

Non-closure or Closure of Visceral and Parietal Peritoneum at Caesarean Section- A Comparative Study

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Summary

A prospective randomized trial of 224 women undergoing caesarean section was carried out - 112 women were selected for non-closure of visceral and parietal peritoneum. Indications for caesarean section and various demographic and antenatal characteristics were similar in both groups, so also the intrapartum and intraoperative characteristics.

On analyzing the outcome of the two groups we found that nonclosure of visceral and parietal peritoneum had benefits of less operative time. Post-operative outcome was similar in both groups. Nonclosure of visceral and parietal peritoneum makes caesarean section a shorter and simpler procedure with no difference in morbidity.

Introduction

Caesarean section is the most common intraperitoneal surgical procedure in Obstetrics and Gynaecology. Closure of visceral and parietal peritoneum is done routinely. Most Obstetricians and Surgeons believe that the closure of peritoneum can prevent adhesions. This has not been proved. On the contrary several reports and animal experiments have shown that suture peritonization tends to cause tissue necrosis, inflammation and foreign body reactions to the suture material. Peritoneal and vascular injury produced by any suture may be a major cause of adhesion formation. In several prospective studies nonclosure of peritoneum did not cause increased postoperative complications.

Materials And Methods

A total of 224 women undergoing elective or emergency caesarean section were prospectively selected for either nonclosure or closure of visceral and parietal peritoneum.

The abdomen was opened by a Pfannenstiel or a vertical subumbilical incision. All uterine incisions were low transverse incisions. The uterine incisions were closed in two layers using chromic catgut. The visceral and parietal peritoneum was left open in nonclosure group and was closed with chromic catgut in closure group. The rectus sheath was closed with nonabsorbable suture material.

The operation time, the postoperative morbidity, and postoperative stay were analysed.

Table — I :
Patient Characteristics and Procedure Statistics

	Nonclosure group n=112	Closure group n=112	Significance
Maternal Age			
- Mean	23.94	24.50	N.S.
- Range	18-40	18-35	
Parity			
- Mean	1.91	1.86	N.S.
- Range	1-6	1-6	
Booked cases (%)	55 (49.1%)	66 (58.9%)	-
Unbooked cases (%)	57 (50.9%)	46 (41.1%)	-
Primary caesarean (%)	75 (67.0%)	70 (62.5%)	-
Repeat caesarean (%)	37 (33.0%)	42 (37.5%)	-

Table — II :
Indications for Caesarean delivery

	Nonclosure group	Closure group
Foetal distress	25 (22.30%)	21 (18.70%)
Cephalopelvic disproportion	45 (40.10%)	51 (45.50%)
Breech presentation	05 (4.46%)	11 (9.80%)
Malpositions	04 (3.50%)	02 (1.70%)
Placental factors	09 (8.00%)	02 (1.70%)
Others	24 (21.40%)	25 (22.30%)

Of the total women 224 undergoing emergency or elective caesarean section 112 were allocated to the study group and 112 to the control

group. The study and control groups were similar with respect to maternal age, parity and antenatal booking. Groups were also similar with respect to indications for caesarean, mode of anaesthesia, type of incision, number of women with previous caesarean section or intraoperative tubal ligations.

Table — III
Comparison of the Procedure, Operative time & Postoperative stay

	Nonclosure group	Closure group	Significance
Anaesthesia			
- G.A. (%)	32 (28.60%)	38 (33.90%)	-
- Spinal (%)	80 (71.40%)	74 (66.10%)	-
Incision			
- Vertical (%)	51 (45.40%)	73 (65.20%)	-
- Pfannenstiel (%)	61 (54.50%)	39 (34.80%)	-
Tubal Ligation (%)	53 (47.30%)	50 (44.64%)	
Operation time (in minute)			
- Mean	40.357	48.509	Significant
- Range	(26-51)	(33-61)	P=0.005
Post-operative stay:			
Less than 10 days	100 (89.30%)	101 (90.20%)	
- Mean	7.09 days	7.13 days	N.S.
- Range	6-9 days	6-9 days	
More than 10 days	12 (10.70%)	11 (9.80%)	
- Mean			
- Range	10-15 days	10-15 days	

Women in the nonclosure group had a shorter mean operation time than in the closure group (40.3 minutes and 48.5 minutes respectively).

The mean operation time in both groups were compared in Z Test. When Z test for the significant difference between Z means was applied, it was found that closure group definitely took longer time when compared to nonclosure type. It was found highly significant ($Z= 9.9405$ $P=0.005$).

All the patients were monitored in the postoperative period regarding febrile morbidity, ileus and wound healing. There was no statistical difference in the short term postoperative morbidity in both the groups.

One hundred (89.3%) patients in nonclosure group and 101 (90.2%) patients in closure group were discharged from the hospital without any morbidity. The mean postoperative stay was 7.09 days in study group and 7.13 days in control group.

Twelve (10.7%) patients in nonclosure group and 11 (9.8%) patients in closure group were hospitalized for more than 10 days for anaemia, wound infection, urinary tract infection and respiratory infection.

Discussion

This study examines the question of closure or nonclosure of the visceral and parietal peritoneum at caesarean section.

Our findings indicate that caesarean section without suture reapproximation of peritoneal edges provides significant advantages. One is, decrease in operative time which in turn is associated with shorter anaesthesia exposure.

The length of postoperative stay was similar for the nonclosure and closure group.

Hertzler (1919) had shown that peritoneal healing differs from that of skin. When a defect is made in the peritoneum, the entire surface becomes endothelialized, simultaneously by mesenchymal cells and not gradually from the borders as in epidermalization of skin wounds. Ellis (1962) and Hubbard et al, (1967) reported that re-epithelialization of peritoneum occurs in 5-6 days.

Adhesions, delayed healing and wound breakdown are often attributed to failure of peritoneal resuturing or the presence of deperitonealized areas within the abdomen. To reconstruct the pelvis after removal of viscera and peritoneum seems logical for good surgical practice. However, data indicate that approximation of peritoneum by sutures to cover vascularized areas denuded by the previous dissection may not facilitate peritoneal repair.

The most important factor in adhesion prevention is impeccable surgical technique, including minimal tissue traumatization and avoidance of ischaemia and inflammation by eliminating crushing forceps pressure, stitch tension and knot pressure. These demands are best met by leaving the peritoneum open.

All experimental evidence indicates that areas denuded of peritoneum will heal satisfactorily and that suturing of peritoneum actually increases the incidence of adhesions. This was confirmed by Tulandi et al in (1988) in a clinical study using second look laparoscopy.

In the study by Pietrantonio et al, (1991) only parietal peritoneum was left open at caesarean section and Hull and Varner (1991) left both the visceral and parietal peritoneum unsutured. Both studies reported significant decrease in operating time in the open group. Hull and Varner, (1991) found that pain medication requirements were higher in closure subjects. Nagele et al, (1995) showed that nonclosure of visceral peritoneum not only reduces the operating time and anaesthesia exposure but also offers other significant benefits with regard to postoperative course including reduction in postoperative necrosis and most important, a lower febrile and infectious morbidity and therefore decreased antibiotic requirements. In another clinical trial Irion et al, (1996) showed that there was no increase in short term postoperative morbidity, when the visceral and parietal peritoneum were unsutured.

The results of our study indicate that operative and anaesthesia time are reduced and that there is no difference in the post-operative morbidity in the experimental and the control group.

Conclusion

Non-closure of visceral and parietal peritoneum makes caesarean section a shorter and a simpler procedure without increasing morbidity. Hence, routine closure of both visceral and parietal peritoneum can be abandoned at caesarean section.

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