COMPARE CLOSURE OR NON CLOSURE OF VISCERAL AND PARIETAL PERITONEUM IN CAESARIAN SECTION

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ABSTRACT

Objective: To compare closure versus non closure of visceral and parietal peritoneum during primary cesarean section regarding early postoperative outcome. Methods: This randomized controlled study was conducted in department of Obstetrics and Gynecology, Ismailia General Hospitals from November 2018 to March 2019. Included 142 pregnant women undergoing cesarean section, who were divided into two groups; Group I (Control) 71 patients with closure of both the visceral and parietal peritoneum (Study) 71 patients with nonclosure of both the visceral and parietal peritoneum. Parameters compared were operative time, postoperative pain degree, distention, fever, regain of intestinal sound, wound infection and duration of hospital stay. Results: Operating time, less postoperative pain score and rapid regain of intestinal motility, less duration of hospital stay, were significantly shorter in non-closure group. Conclusions: non-closure is recommended technique of both visceral and parietal peritoneum in CS because it results in significantly shorter operation time, less postoperative pain score and rapid regain of intestinal motility, less duration of hospital stay.

Key words: Peritoneal closure, Caesarian Section, Peritoneum

I. INTRODUCTION

Cesarean section is the most popular obstetric intra-peritoneal operation1. There are many possible ways of performing cesarean section and operative techniques used for cesarean section vary. The techniques used may depend on many factors including the clinical situation and the preference of the operator2.

Closure of the peritoneum at laparotomy has been a part of standard surgical practice. In contrast to epidermal repair, where healing occurs gradually from wound borders, peritoneum heals simultaneously throughout the wound because mesothelial cells initiate multiple sites of repair. If the peritoneum is left open, experimental studies have shown that a spontaneous repertonealisation will appear within 48–72 hours after injuring the peritoneum with complete healing after five to eight days3.

Closure of the peritoneum at lower abdominal surgery has long been advocated in traditional surgical training. The reason for this is to establish normal anatomical relations, to prevent adhesion formation between the intestine and fascia or between uterus and fascia, re-establishment of the peritoneal barrier to reduce the risk of infection and to reduce the risk of herniation or dehiscence. How ever, the advantages of this technique have not been proven by prospective randomized trials3.

Recommendation from Evidence-based surgery for cesarean delivery, states surgeons must balance the advantage of non closure regarding less postoperative fever, less operating time and reduced hospital stay, and understand that limited data suggest parietal peritoneal closure may decrease the risk of future adhesions4. So, the aim of this study was to compare closure versus non closure of visceral and parietal peritoneum during primary cesarean section regarding early postoperative outcome.
II. METHODS:

This randomized controlled study was conducted in department of Obstetrics and Gynaecology, Ismailia General Hospitals from November 2018 to March 2019. Included 142 pregnant women undergoing caesarean section. Exclusion criteria were Primary cesarean section for obstetric causes (breech, CPD...etc).Exclusion criteria were Prior cesarean section. Prior gynecologic abdominal surgery.Patient having any previous surgical lower abdominal operation.Medical disorder with pregnancy (Diabetes Mellitus, liver and heart disease). Patient suffers from chronic disease such as (Diabetes Mellitus, Liver and heart disease). Patients presented with febrile morbidity prior to operation.

Patients included in this study randomly allocated into 2 groups;

Group I (Control Group): 71 patients performed a primary cesarean section with closure of both visceral and parietal peritoneum.

Group II (Study Group): 71 patients performed a primary cesarean section with non closure of both visceral and parietal peritoneum.

All patients were subjected to preoperative detailed medical history taking, emphasizing on medical and surgical history, history of neurological disorders and spinal surgery, history of general disease diabetes mellitus and history of drug intake affecting the bowel function. Also general examination including vital signs measuring and obstetrical examination.

Intra operative procedures:

Intravenous antibiotic was given: ampicillin plus sulbactam (Unasyn) 1.5gm were injected every 12 hours before fetal delivery. A standard surgical technique was performed through a Pfannenstiel incision followed by transverse lower segment uterine incision that was closed with two layers (the 1st layer by continuous and the 2nd by inverted Lambert suture) using (Vicryl 1). In the peritoneal closure group both layers of peritoneum was closed with a continuous (Vicryl 1) suture. In the non- closure group, neither visceral nor parietal peritoneum was closed. The rectus sheath was sutured using continuous absorbable sutures (Vicryl 1), the skin was closed with a continuous subcuticular sutures (Prolene). Operative time was recorded in minutes from skin incision to the last suture.

