

PERITONEAL NON-CLOSURE AT CAESAREAN SECTION – A STUDY OF SHORT TERM POST OPERATIVE MORBIDITY

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ABSTRACT

Objective: To assess the intra-operative and immediate post-operative effects of non-closure of parietal and visceral peritoneum during caesarean section.

Study Design: Randomized control trial.

Place and Duration: Department of Gynaecology and Obstetrics, Combined Military Hospital, Lahore; from 1 Jan 05 to 30 Jun 05 (6 months).

Patients and Methods: A total of 306 women undergoing caesarean section were randomly allocated to standard routine closure (control group n= 157), and non-closure of both peritoneal layers (study group n=149). Preoperative, intra and postoperative management decisions were made without reference to either group specifically. Statistical analysis compared incidences of immediate post operative complications. Main outcome measures were mean operative and anesthesia time, intra operative blood loss, post operative febrile morbidity and analgesia requirements, post operative bowel function and paralytic ileus, rate of wound infection/dehiscence and length of hospital stay in both groups.

Results: The mean operative time was reduced by seven minutes ($p < 0.01$), and hospital stay was 01 day less ($p < 0.01$) in study group. There was no difference in rate of febrile and infectious morbidity or in level of post operative pain and number of analgesic doses in both groups. The difference b/w the frequency of postoperative items was also insignificant ($p > 0.05$)

Conclusion: Peritoneal non-closure is recommended during caesarean section because it results in significantly shorter operative time and hospital stay, decreased anesthetic dosage, quicker return of bowel activity and thus conferred significant patient and economic benefit.

Keywords: Peritoneal closure, non-closure, postoperative morbidity, caesarean section

INTRODUCTION

Caesarean section is a very common surgical procedure worldwide. Suturing the peritoneal layers at caesarean section may or may not confer benefit hence there has been a need to evaluate whether this step should be omitted or not [1]. Non-closure of parietal and visceral peritoneum is recommended in RCOG Green Top Guidelines July 2002 – 2005

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because of operative and postoperative benefits and cost effectiveness. Operative techniques used for caesarean section show considerable inter operative variants [2], but closure of the peritoneum at lower abdominal surgery has been "standard" surgical practice amongst obstetricians worldwide. This routine peritoneal closure may not confer any real benefit and at present there is no evidence to justify its time and cost. Various studies have infact demonstrated non closure to be associated with reduced operative time, less post operative fever and wound infection. There is significant reduction also in the need

for analgesics [3]. The aim of the present study was to evaluate objectively whether omitting this step in our setup also would be better and safer or vice versa.

PATIENTS AND METHODS

A total of 306 women underwent caesarean section for elective and emergency indications in combined military hospital Lahore during first half of 2005. The operative technique was either non-closure of parietal and visceral peritoneum (study group n= 149) or closure of both layers with absorbable suture Chromic 2/0 (sterile catgut suture N463-Johnson n Johnson), costing Rs.65/- per suture (control group n=157). Patients were randomly allocated to control and studies group. Preoperative, intra-operative and postoperative management was principally similar in both groups. Doctors and nursing staff on duty responsible for data collection were not in knowledge of respective study / control status of patient groups. Intra operative factors measured were mean operative time and quantity of anesthetic agents and the amount of blood loss. The various aspects of immediate post operative period under comparison included length of hospital stay, post operative pain, restoration of bowel function, rate of febrile morbidity, wound infection/dehiscence and haematoma formation. Febrile morbidity was defined as temperatures $> 38^{\circ} \text{C}$ on two occasions, four hours apart. There were no differences in anesthetic methods, operative indications or peripartum narcotic analgesic use.

Data was analyzed using SPSS 10.0. Student t - test and chi-square were used for statistical analysis with p-value <0.05 considered as significant.

RESULTS

There were no significant differences in short-term postoperative morbidity in both groups in comparison of postoperative pain, fever and wound infection, dehiscence or haematoma formation. However, peritoneal non-closure resulted in significantly shorter operative time difference of 7 minutes ($p<0.01$) and shorter postoperative hospital

stay, ($p< 0.01$) Non-closure also led to quicker return of full bowel activity and decreased frequency of paralytic ileus, due to lesser duration of peritoneal cavity exposure per operatively but these differences are statistically insignificant. In our study, mean time to positive auscultation of bowel sounds was between 12-15 hour (SD 0.6) in non-closure group compared to 12-18 hour (SD 0.5) in closure group. The difference is not statistically significant but has slight clinical significance in favour of non-closure (table).

