemiology. 2007; 18: 485-6.
7. Kaplan B, Rabinerson D, Neri A. The effect of respiratory physiotherapy on the pulmonary function of women following cesarean section under general anesthesia. International Journal of Gynecology & Obstetrics. 1994; 47: 177-8.
8. Burti JS, da Silva Cruz JdP, da Silva AC, Moreira IDL. Assistance in immediate puerperium&58; the role of physiotherapy. Revista da Faculdade de Ciências Médicas de Sorocaba. 2017; 18: 193-8.
9. Chen HM, Chang FY, Hsu CT. Effect of acupressure on nausea, vomiting, anxiety and pain among post-cesarean section women in Taiwan. The Kaohsiung journal of medical sciences. 2005; 21: 341-50.
10. Kose SK, Arioz DT, Toktas H, Koken G, Pektas MK, Kose M, et al. Transcutaneous electrical nerve stimulation (TENS) for pain control after vaginal delivery and cesarean section. The Journal of Maternal-Fetal & Neonatal Medicine. 2014; 27: 1572-5.
11. Babu AS, Vasanthan LT, Maiya AG. Transcutaneous electrical nerve stimulation to reduce pain in post-op thoracotomy patients: A physical therapists' perspective. Indian journal of anaesthesia. 2010; 54: 478.
12. Karakaya IC, Yüksel I, Akbayrak T, Demirtürk F, Karakaya MG, Özyüncü Ö, et al. Effects of physiotherapy on pain and functional activities after cesarean delivery. Archives of gynecology and obstetrics. 2012; 285: 621-7.
13. Vermelis JM, Wassen MM, Fiddelers AA, Nijhuis JG, Marcus MA. Prevalence and predictors of chronic pain after labor and delivery. Current Opinion in Anesthesiology. 2010; 23: 295-9.
14. Wikmar LN, Pilo C, Pahlbäck M, Harms-Ringdahl K. Perceived pain and self-estimated activity limitations in women with back pain post-partum. Physiotherapy Research International. 2003; 8: 23-35.
15. Norman E, Sherburn M, Osborne RH, Galea MP. An exercise and education program improves well-being of new mothers: a randomized controlled trial. Physical Therapy. 2010; 90: 348.
16. Stuge B, Lærum E, Kirkesola G, Vøllestad N. The efficacy of a treatment program focusing on specific stabilizing exercises for pelvic girdle pain after pregnancy: a randomized controlled trial. Spine. 2004; 29: 351-9.