

## ORIGINAL ARTICLE

## COMPARISON OF PERITONEAL CLOSURE VERSUS NON-CLOSURE DURING CAESAREAN SECTION

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**Background:** In modern obstetrics caesarean sections are commonly used and in all caesarean sections either peritoneal closure is done or not. This cases series was conducted to record outcomes in our setup. **Methods:** Cases of caesarean sections were followed for adhesions and non-adhesions in peritoneal closure and non-closure cases from 1<sup>st</sup> January to December 2011 at DHQ Hospital Haripur. In non-peritoneal closure cases adhesions were marked as compare to non-adhesions in peritoneal closure cases. **Results:** Sixty-five cases of peritoneal closure and 30 cases of non-peritoneal closure were followed up. There were more cases of adhesions in non-closure group ( $p < 0.05$ ). **Conclusion:** Peritoneal closure is beneficial in routine caesarean sections.

**Keywords:** Adhesions, Caesarean sections, peritoneal closure, peritoneal non closure

J Ayub Med Coll Abbottabad 2015;27(1):78–80

## INTRODUCTION

Caesarean-section is one of the commonest surgical procedures with trends on the rise worldwide. Though the basic procedure is the same; some new techniques are practiced like not closing the parietal peritoneum. Various studies have been published to highlight the merits and demerits of these procedures generating varied discussions. Whether the parietal peritoneum should be closed at caesarean section or not is a burning issue.<sup>1</sup>

Arguments put forward by both sides are convincing that add to confusion on part of the practicing obstetricians. Basic concepts and training of surgical skills vouch for the fact that all that is incised during operation must be stitched back so as to restore the anatomical picture back to normal possibly.<sup>2</sup>

According to Walter and Israel, peritoneal healing and other serosal surfaces occur by metaplasia of the connective tissue underlying.<sup>3</sup> Peritoneum regenerates within eight days of surgery. Some studies advocate non closure of peritoneum in some cases, but other show sticking to everything in between dense adhesions formation is left uncultured peritoneum.<sup>4</sup>

In non-peritoneal closure, future surgeries become difficult and time consuming. It results in various complications like long standing pain, dyspareunia, infertility, hernia and intestinal obstruction.<sup>5</sup> Intention behind peritoneal closure is to keep the intra-abdominal contents inside the abdomen. Peritoneal closure makes an inter-phase between abdominal contents and the wall of interior abdomen. As compared to other laparotomies peritoneal healing after caesarean section is slightly different for a simple reason that a 16–18 weeks size puerperal uterus in the midline pushes the omentum and intestines through the peritoneal incision. In un-

sutured peritoneum it regenerates by eighth post-operative day, the adhesions would form, binding the anterior abdominal wall to uterus, omentum and intestine even. Less dense adhesions are observed in parietal peritoneal closure in primary c sections.<sup>6</sup> This study is an effort to compare the two procedures in our setup in terms of adhesions formation.

## MATERIAL AND METHODS

Ninety-five consecutive cases of repeat sections with 65 peritoneal closures and 30 non closures were followed up in this case series. The 1<sup>st</sup> group (Group C) consisted of sixty five cases having peritoneal closure in previous surgery. The second group (Group NC) had thirty cases with un-sutured peritoneum in previous surgery. Presence of adhesions was evaluated during the repeat surgery in both groups for adhesion formation, severity and nature, surgery duration, procedural difficulty and post-operative complications. The adhesions were classified in four grades: 1) Grade 0: adhesion less, 2) Grade 1: mild adhesion, 3) Grade 2: moderate adhesions of omento-facial, and 4) Grade 3: severe adhesions with bowel attachments, bladder.

Cases with peritoneal non closure were compared over the years with peritoneal closure in primary caesarean sections. Patients with history of puerperal pyrexia, history of massive blood transfusion, previous surgery on more than one occasion, C Section for obstructed labour, chorioamnionitis and premature rupture of membranes (PROM), and history of prolonged hospital stay. Data was analysed using SPSS 16.0. Chi-square test was used to know significant differences in both the groups.