None of the cases had any wound dehiscence; haematoma formation or significant wound infection in our study. There was no patient with late postoperative complication or re-admission during peripartum. No difference in intra operative blood loss was observed between two groups. Requirement for parenteral narcotics / NSAIDs analgesics was generally similar in both groups. Only two patients in study group developed postoperative ileus as compared to seven in control group, which resolved spontaneously ($p>0.05$). Bowel stimulant drugs were not administered to either group, as it is not standard practice in our hospital after uncomplicated Caesarean delivery.

DISCUSSION

Surgical tradition advocates the operative technique of peritoneal closure at Caesarean section, presumably to restore normal anatomy and prevent postoperative adhesion formation between intestines and fascia, between uterus and fascia, and reduce risk of wound infection, herniation, dehiscence and haematoma formation [4]. This technique has not been proved advantageous by randomized control trials and experimental studies have shown that in un-sutured peritoneum, spontaneous re-peritonealization will occur within 48-72 hours with complete healing in five to six days [5-7], whereas suture peritonealization tends to cause tissue ischaemia, necrosis, inflammation and foreign body reaction to suture material. This may lead to delayed healing as well as adhesion formation. Large number of randomized

Table: Comparison of short term post operative morbidity.

Outcome Measures	Study Group Non-Closure (n = 149)	Control Group Closure (n = 157)	P-Value
Average duration of operating time (min)	47	54	< 0.01
Post operative length of hospital stay (days)	3.1	4.1	< 0.01
Post operative fever > 38° C ≤ 48 h	10 (6.7 %)	11 (7 %)	> 0.05
Post operative Ileus	2 (1.3%)	7 (4.4%)	> 0.05
Mean time of positive auscultation of bowel sounds	12 - 15 h mean (SD 0.6)	12-18 h mean (SD 0.5)	> 0.05

control trials [8-11] which were included in a Cochrane systematic review [12] found that peritoneal non-closure at caesarean section saved operating time and lessened anesthesia exposure, and is associated with lower post operative febrile and infectious morbidity. Grundsell et al [13] reported that in their randomized control trial, hospital stay was one day less in non-closure group. According to Cochrane systematic review by Wilkenson and Enkin [12], there is no statistically significant differences in short term post operative morbidity and analgesic requirements. In another retrospective study comparing closure vs. non-closure, McNelly et al [14] found that full bowel activity occurred significantly later in the peritoneal closure group. The outcome of peritoneal closure at LSCS was evaluated prospectively in our study and results are comparable to above mentioned studies.

Cost analysis to determine possible savings with peritoneal non-closure amounts to Rs. 20540/- if one suture is saved at each operation at a caesarean section rate of 21.3 % with more than 3000 deliveries per annum.

This calculation is independent of operation theatre time, decreased anesthesia and hospital expenses of a shorter post operative stay, so actual saving to health care system would be even greater. This economic benefit from non- closure of peritoneum at caesarean section has important implications in a resource limited set up like ours. Any small improvement in postoperative morbidity will have important implications in clinical practice in terms of clinical satisfaction. At present, no data supports any hazards of peritoneal non-closure and there is clear evidence of benefit in intra operative

and postoperative outcome in favour of this technique. Short-term postoperative morbidity and pain are not increased because of a shorter and simpler surgical procedure, in which visceral and parietal layers are left unsutured. Other distinct advantages to non-closure are shorter operation duration and reduced cost. No disadvantage to non-closure could be proved in our study, so we suggest that routine closure can safely be abandoned since it has no proven benefit over non-closure.

CONCLUSION

We agree with the conclusion of Cochrane’s database [12] that there is no significant difference in short term morbidity from peritoneal non-closure at caesarean section. In fact, non-closure is a simpler operative technique, more cost effective, associated with fewer postoperative complications and lower febrile morbidity and provides a shorter surgical procedure. Long term studies following caesarean section are limited but data from other surgical procedures suggests that there may also be less post operative adhesion formations. Thus it is fair to conclude that at present there is no evidence to justify the extra time and cost of peritoneal closure.

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