

## ORIGINAL ARTICLE

**Comparison of Primary Outcomes in Extra-Abdominal Versus Intra-Abdominal Uterine Repair at Caesarean Section: A Comparative Study**Sanum Kashif<sup>1\*</sup>, Asia Hanif<sup>2</sup>**ABSTRACT**

**Objective:** To compare extra-abdominal repair of uterine incision, in caesarean section with in situ repair, in terms of duration of surgery.

**Study Design:** Comparative study.

**Place and Duration of Study:** The study was conducted in Gynae and Obstetrics Department of CMH Abbottabad from May 2016 to Nov 2017.

**Materials and Methods:** A total of 362 patients were randomized by creating permuted blocks of 6. In Group A (n=181), uterus was exteriorized, following delivery of baby and in Group B (n=181) in-situ repair of uterus was performed. Lower segment cesarean section (LSCS) with Pfannenstiel incision was made, with uterine repair in two layers. Data was collected by the trainee herself on the annexed pro forma. SPSS version 20 was used for data analysis.

**Results:** The mean age of participants was  $29.57 \pm 5.79$  years while mean age in group-A was  $29.09 \pm 5.52$  years and in group-B was  $30.04 \pm 6.02$  years. The mean gestational age in group-A and group-B was  $37.26 \pm 3.05$  weeks and  $37.24 \pm 2.98$  weeks respectively. The mean operative time in group-A was significantly lower ( $34.90 \pm 5.84$  minutes) then group-B ( $36.25 \pm 6.36$  minutes),  $p$ -value = 0.036 (<0.05).

**Conclusion:** The surgical time in extra abdominal uterine repair in caesarean sections was significantly short as compared to intra-abdominal repair, so exteriorization of uterus is more advantageous than in situ repair in terms of postoperative recovery.

**Key Words:** *Caesarean Section, Extra-Abdominal Repair, Intra-Abdominal Repair Intra-Operative Complications, Uterine Exteriorization.*

**How to cite this:** Kashif S, Hanif A. Comparison of Primary Outcomes in Extra-Abdominal Versus Intra-Abdominal Uterine Repair at Caesarean Section: A Randomized Controlled Trial. *Life and Science*. 2022; 3(2): 80-83. doi: <http://doi.org/10.37185/LnS.1.1.185>

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**Introduction**

Among major surgical procedures worldwide, caesarean section is one of the most commonly performed surgical procedure. Depending on facilities available, it constitutes approximately 70 % of deliveries.<sup>1,2</sup> In caesarean sections, ideal surgical technique is the one with less surgical time, low cost,

less postoperative morbidity and short length of hospital stay.<sup>3</sup> Literature showed multiple surgical techniques in caesarean sections, to lower the peri-operative morbidity. It includes repair of uterine incision either by exteriorization or in situ repair. According to some studies, intra-abdominal uterine repair, has been considered as a reliable technique for repair of incision, after delivery of new born and placenta. It offers earlier uterine repair, results in short operative time (less than 45 minutes). More over bowel movement also return earlier in situ repair.<sup>4</sup> Both uterine repair techniques have been used by obstetricians. Local literature also showed varying results; in some studies<sup>5</sup> exteriorization of uterus at caesarean was found better in terms of surgical time. While others showed that intra-abdominal uterine repair is better in terms of peri-

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Funding Source: NIL; Conflict of Interest: NIL

Received: Mar 14, 2021; Revised: Mar 15, 2022

Accepted: Mar 31, 2022

operative complications. Therefore it is necessary to identify, if there is any difference between the techniques, in terms of patient recovery.<sup>6</sup> Mostly studies showed that although there were no significant change in hemodynamic parameters, postoperative hematocrit reduction was less in case of exteriorization of the uterus for repair.<sup>7</sup> In some cases, intra-abdominal repair of uterus at caesarean section was found better.<sup>8</sup> The aim of this study is to generate evidence, for the development of local recommendations regarding primary outcomes.