Postoperative evaluation:

After the operation the patient received immediately declofenac sodium 75m.g then pethidine on demand. All patients were subjected to the routine follow up (vital signs, abdominal laxity, uterine contractions and vaginal bleeding) within the first 24 hours. Postoperative pain was assessed by Visual Analog Scale (VAS) by measuring in centimeters from the left hand end of the line to the point that the patient marks. Postoperative pain was evaluated using (VAS) of 0-10 cm. Pain was classified into 4 categories: no pain (VAS=0-0.4), mild pain (VAS=0.5-4.4), moderate pain (VAS=4.5-7.4), and severe pain (VAS=7.5-10). Patients were assessed postoperative fever using oral route every six hours, distention, regain of intestinal sounds using the stethoscope auscultation in the right iliac region and in the umbilical region. Patients were followed up and examined in the outpatient clinic at the 7th day after undergoing cesarean delivery. Wound infection was diagnosed when there was serous or purulent discharge from the skin incision with erythema and indurations, with or without fever and Duration of hospital stay starting from the time of cesarean delivery.

Statistical Analysis:

Data were statistically described in terms of range, mean ± standard deviation (± SD), frequencies (number of cases) and relative frequencies (percentages) when appropriate. Comparison of quantitative variable between the study groups was done using Student t test for independent samples when data were normally distributed. For comparing categorical data, Chi square (x2) test was performed. Fischer Exact test was used instead when the expected frequency is less than five. A probability value (p value) less than 0.05 was considered statistically significant. All statistical calculations were done using computer programs Microsoft Excel version seven (Microsoft Corporation, NY, USA) and SPSS (Statistical Package for the Social Science; SPSS Inc.) version 20 for Microsoft Windows.

III. RESULTS:

Table (1): Basal characters distribution between studied groups
Age was distributed as 23.67±3.15 and 23.64±2.94 between closure non closure group with no significant difference between groups, also there was no significant difference regard BMI or GA between groups as they were distributed as 28.34±2.12 and 29.18±1.94, 38.83±0.86 and 38.67±1.05 respectively between groups, and majority in both groups were PG and P1 with no significant difference between groups regard parity table 1.

**Figure 1-5:** Non closure group significantly shorter regard operation time, sutures number, hospital stay, time needed for mobilization and also lower regard analgesia needed but there was no sig. regard anesthesia type.

![Figure 1](image-url)
Fig. (2): The number of sutures between the two groups.

Fig. (3): The duration of hospital stay between the two groups.
Fig. (4): The time of mobilization between the two groups.

Fig. (5): The number of analgesia needed.

**Figure 6:** Non-Closure group significantly lower at both time also there were significant decrease at both groups.
Fig. (6): Visual analogue scale distribution between the studied groups

**Figure 7**: there was no significant difference between groups but there was slight significant decrease in both groups.
Complication, UTI and wound infection were higher in closure group but not significantly, and distension was sig. higher in closure group table 2.

**IV. DISCUSSION**

Regarding the preoperative data in this study, there was no significant statistical difference between both groups as regard age, parity, BMI, gestational age and types of cesarean sections to ascertain that the postoperative outcomes will be related mainly to the selected procedure.

The mean age was $23.64 \pm 2.94$ years in closure group, and $23.67 \pm 3.15$ years in non closure group; the age of our patients was comparable to other studies $^{(5)}$.

The mean gestational age was $38.67 \pm 1.05$ in closure group and $38.83 \pm 0.86$ in non closure group, in the study by $^{(6)}$Ghongdemath and Banale$^{(6)}$it was $37.5 \pm 2.3$ in closure group and $37.6 \pm 2.0$ in non closure group.

In our study there was significant statistical difference regarding operative time, as the operative time was shorter (8.9 minutes) in the non-closure group than the closure group. $^{(5)}$Rafique et al.$^{(5)}$revealed a reduction in operative time (6 minutes) in the non-closure group than the closure group, $^{(7)}$Bamigboye and Hofmeyer$^{(7)}$revealed a
reduction in operative time (7.33 minutes) in women who had both peritoneal surfaces unsutured in comparison with sutured peritoneum, Ghongdemath and Banale[10] revealed a reduction in operative time (11.2 minutes) in the non-closure group than the closure group and in the study by Tabasi et al. [8] the operative time was shorter (6.89 minutes) in the non-closure group than the closure group. The decrease in operative time reduced the duration of anesthesia time exposure and that of exposure of wound to the environmental contaminants. This is reflected in decreased incidence of febrile morbidity. American Society for Reproductive Medicine in collaboration with Society of Reproductive Surgeons 2008 has found that non closure of the parietal peritoneum in cesarean sections will definitely reduce the surgical time by five to six minutes. In the study by Shakeel et al. [9] and Zareian & Zareian [10], operative time was shorter in non closure group than closure group.