## RESULTS

There were no remarkable differences in both groups, in terms of immediate postoperative morbidity, like

postoperative pain, analgesics requirement, febrile episodes, wound healings and stay at hospital. In patients of non-closure group, dense adhesions were found during laparotomies, peritoneal cavity access was found difficult and time consuming. Adhesiolysis was needed to access the uterus, resulting in longer incision, surgical time and delivery interval. Adhesions were more in the case of NC group ( $p < 0.05$ )

Anterior abdominal wall was stuck to the anterior uterine wall in some cases in the midline, uterus was covered by omentum, and rectus muscle was incorporated in the wall of uterus. In some cases adherent to anterior abdominal wall small bowel loops were found, making abdominal opening difficult and risky. Extra peritoneal caesarean was done in certain cases to shorten incision delivery interval. Ligation of Fallopian tubes was difficult in some cases. Bleeding was more in few instances because of extensive formation of adhesions. Successive surgeries were easier, faster, cleaner with few adhesions in Group C, where closure of parietal peritoneum was routinely practiced.

**Table-1: Outcome by type of procedure**

Adhesions	Procedure		Total
	Closure n (%)	Non-Closure n (%)	
None	50 (77)	0 (0)	50 (53)
Grade-1	15 (23)	5 (17)	20 (21)
Grade-2	0 (0)	15 (50)	15 (16)
Grade-3	0 (0)	10 (33)	10 (10)
Total	65 (100)	30 (100)	95 (100)

## DISCUSSION

Peritoneal non-closure in caesarean-sections will certainly reduce the surgery time by few minutes which attracts many studies to advocate non-closure.<sup>8</sup> A study conducted in Pakistan in a Military hospital comparing peritoneal closure versus non-peritoneal closure of peritoneum observed that peritoneal non-closure was recommended as it reduces the surgery time, span of anaesthesia, quicker recovery and early hospital discharge.<sup>9</sup> However at the cost of adhesion formation and problematic successive surgeries as observed in our study, it's a loss rather advantage. Longer operating time, heavy bleeding, and turbulent postoperative periods with late hospital discharge in repeat surgeries done on patients where non-peritoneal closure was observed. Most of the studies which advocate non-peritoneal closure, have not weighted long term consequences like morbidities and complications in successive surgeries with adhesions.<sup>10</sup> A double blind randomized trial conducted to compare the intensity of post-caesarean pain between closure and non-closure group concluded hardly any difference in postoperative pain in both groups in successive cesareans.<sup>11</sup> As there is

hardly any difference in postoperative pain, early discharge and wound complication in closure and non-closure group, should we close the peritoneum? Cumbersome surgeries were encountered in those patients who had non-peritoneal closure in previous surgeries due to complicated omento-facial adhesions. There were also profound blood losses while separation of previous adhesions to access lower uterine segment. Bowel loops were stuck in the bands of adhesion in some cases. Bladder and bowel injuries risk during dissection of adhesion was also observed.<sup>12</sup>

Tulandi, *et al* in review of 14 studies observed that non-closure of the peritoneum result in a significantly increased incidence of adhesion formation.<sup>13</sup> In a prospective randomized trial by Zareian *et al*, performed on 45 patients, revealed increased operating time but found decreased risk of adhesions and, suggested peritoneal closure during caesareansection.<sup>14</sup> It is in agreement with our observation for cases of repeat surgery on patients who had closure of the parietal peritoneum in prior surgery. These patients had uneventful post-operative periods and short hospital stay. The study conducted by Lyell *et al* endorses our observations, with 5-fold protective against all adhesions and 3-fold protective against dense adhesions.<sup>10</sup>

## CONCLUSION

It has been observed that in non-peritoneal closure of primary caesarean sections, successive surgeries often face adhesion problems. Surgeries are faster cleaner in peritoneal closure cases, so to reduce adhesion related morbidity and arid subsequent surgeries routine closure of parietal peritoneum in caesarean sections is recommended.

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