**Materials and Methods**

The study was conducted after getting approval from hospital ethical committee. The women, meeting inclusion criteria including underwent caesarean section either elective or emergency (after 28 weeks of gestation) from May 2016 to Nov 2016 were included by consecutive (non-probability) sampling. They were assigned into two groups by block randomization by creating permuted blocks of 6. Group A surgeon was supposed to exteriorize the uterus following baby delivery and group B in-situ repair of uterus was performed. Patients with previous more than two cesarean sections, multiple adhesions, pregnancy with ovarian cyst, myoma, ruptured uterus, with history of previous abdominopelvic surgery, hysterectomy, and chorioamnionitis were excluded from the study. All the operations were done by an experience gynecologist with 5 years post fellowship experience. Lower segment cesarean section with Pfannenstiel incision was made with repair of uterine incision in two layers. Data was collected by the trainee herself on the annexed pro forma and analyzed on SPSS version 20.0. Mean± SD was calculated for patient's age, parity and surgical time. Data was stratified by age and parity, and analyzed. To know significant difference between two groups with respect to outcome variables i.e. surgical time, independent samples t. test was used at 5 % level of significance. P value of ≤ 0.05 was considered significant. All the results were presented as tables and charts. Post-esterification t-test was applied. p-value ≤ 0.05 was taken as significant.

**Results**

The mean age of cases in this study was 29.57 ± 5.79 years. A total of 197(54.42%) patients were 20-30 years old and 165(45.58%) were 31-40 years old.

The mean gestational age in group-A and group-B was 37.26 ± 3.05 weeks and 37.24 ± 2.98 weeks respectively.

Table 1. There were 74(20.44%) cases with gestational age < 37 weeks and 288(79.56%) females who had gestational age as 37 weeks or more. The mean operative time in group-A was significantly lower (34.90 ± 5.84 minutes) then group-B (36.25 ± 6.36 minutes), p-value = 0.036 (< 0.05). Table 1. When data was stratified for age, gestational age and parity, mean operative time was significantly less in age group 31-40 years and in females having parity ≥ 4. Table 1.

**Table 1: Comparison of Operative Time (Min) in Both Groups with Respect to Age (Years), Gestational Age (Weeks) and Parity**

	Group A	Group B	p-value
Age			
20-30	35.02+ <sub>5.68</sub>	35.74+ <sub>6.17</sub>	0.392
31-40	34.73+ <sub>6.10</sub>	36.67+ <sub>6.53</sub>	0.041
Gestational			
Age	34.71+ <sub>5.55</sub>	36.19+ <sub>6.01</sub>	0.273
<37 weeks	34.95+ <sub>5.93</sub>	36.27+ <sub>6.46</sub>	0.072
37 weeks or more			
Parity			
<4	34.87+ <sub>5.61</sub>	35.59+ <sub>6.32</sub>	0.369
4 or more	34.95+ <sub>6.27</sub>	37.26+ <sub>6.32</sub>	0.033

**Discussion**

Caesarean section (CS) is one of the commonest major surgical procedure worldwide, associated with risks to both mother and baby, as well as costs.<sup>9</sup> According to the systematic review of Cochrane Library, which included 1,221 women, comparing the effects of extra-abdominal with intra-abdominal repair of the uterine incision. In terms of majority of outcomes analyzed, no difference between groups was found significantly, except febrile morbidity and duration of hospital stay.<sup>10</sup> With exteriorization of uterus, febrile morbidity was less (relative risk 0.41). Nevertheless, these results are based on few and small studies. Still there is no clear demarcation about the technique that offers the most advantages.<sup>11</sup>

A local study reported that mean age was 27.1 ± 2.7 and 27.4 ± 2.9 years in group-A and B, respectively. Gestational age was 37.7 ± 5.2 and 37.2 ± 5.4 weeks in group-A, and B, respectively.<sup>12</sup> In current study the mean age of cases in this study was 29.57 ± 5.79 years while mean age in group-A and group-B was

29.09 ± 5.52 years and in group-B was 30.04 ± 6.02 years. The average gestational age in group-A and group-B was 37.26 ± 3.05 weeks and 37.24 ± 2.98 weeks respectively. The mean age and gestational age was almost similar as reported in above study. We in current study found that the mean surgical time in group-A was significantly lower (34.90 ± 5.84 minutes) then group-B (36.25 ± 6.36 minutes),  $p$ -value = 0.036 ( $< 0.05$ ). Another study reported that mean time for the first recognized bowel movement was 13.10 ± 3.45 hours in situ repair and 16.11 ± 4.98 hours in exteriorization of uterus ( $p < 0.001$ ). Exteriorization had been associated with vomiting during caesarean (18% with intra-abdominal repair compared with 38% exteriorization of uterus). Significant difference was found in both groups in terms of vomiting ( $p < 0.001$ ).<sup>12</sup>

