

Comparison of Outcome with or without Peritoneum Closure in Females undergoing Elective Caesarean Section

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Abstract

Background: Caesarean section is one of the most frequently performed surgical procedures worldwide. Traditionally, suturing of peritoneal layers in cesarean section patients has been done, but with variable results.

Objective: To compare the outcome with or without peritoneum closure in female undergoing elective caesarean section.

Methodology: This was a Quasi Experimental study, conducted from 1st June, to 30th November, 2018 at Obstetrics and Gynecology Unit 2, Jinnah Hospital Lahore. Total 100 patients were selected for elective cesarean section from patients visiting outpatient department and divided into two groups A (Peritoneum closed) and Group B (Peritoneum not closed) by simple randomization technique. Variables included were Surgery time (minutes) and post-operative amount of analgesia. Data was analyzed by SPSS version 20. Results: Mean age of the patients was 28±4 and 28±5 in group A and B, respectively. Mean gestational age was 38.7±1.1 and 38.46±1.1 weeks in group A and B respectively. In group A, mean operative time was 43.1±4.8 and in group B, 35.1±3.3 minutes. (p=0.001). Postoperative analgesia was required 207±12 mg in group A and 182±11 mg in group B. (p=0.001).

Results: Out of 300 subjects, 33.3% of the respondents belonged to the age group of 26-35 years, 65.7% were married, 85.33% reported that they have heard about this term, while 14.67% reported that they don't know about gender based violence. While assessing the association between marital status and knowledge it was found that 82% who were married had knowledge about this term as compared to unmarried 79%. This showed that married females were more familiar with the gender based violence. Although the study showed statistically no association of marital status with knowledge (p=0.189).

Conclusion: In conclusion, this study showed that the non closure of the peritoneum was associated significantly shorter duration of surgery and significantly lower pain scores and less analgesic use compared to traditional practice of closure of the peritoneum.

Key words: Peritoneal closure, Non-Closure, Morbidity, Pain

Introduction

Caesarean Section is the most frequent major surgical procedure performed in obstetrics.¹ World Health Organization has recommended that Caesarean Section rate of any center should not exceed 15% but with the rise in trend it has exceeded 70% in most of the centers of developing countries and Pakistan is not an exception.² Monroe Kerr was the pioneer of lower segment caesarean section and he started it in 1911 now it is being performed over 90% of the hospitals.² There are various techniques to perform Caesarean section, what so ever the technique may be, one has to open the parietal and visceral peritoneum to reach the uterus. Traditionally these peritoneal layers are sutured with aim to restore the anatomy, approximate the tissues, reduce infection by re-establishing anatomical barrier, reduced chances

of wound dehiscence, reduced amount of hemorrhage and adhesion formation.³

Contrary to this some surgeons believe that peritoneal tissue is composed of mesothelial cells with capacity to heal on its own within 48-72 hours even if it is left open. It is also sensitive to pain thus suturing peritoneum will lead to ischemic pain, foreign body reaction, adhesion formation and increase in morbidity of the patient, which may affect mothers bonding with her newborn and postnatal care.⁴ Although the basic procedure remains the same some new techniques have been adopted like not closing the visceral or parietal peritoneum. A large number of studies on merits and demerits of these practices have been published, generating larger debates.⁴ According to researchers closing the peritoneum is beneficial in routine caesarean section,^{2,5} but others suggest that not

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stitching peritoneum during caesarean section takes less theatre time and suture material therefore will be cost saving. Information regarding possible long-term disadvantages is limited. In routine, peritoneum closure is done during Caesarean section. Recently, it is experimented that not closure of peritoneum may be more beneficial,⁶⁻⁸ but not much evidence is available in this regard as well as there is no local evidence available in literature. The study will help us in developing better management protocols for better surgical outcomes of our women undergoing Caesarean section. The objective of this study was to compare the outcomes with or without peritoneum closure in females undergoing elective Caesarean section.

Methodology

In this study, we included a total of 100 pregnant ladies, 50 in each group, at ≥ 37 weeks of gestation with unscarred uterus. This was a quasi experimental study. The patients were admitted from outpatient department of Jinnah Hospital for delivery by elective Caesarean section. Women who had abdominal surgery in the past or with severe anemia, diabetes, hypertension, cardiac, renal or hepatic disease, abnormal placental implantation or placental abruption, were not included in the study.

Detailed history was taken, general physical examination and base line investigations were done. Informed verbal consent for anesthesia, surgery and to participate in study was taken and the patients were divided in two groups A and B by simple randomization technique. All the patients received spinal anesthesia for surgery and were operated by same technique, except that parietal peritoneum of group A patients was stitched with vicryl 2/0 while it was left open in group B patients. Total time for surgery was noted from incision at skin and stitching upper layer of skin by using stop watch.

After surgery patients were shifted in postoperative ward. Patients were given third generation cephalosporin and intravenous fluid. They were observed for pain every 6 hourly in postoperative period for 24 hours by Visual Analogue Scale (VAS). When patients had pain of >4 she was given injection diclofenac sodium 75 mg intramuscularly. Total amount of analgesia received by each patient in 24 hours was

calculated in both the groups. All the information was collected on predesigned Performa.

Data was analyzed by SPSS version 20. Quantitative variables like age, gestational age, BMI, operative time and analgesia consumed were calculated as mean and standard deviation. Qualitative variables like parity were calculated as frequency and percentage. Both groups were compared by using independent sample t-test for mean operative time and analgesia requirement. P-value less than 0.05 was considered as significant. Data was stratified for age, gestational age, parity and BMI and number of previous C-sections (if any). Post-stratification t-test of significance was applied for stratified groups. Ethical approval was sought from ethical committee of hospital.

Results

In this study, a total of 100 patients (50 in each group) were included. In group A, peritoneum was closed while in group B, peritoneum was not closed. Mean age of the patients was 28.6 ± 4.8 and 28.4 ± 5.8 in group-A and B, respectively. In group A, mean gestational age was 38.7 ± 1.1 weeks and 38.46 ± 1.1 weeks in group B. Mean BMI (kg/m^2) was 25.5 ± 2.2 and 25.0 ± 2.4 in group A and B, respectively.

In group A, mean parity was 3.0 ± 1.1 and 3.1 ± 1.3 in group B. Outcome with or without peritoneum closure in females undergoing elective cesarean section was as follows: In group A, mean operative time was 43.1 ± 4.8 and in group B 35.1 ± 3.3 minutes. There was statistically significant difference between two groups ($p=0.001$). Postoperative analgesia was required 207.1 ± 12.1 in group A and 182.9 ± 11.2 in group B. ($p=0.001$)

Table I: Demographics of the Patients in both Groups.

Variable	Group A	Group B	Range
	Mean \pm SD	Mean \pm SD	
Age (years)	28.6 ± 4.8	28.4 ± 5.8	18-40
Gestational age (weeks)	38.7 ± 1.1	38.46 ± 1.1	37-42
BMI (kg/m^2)	25.5 ± 2.2	25 ± 2.4	20-35

Table II: Outcome of Patients with or without Peritoneum closure

Outcome	Group A (Peritoneum closure) (n=50)		Group B (Non-peritoneum closure) (n=50)	
	Mean	SD	Mean	SD
Operative time (Minute)	43.1	4.8	35.1	3.3
P value	0.001			
Postoperative analgesia required (mg)	207.1	12.1	182.9	11.2
P value	0.001			

Discussion

There is no agreement regarding the effect of leaving the peritoneum open on post-operative pain.⁶⁻⁸ Some studies have shown that leaving the peritoneum open at caesarean section has beneficial effects on post-operative pain,^{6,7} while others have showed that it rendered no benefit.⁸ These contradictory results may be due to the fact that the above studies were not designed specifically to assess post operative pain.

Despite the fact that closure of both peritoneal layers has been standard practice for many years the literature,^{9,10} claims significant advantages for non-closure of the peritoneum at the caesarean section. These advantages include a reduced operating time,^{6,8,11} fewer intra abdominal adhesions,¹² lower post operative morbidity in the form of reduced infection rate and earlier discharge from hospital.⁶ Non-closure is also supported by the animal and clinical data,^{9,12} which demonstrate that peritoneum, being a mesothelial organ, heals differently to epithelial tissue. Mesothelial cells initiate multiple sites of repair and even large peritoneal defects heal spontaneously, within 48 to 72 hours. The process of peritoneal repair after injury depends upon an intact blood supply and is adversely influenced by ischemia. It has been suggested that approximation of the peritoneal layers is not only unnecessary for wound healing but may actually be harmful for the patient.^{13,14}

