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Research Paper

# Effect of Non Closure of Peritoneum on Outcome of Caesarean Section - A Prospective Randomised Control Study

Medical Science

**KEYWORDS :** peritonization, Caesarean Section, postoperative recovery.

**DR. NAMITA AGARWAL** MBBS, MS (Obs. & Gyn.) Associate Professor Department of GYN. & OBS. SRMS-IMS, BAREILLY, U.P. (INDIA)

**DR. BRIJESH KUMAR AGARWAL** MBBS, MS, DMB Associate Professor in Surgery Department of Surgery SRMS-IMS, BAREILLY, U.P. (INDIA

## ABSTRACT

*To study the effect of nonclosure of peritoneum at Caesarean Section as compared to peritonization. A prospective randomized controlled trial on women undergoing Caesarean Section was done. They were randomized into nonclosure and closure groups. Various details were noted in the proforma during the intraoperative and postoperative period. Chisquare test was used to compare outcome in two groups. Operating time, pain, time of oral intake, time of ambulation & hospital stay were significantly shorter in nonclosure group (p<0.0001). There was lesser febrile morbidity and wound infection in the non closure group but it was not statistically significant. This study gives us sufficient confidence for non peritonization at Caesarean Section. Our study is comparable to other studies done in this regard.*

**Introduction**

Caesarean section is most certainly one of the oldest operative procedure employed on the human body. It is a surgery which frequently needs to be repeated in the same patient in many clinical situations. The increase in the rate of Caesarean Section has reached such a large proportion that, it is being referred to as a 'global epidemic.' Caesarean delivery rates rose from 20% to 33% of all births in the United States from 2006 - 2009.

Caesarean Sections are performed on a varied clinical profile of patients from rural and urban areas, low cost as well as expensive setups with ideal infrastructure and even in low resource settings in terms of surgical manpower. It is frequently a life saving procedure for either the foetus and / or mother . Caesarean delivery mortality has reduced significantly due to availability of effective antibiotics, safe anaesthesia and blood transfusion services. We obstetricians are still constantly striving in our attempts to make Caesarean Section even more safe, more economical in cost and time for both the patient and doctor, more convenient with lesser hospital stay and with lesser post operative morbidity.

Single layer versus double layer uterine closure in low transverse uterine incision has been studied by many workers with conflicting results to be generalized. Non-closure of visceral or/and parietal peritoneum has been attempted by various workers with exclusion of patients with obesity and infection. We have included patients with obesity, repeat caesarean section and infections in our study. The future in obstetrics aims at equal safety, discomfort, ambulation, cost, postoperative morbidity and mortality for both Vaginal and Caesarean deliveries.

This study is an attempt in this direction.

There is a belief that closure of peritoneum can prevent adhesions[1]. On the contrary, studies support the opposite view[2]. Clean cut edges of peritoneum without suturing provide more rapid peritoneal repair , leading to less operative time, less postoperative pain, less chances of fever, early oral intake and early ambulation less postoperative hospital stay and better wound healing[3,4,5].

**Methodology**

This study was conducted between May 2008 to April 2012 at Department of Obstetrics and Gynaecology, SRMS IMS and Ekta Hospital, Bareilly, U.P. to study the effect of nonclosure of peritoneum in comparison to closure of peritoneum at Caesarean delivery.

260 women undergoing emergency or elective lower segment Caesarean Section were included in the study.

Detailed history, examination, investigations, written consent & allotment of sealed envelop was done. The patient was taken in the Operation Theatre and the sealed envelop opened and note shown to the surgeon mentioning in which group this patient belongs either closure group or non closure group.

We did all the cases in Spinal or Epidural anesthesia. Foleys catheterization was done in all cases.

All the women underwent Lower Segment Cesarean Section through a Pfannenstiel incision. Uterus was closed with No 1 Vicryl in both the groups. In the Control group, both the layer of peritoneum were closed with Chromic Catgut No 1-0. Rectus sheath was sutured with Vicryl No 1. Skin closure was done with continuous subcuticular Vicryl No. 1-0. In the nonclosure group , the abdomen was closed without suturing both the visceral and parietal peritoneum.

We used injectable combination of Cefoperazone + Sulbactum and injecton Gentamycin per operatively according to the weight of the patient. These antibiotics were continued for 2 days and then, oral antibiotics were given for seven days except for injection Gentamycin, which was given for a total of five days.

We kept the patients in the same postoperative conditions and discharged the patients after ambulation and symptomatic well being.

Outcome measures noted were - operation time, postoperative pain, duration of ileus, time of ambulation, fever, wound infection and hospital stay.

Operating time was duration from skin incision to end of skin closure. Routinely we did not use any analgesic. Within 24 hours of surgery , we used Diclofenac 75 mg intramuscularly. Requirement of analgesic after 24 hours was recorded. Oral liquids were allowed when on auscultation bowel sounds were heard. Time in between surgery and appearance of bowel sounds was recorded. Fever was considered as fe-

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brile morbidity if it was more than $38^0$ C after 24 hrs. after surgery. We removed the catheter on the third postoperative day or earlier after bowel was cleared. Ambulation of the patient was encouraged as soon as possible. Hospital stay was noted. Wound infection was diagnosed when there was serous or purulent discharge from the skin incision or appearance of erythema, induration and tenderness around the skin sutures.