According to another study, conducted to compare uterine exteriorization for repair versus intra-abdominal repair at caesarean section, in Egypt. Uterine exteriorization was used in group 1 ( $n = 500$ ) and intra-abdominal repair in group 2 ( $n = 500$ ). Surgical duration was considered as the primary outcome measure. The result of this study has showed that surgery duration was significantly longer in group 1 than group 2 (49.9 ± 2.3 minutes vs 39.9 ± 1.8 minutes;  $P < 0.001$ ). These findings are contradictive to our findings.<sup>13</sup>

A study reported that surgical time was less than 45 minutes (35.3%) with intra-abdominal uterine repair as compared with 44% with exteriorization of uterus ( $p=0.003$ ). One more study reported that significant difference was found in surgical time i.e. in extra-abdominal uterine repair group, time noted was 32.78 min, while in intra-abdominal repair group, time was 36.38 min ( $p$ -value 0.0001).<sup>14</sup> Likewise another randomized controlled trial study was done in 2012, to compare extra-abdominal uterine repair vs in situ repair in cesarean section at the Lady Willingdon hospital, Gynae Unit III Lahore, Pakistan. The study analysis included 100 patients randomized each for extra-abdominal uterine repair and patients with intra-abdominal repair. A significant difference was found in terms of surgical time, less than 45 minutes (46% with extra-abdominal repair compared with 34.3% with in situ uterus,  $P=.03$ ).<sup>15</sup>

Moreover in 2015, a meta-analysis is conducted to compare peri-operative outcomes following uterine

exteriorization versus in situ repair in caesarean delivery. Sixteen studies were considered, in which 9,736 patients had extra-abdominal repair and 9,703 had intra-abdominal uterine repair. Estimated blood loss was not different statistically between the techniques (mean difference [MD], -61.03 mL; 95% CI) however, extra-abdominal repair avoids the drop in hemoglobin level (MD, -0.14 g/L; 95% CI, -0.22 to -0.07). There was no significant difference found in terms of intraoperative nausea/vomiting (OR, 0.94; 95% CI) and pain (OR, 1.52; 95% CI) between repair techniques. In situ repair was associated with earlier return of bowel function. This meta-analysis has concluded that uterine exteriorization for repair, reduces the blood loss and associated drop in hemoglobin level and there was no significant difference between the techniques in terms of peri-operative pain and nausea/vomiting. However, In situ repair may be associated with a earlier return of gut function.<sup>16</sup> We did not study these parameters as our main objective was to compare surgical time only, that effects the overall postoperative recovery. Recently a prospective comparative study was conducted, in which 200 women, planned for caesarean section, were divided into two groups. Peri-operative complications were assessed and compared between groups. The study found, no significant difference between groups in terms of age, parity, gestational age and type of cesarean section. There was no significant difference found between groups in terms of drop in Hb level, surgical time, drop in hemodynamic parameters and intra-operative pain score. In-situ repair was associated with significant blood loss ( $P$  value was  $< 0.001$ ) and blood transfusion ( $P= 0.038$ ). Also In-situ repair was associated with high postoperative morbidity ( $P=0.046$ ). There was no difference found in variables like surgical site infection, endometritis and hospital stay. Hence, the study showed that any of the technique can be the method of uterine repair. Technique of uterine repair depends on surgeon's preference. Exteriorization of uterus is usually a better technique in patients, where lower uterine segment is difficult to access and at the time of difficulty in achieving hemostasis.<sup>17</sup> According to the study of Canadian Journal, exteriorizing the uterus prior to removal of the placenta during CS may decrease intraoperative and immediate

postoperative bleeding compared with the conventional technique and the mean drop in hemoglobin level was less in women who had uterine exteriorization for repair than in those who had in situ repair (13.2 g/L vs. 16.9 g/L,  $P = 0.016$ ).<sup>18</sup>

### Conclusion

The surgical time in extra abdominal uterine repair in caesarean sections was significantly short as compared to intra-abdominal repair, so exteriorization of uterus is more advantageous than in situ repair in terms of postoperative recovery.

### Limitation of Study

Limitation of the study is that surgery was performed by different gynecologist of only one tertiary care hospital.

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