Benefits of non-closure on post-operative pain remains controversial. This controversy probably stems from the fact that only one published study,¹⁰

was designed specifically to look at this important outcome measure and all the published studies failed to standardize the pre-operative, operative and postoperative conditions.^{6,7,8}

Hull et al⁷ in a study of 113 women and Nagele et al⁶ in a randomized trial of 549 women, reported less use of post operative analgesia, when the peritoneum was not sutured at caesarean section, but in both of these studies pain was not the primary outcome measure. Furthermore, the anesthetic technique was not standardized: some patients received general anesthesia and others either epidural or spinal with or without neuroaxial opioids. In both these studies importance was given to the number of doses rather than the actual amount used and post-operatively pain was not assessed.

Similar criticism can be applied to a study by Irion et al⁸ which found no difference in the number of analgesic doses required post-operatively in their study of 280 patients. Again no standard anesthetic technique was used and the authors failed to mention the number of patients receiving epidural opioids in each group although they do state that "epidural opioids were usually given to women with epidural anesthesia". Pain was measured only once a day and no reference to the actual dose of the analgesics was made. A study by Højberg et al,¹⁰ is the only study which evaluated post-operative pain as the primary outcome measure following closure or non-closure of the peritoneum. In this most recent study of 40 patients, no statistically significant difference was found in post-operative pain scores between the two groups, but the non- closure group used significantly less oral analgesia.

In our study, there was statistically significant difference between the two groups in the use of analgesia. In contrast, other studies,^{10,15} showed the overall visual analogue scales for pain were not significantly different between the two groups, although there was a tendency to a lower score in the non-closure group.

In present study, operative time was found to be significantly less in the non-closure group as compared with the closure group ($p < 0.001$). A similar significant reduction was found by previous studies.^{6,7,8,11} A review to assess the studies showing outcome of closing the parietal peritoneum versus closing or not closing either visceral peritoneum alone reported that as caesarean section is a quite commonly performed surgical procedure worldwide. That review assessed both intraoperative

and postoperative outcomes, which included, immediate- and long-term results. They included both emergency or elective caesarean section which was in contrast to our study. Postoperative adhesion formation was assessed in only four trials with 282 women, and no difference was found between groups). There was significant reduction in the operative time (mean difference (MD) -5.81 minutes, 95% CI -7.68 to -3.93). The duration of hospital stay in a total of 13 trials involving 14,906 women, was also reduced (MD -0.26, 95% CI -0.47 to -0.05) days. In a trial involving 112 women, reduced chronic pelvic pain was found in the peritoneal non-closure group.¹⁴ Other studies have almost the same result that the closure of peritoneum causes the more morbidity than the non-closure.¹⁵⁻¹⁸

A meta analysis reported that in large number of studies in which there was non-closure of visceral peritoneum only versus closure of both peritoneal surfaces, showed that there was an increase in adhesion formation (two trials involving 157 women, RR 2.49, 95% CI 1.49 to 4.16) which was limited to one trial with high risk of bias. There was reduction in operative time, postoperative days in hospital and wound infection.¹⁴ Similarly in many studies, with Non-closure of parietal peritoneum only versus closure of both peritoneal layers, there was again reduction in operative time and postoperative pain with no difference in the incidence of postoperative pyrexia, endometritis, postoperative duration of hospital stay and wound infection. In yet other studies reported by that review showed that non-closure versus closure of visceral peritoneum when parietal peritoneum is closed, there **was** reduction in all the major urinary symptoms of frequency, urgency and stress incontinence when the visceral peritoneum is left unsutured.¹⁴

Conclusion

In conclusion, this study showed that the non-closure of the parietal peritoneum was associated with significantly shorter duration of surgery, significantly lower pain scores and less analgesic use compared to traditional practice of closure of the peritoneum.

Authors Contribution: RA: Conception of work and Design of Work. SF: Drafting and Revising.

FS: Acquisition & analysis of data and interpretation of data. **HM:** Analysis of data and drafting. **AZ:** Acquisition & analysis of data and interpretation of data. **AA:** Analysis of data and drafting.

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