**Results**

Among the 260 women selected in the study , 130 patients had nonclosure, while 130 controls had closure of both visceral and parietal peritoneum at Caesarean Section.

Mean age, parity and gestational ages were comparable in both the groups. (table-1 and 2). Emergency or elective caesarean has been shown in Table-3.

**Table-1- Patient Characteristics**

| Parameters | Nonclosure (130) | Closure (130) | Statistical significance |
|---|---|---|---|
| Age ( years) | 25.4±3.05 | 25.79±2.86 | z=1.06, p = 0.2 Not sign |
| Gestational age | 28.9±1.04 | 38.15±1.2 | z=1.78, p=0.07 Not sign |

**Table-2 - Order of Parity**

| Order of Parity | Nonclosure (130) | Closure (130) | Statistical significance |
|---|---|---|---|
| P1 | 91 | 80 | $x^2$=2.067, p = 0.15 Not sign |
| P2 | 39 | 50 | |

**Table-3-Type of Caesarean**

| Type of LSCS | Nonclosure (130) | Closure (130) | Statistical significance |
|---|---|---|---|
| Elective | 52 | 44 | $x^2$=1.05, p = 0.3 Not sign |
| Emergency | 78 | 86 | |

Outcome of the study has been shown in different parameters in Table-4 & 5. The average time taken in operation and time of anesthesia is significantly lower in subject group as compared to control group. Requirement of painkillers is less in subject group as compared to control group, and it was highly significant. Time of oral intake and ambulation was less in non closure group as compared to control group and was statistically significant. Time of oral intake in the non closure group was less than 24 hours in all patients and more than 30 hrs. in all patients of closure group. None of the patients of non closure group were in the hospital for more than five days in contrast to the closure group. Similarly febrile episodes & wound infections were lower in the study group, but was not statistically significant. The duration of hospital stay was shorter in the study group and was statistically significant.

**Table-4 - Post-Op Parameters**

| Pre Op. Parameter | Nonclosure (130) | Closure (130) | Statistical significance |
|---|---|---|---|
| Operating time (minutes) | 36.63±2.55 | 52.5±2.9 | z=46.75, p< 0.0001 Highly sign |

**Table-5 - Post-Op Parameters**

| Pre Op. Parameter | Nonclosure (130) | Closure (130) | Statistical significance |
|---|---|---|---|
| Pain | 39 | 76 | $x^2$=21.34, p< 0.0001 Highly sign |
| Fever | 16 | 20 | $x^2$=0.51, p = 0.47 Not sign |
| Time of oral intake (hrs) | 18.46±2.14 | 33.4±2.38 | z=53.135, p< 0.0001 Highly sign |
| Ambulation (days) | 2.16±0.55 | 3.55±0.74 | z=17.065, p< 0.0001 Highly sign |
| Wound Infection | 12 | 18 | $x^2$=1.35, p = 0.24 Not sign |
| Hospital Stay (days) | 3.43±0.7 | 6.74±0.8 | z=35.373, p< 0.0001 Highly sign |

**Discussion**

Theoretically, it is a practice to suture both visceral and parietal peritoneum at Caesarean Sections without proper evidence. It has been proved that the peritoneum regenerates denovo and not from the cut edges of the defect[6].

In this study, there was a significant reduction in the average operating time by 15.9 minutes in the non closure group. This finding is consistent with those of other studies who have reported shorter operative time in these groups of patients[7]. However in the pre

sent study, surgical time was more than 10 minutes shorter probably because both visceral and parietal peritoneum were left unsutured; whereas Pietranoni et al[7] left only parietal peritoneum open and Nagele et al[8], left only visceral peritoneum open.

The less operative time reduced the duration of exposure to anaesthesia and that of exposure of wound to external environmental contaminants. This is reflected in the decreased incidence of febrile episodes and has been reproduced in the observations made by other researchers [6,7,9]. Moreover needle pricks and foreign body reaction to suture material causes tissue ischaemia and necrosis causing delayed healing.

We also noticed less use of post operative analgesics in the subject group as compared to control group due to less manipulation of parietal peritoneum, which is pain sensitive. Studies done by other workers also show the same observations[10,11].

The present study showed decreased incidence of wound infection in the subject group which was statistically not significant and was comparable with the findings of Hull[12] and Nagele et al[8].

The average time of oral intake in the non closure group was 18.5 hrs and in the closure group it was 33.5 hrs. There was probably lesser bowel handling due to the significantly lesser operating time and so earlier appearance of bowel sounds. This difference in the time of oral intake in the two groups was statistically significant. Early oral intake lead to earlier ambulation in the non closure group which was again statistically significant. The mean hospital stay was more than 3 days shorter in the non closure group. There were 12 patients in the closure who had to stay in the hospital for more than 7 days either due to pain or febrile episodes. None of the patients in the non closure group were in the hospital for more than 5 days. This difference was highly significant statistically. Early oral intake and ambulation, lesser pain and febrile morbidity resulted in a sense of general well being to the patient and their earlier discharge from the hospital.

**Conclusion**

There is no evidence to justify the time taken and cost incurred in peritoneal closure. This study provides reassurance regarding nonclosure of peritoneum even in patients with infection and obesity. To statistically determine a decrease in incidence of adhesions encountered in repeat Ceasarean Section we need further studies over a larger population and over a longer period of time.

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