There was a significant statistical difference between both groups regarding mean degree of pain "using Visual Analogue Scale", women in non-closure group had lower pain scores. Rafique et al. [5] in a randomized controlled study of 100 women in a randomized trial of 549 women reported less postoperative analgesia when the peritoneum was not sutured at CS. In the former study, pain was the primary outcome measure and investigators found no overall difference in pain scores between the two groups, although there was a trend of lower pain scores in non-closure group. In the latter study, analgesic use only was measured and authors found lower narcotic use in non-closure group. Both studies supported our study. In addition to the cited study, a series of other studies also supported our findings [8,11,12]. Better pain outcomes following peritoneal non closure were attributed to the rich nerve supply and poor blood supply of the peritoneum.

Stretching, suturing, and reapproximation of the peritoneum causes ischemia, which leads to greater postoperative pain [5].

On the other hand, in the study by Choudhary et al. [13] the previous non closure group had more postoperative pain because the presence of adhesion due to non closure of peritoneum during primary CS, our study was deficient in the history of previous CS technique.

As regarding febrile morbidity there was no significant statistical difference between the two groups, as the mean temperature was 37.02±0.41°C in the non closure group while it was 37.1±0.47 in the closure group. Several studies did not show any significant difference regarding fever between the closure and non closure groups Tabasi et al. [8]; Zareian & Zareian, [10]; Bamigboye et al [7]; Brocklehurst et al [14] and Galaal & Krolikowski [15], which also supports our findings.

In the present study we found that bowel function took longer time to return to normal after closure of the peritoneum compared with non-closure and all cases regain intestinal motility within the first 12 hours postoperatively. Irion et al. [16] found that bowel function took a slightly longer time to return to normal after closure of the peritoneum compared with non closure. There was no statistical significant difference between the two groups as regard bowel function in the study by Galaal and Krolikowski [15].

Concerning postoperative distention, there was no significant statistical difference between both groups. Hull and Varner [16] found no difference in the episodes of ileus or partial ileus in the closure or non closure group; they observed that bowel stimulants were more frequently used in the closure group compared with the non closure group. There was also no significant statistical difference regarding degree of distension in the study by Pietrantoni et al. [17]; Ohel et al. [18] and Grundsell et al. [19]. In these studies there was no exclusion of patients with GIT problems.

There was also significant statistical difference regarding length of post operative hospital stay between closure and non closure groups. Closure of peritoneum lead to a longer hospital stay. Similarly Nagele et al. [20]; Grundsell et al. [19] and Shakeel et al. [9] showed that there was statistically significant difference regarding length of post operative hospital stay. In contrast to this result Galaal & Krolikowski [15]; Rafique et al. [5] and Pietrantoni et al. [17] did not show any significant difference regarding length of post operative hospital stay between the closure and nonclosure groups. On the other hand, Choudhary et al. [13] shows decreased postoperative hospital stay in the closure group because it depends on the technique of the previous CS, which not included in our study.

The present study shows no significant statistical difference regarding postoperative wound infection between both groups, (how ever not significant), there is Two case detected of wound infection in closure group versus One cases in non closure group. Case of wound infection resolved with wound care and medical treatment. In the study done by

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Ghongdemath and Banale (6) reported that the febrile morbidity was high in closure group as compared to that in the non closure; however it was not statistically significant. A systematic review, Bamigboye and Hofmeyr (7) show no statistical significant difference regarding wound infection and febrile morbidity the study include large number of cases more than the present study.

From our finding we conclude that, non closure of the visceral and parietal peritoneum associated with improvement in the short term postoperative outcome. Ghongdemath and Banale (6) assessed the short-term morbidity, to evaluate whether nonclosure of the visceral and parietal peritoneum has benefits over routine closure, with regards to the intraoperative and early postoperative course. They concluded that avoiding the closure of visceral and parietal peritoneum at cesarean delivery is associated with lesser operating time, decreased incidence of febrile morbidity, lesser need for postoperative analgesics, early ambulation and quicker recovery than the closure group. Hence routine closure of peritoneum at cesarean can be avoided.

V. CONCLUSIONS

Non-closure is recommended technique of both visceral and parietal peritoneum in CS because it results in significantly shorter operation time, less postoperative pain score and rapid regain of intestinal motility, less duration of hospital stay, and is perhaps a preferred way to manage the CS patients because of these benefits.

REFERENCES: