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Comparative Study between Exteriorization of Uterus during Caesarean Section versus Intra Peritoneal or In-Situ Repair

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Introduction

Caesarean delivery defines the birth of a foetus via laparotomy and then hysterotomy. It is the delivery of an infant, alive or dead, through an abdominal uterine incision after period of viability. From 1996 to 2011, the caesarean delivery rate in United States increase from 20% of all deliveries to 33%. In India rate of the caesarean section raised 17.2% in 2015-16 (NFHS-4) in relation to 8.5% in 2005-06 (NFHS-3) data. Cesarean section rate in Rajasthan in 2015-16 was 8.6% as compare to 3.8% in 2005-06 (Source NFHS-3).[1]

A figure below 5% implies that a substantial proportion of woman do not have access to surgical obstetric care; on the other hand a rate higher than 15 percent indicate over utilization of the procedure for other than life saving reason (WHO;2010). The level of caesarean section is well above the mentioned WHO ratio of 15% for many of the countries, and it is increasing over the time.[1]

In this contest the rapid increase of CS rate throughout world has become a serious public health issue because several studies have found that the high rate of caesarean section delivery does not necessarily contribute to an improved maternal health and pregnancy outcome.[2]

Various studies on the technique of performing caesarean section have focused on reducing the operating time, blood loss, wound infection. Many variations in the surgical techniques for caesarean section have been proposed.[2] They aim at reducing the surgical time, surgical cost, postoperative morbidity, adverse effects and hospital stay.

Majority of the surgeons prefer to suturing of the uterus, lying within the abdomen (intra peritoneal or in-situ repair). But this common practice of in-situ repair has the short comings of poor accessibility of lower uterine segment, thus in effective suturing leading to more blood loss. An increasing number of surgeons now a days choose to exteriorize the uterus. Exteriorisation has been described to facilitate easy repair of uterine incision when exposure is difficult and when there are problems with haemostasis. Initially the technique of exteriorisation of uterus was not popular because of hypothesised danger of the technique. These include vomiting, pain, and

hemodynamic instability. In this context we performed the current study with the aim of comparing the advantages and disadvantages of exteriorisation by analysis of 130 cases each with regard to operating time, blood loss, need for emergency blood transfusion, intraoperative pain, vomiting, wretching and postoperative changes in Hematocrit value.[3]

Material & Methods

A randomised clinical trials, comparing uterine exteriorisation with intraabdominal repair of uterine incision in caesarean section was conducted in the Department of Obstetrics and Gynaecology, JLN Medical College, Ajmer at Zanana Hospital on 130 Patients admitted in ward during June 2015 to July 2016. Written informed consent by each was sought before the study.

Inclusion Criteria

Women undergoing caesarean section either elective or emergency under spinal anaesthesia.

Exclusion Criteria

Patients with heart disease, chorioamnionitis and third trimester haemorrhage.

All the cases that met inclusion and exclusion criteria were randomly allocated into 2 interventional group by Chit Box Method:-

Group A (Study Group)- 65 patients under the exteriorisation of uterus for repair during caesarean section.

Group B (Control Group)- 65 patients undergone caesarean section whom uterus was repaired intra-abdominally.

All the caesarean section was done by a single surgeon to eliminate Bias. All the results were statistically analysed.

Measurement during following stages are :

Preoperatively – We will measure heart rate, P.R. & Blood pressure.

Intraoperatively checked: heart rate, blood pressure after induction of anaesthesia, during surgery, on exteriorization of uterus, during repair of uterus and after reposition of the uterus inside the peritoneal cavity. All other intra-operative difficulties encountered like problem of exposure of incision site, wound extension, hematoma and PPH was also noted.

Postoperatively we looked for Degree of Hb fall before and after surgery.

Results

The present study observed that most of the cases in both groups belonged to age group between 20-30 yrs, 84.62% in study group and 87.99% in control group (table 1). The most frequent indication for caesarean section is previous caesarean section in our study. 27 (41.54%) patients in both groups were taken for this indication. Next in the line are breech, failed induction, CPD and fetal distress followed by previous 2 LSCC etc (table 2).

The mean difference between preoperative Hb and IIIrd postoperative day HB in study group is 0.9262 ± 0.574, in control group is 1.842 ± 0.7943 the difference is highly significant ($P < 0.001$) (table 3). The mean decrease in the 2 days hematocrit in study group is 3.306 ± 2.236 and in control group 5.037 ± 2.464. The difference is significant ($P < 0.001$) (table 4).

In our study, 5 out of 65 cases (7.69%) and 15 out of 65 controls (23.08%) had febrile morbidity. It means febrile morbidity is less common in exteriorisation group because difference is significant ($P = 0.029$). It is attributed to reduced operating time (table 5).

Our study wound complications in the form of infection, hematoma, breakdown is found in 3(4.62%) out of 65 cases and 5(7.69%) out of 65 control which is not statistically significant ($P = 0.715$) and occurrence of urinary tract infection is in 3(4.62%) cases and 5 (7.69%) controls. The difference in this outcome also does not come out to be significant ($P = 0.715$) (table 6 & 7).

Table -1: Distribution of Cases according to Age

Groups	N	Mean	S.D.	Median	Range	P-Value
Study	65	25.54	3.759	25	20-38	0.352
Control	65	24.95	3.361	25	18-35	

Table -2: Distribution of Cases according to indications of Caesarean Sections

Indication	Study	Control	Total
Previous LSCS	27 (41.54%)	27 (41.54%)	54 (41.54%)
CPD	5 (7.69%)	5 (7.69%)	10 (7.69%)
Breech	7 (10.77%)	6 (9.23%)	13 (10.00%)
PROM	1 (1.54%)	1 (1.54%)	2 (1.54%)
Failed Induction	5 (7.69%)	7 (10.77%)	12 (9.23%)
Previous 2 LSCS	3 (4.62%)	5 (7.69%)	8 (6.15%)
BOH	2 (3.08%)	2 (3.08%)	4 (3.08%)
Unstable Lie	2 (3.08%)	2 (3.08%)	4 (3.08%)
Foetal Distress	5 (7.69%)	4 (6.15%)	9 (6.92%)
NPOL	4 (6.15%)	3 (4.62%)	7 (5.38%)
S.Oligo	2 (3.08%)	2 (3.08%)	4 (3.08%)
S.PIH	2 (3.08%)	1 (1.54%)	3 (2.31%)
Total	65 (100.00%)	65 (100.00%)	130 (100.00%)

Chi- Square = 1.498 with 11 Degrees of freedom; P=1.000

Table 3 Comparison of Uterine Exteriorisation versus In situ repair outcome – 3rd Postoperative day Drop in Hb

Group	N	Mean	S.D.	Median	Range	P. Value
Study	65	0.9262	0.574	0.8	0.1-2.4	<0.001
Control	65	1.842	0.7943	1.8	0.3-4.2	

Table 4 Comparison of Uterine Exteriorisation versus in situ Repair outcome – 3rd Postoperative day Drop in Hematocrit

Group	N	Mean	S.D.	Median	Range	P. Value
Study	65	3.308	2.236	2.9	0-9.2	<0.001
Control	65	5.037	2.464	5.3	0-13.5	

Table – 5: Comparison of Uterine Exteriorisation versus in situ repair outcome – Febrile Morbidity

Febrile Morbidity	Study	Control	Total
Present	5 (7.69%)	15 (23.08%)	16 (12.31%)
Absent	60 (92.31%)	50 (76.92%)	114 (87.69%)
Total	65 (100.00%)	65 (100.00%)	130 (100.00%)

Chi-Square = 4.786 with 1 Degree of Freedom; P = 0.029

Table – 6: Comparison of Uterine Exteriorisation versus in situ repair outcome – Urinary Tract Infection (Cystitis)

UTI	Study	Control	Total
Present	3 (4.62%)	5 (7.69%)	8 (6.15%)
Absent	62 (95.38%)	60 (92.31%)	122 (93.85%)
Total	65 (100.00%)	65 (100.00%)	130 (100.00%)

Chi Square = 0.133 with 1 Degree of Freedom; P = 0.715.

Table – 7: Comparison of Uterine Exteriorisation versus in situ repair outcome – Wound Complications (Infection, Hematoma, wound dehiscence)

UTI	Study	Control	Total
Present	3 (4.62%)	5 (7.69%)	8 (6.15%)
Absent	62 (95.38%)	60 (92.31%)	122 (93.85%)
Total	65 (100.00%)	65 (100.00%)	130 (100.00%)

Chi Square = 0.133 with 1 Degree of Freedom; P = 0.715.

Discussion

The most frequent indication for caesarean section is previous caesarean section in our study. 27 (41.54%) patients in both groups were taken for this indication. Thus the 2 groups are comparable with respect to indications of caesarean section. In the study by Sood Atul Kumar et al[4] the 2 groups did not differ with respect to indication for caesarean section or various high risk factors. Similarly, in Coutinho et al[5] study the 2 groups were similar in indications for caesarean section. He excluded patients with 2 or more caesarean delivery, chorioamnionitis, third trimester haemorrhage, previous abdominal surgery.

The mean difference between preoperative Hb and III[rd] postoperative day HB in study group is 0.9262 ± 0.574, in control group is 1.842 ± 0.7943 the difference is highly significant (P < 0.001). The mean decrease in the 2 days hematocrit in study group is 3.306 ± 2.236 and in control group 5.037 ± 2.464. The difference is significant (P < 0.001).

Sood Atul Kumar et al[4] found significant intraoperative blood loss in the study group as compared to controls group (P < 0.05). Mean postoperative haemoglobin decrease was significantly lower in the study group as compared to control group (0.85 gm/dl ± 0.27 and 0.93 gm/dl ± 0.25 respectively. P<0.05). Similarly, Ezechil OC et al[6] found significant difference in the estimated blood loss which was less in exteriorised group (P = 0.009) and postoperative anaemia rate were significant less in exteriorised group (P = 0.028). MA Wahad, P Karantzis et al[7] from their study stated that exteriorisation of uterus had a statistically significant association with reduced blood loss (P < 0.05).

Our results contradict with Edi Osagie et al[8], have found that although there were no significant differences in hemodynamic parameters, exteriorisation was associated with a smaller reduction in postoperative hematocrit values.

Orji FO et al[9] after assessing intraoperative and postoperative morbidity following exteriorisation of uterus compared to non-exteriorisation found significant reductions blood loss in the study group (P < 0.05).

Coutinho et al[5] reported by their trial that blood loss estimated by pre and postoperative hematocrit was similar in both groups. Similarly, Colin A Waish[10] found no difference in amount of blood loss when compared the two groups.

But, Mughina Siddiqui et al[11] when compared the intraoperative complications between exterioris-ation and in situ repair group found that the estimated blood loss was similar between the two

groups. Similarly, Nafisi S[12] an anaesthesiologist reported by his trial that the postoperative haemoglobin levels were similar between the groups.

Further, Jose Carvalho et al[13] in the same year found no difference in the amount of blood loss between the 2 groups. This shows that the postoperative drop in haemoglobin and hematocrit is greater in the in situ group than in the exteriorised group (P < 0.001). It means in situ repair leads to greater intraoperative blood loss than exteriorised groups when all other factors are comparable.

Ozbay K et al[14] studied that there was no significant difference in drops in hemoglobin or hematocrit levels. Dr. K.K. Das et al[15] studied that the perioperative fall in haemoglobin was less in the exteriorized group. The mean fall in haemoglobin was 0.9820 for in-situ group and 0.5360 for exteriorization group. The P value for perioperative fall in hemoglobin was <0.0001 which is considered statistically significant.

This shows the incidence of febrile morbidity between the 2 groups i.e. symptoms due to a temperature of above 37.5ºC on at least 2 consecutive reading done at least 6 hours apart. It means febrile morbidity is less common in exteriorisation group because difference is significant (P = 0.029). It is attributed to reduced operating time. Significant lower febrile morbidity reported in this is similar to that reported by others.

Earlier work showed a substantial reduction in the rate or postoperative infection and morbidity with exteriorisation of the uterus. Hershey DW et al[16] found in his study that febrile morbidity was less common in this exteriorised group (RR 0.41. 95% CI 0.17 to 0.97). This finding was statistical significant. Sood Atul Kumar et al[4] got febrile morbidity of 9.9% in study group and 23% in control group which was significant (P < 0.05) similar to our study.

Xiong et al[17] showed no difference in the incidence between the 2 groups similar to MA Wahab, P Karantzis et al.[7] Similarly Nafisi S[12], Orji FO et al[9], Colin A Walsh[10] & Dr. K.K. Das et al[15] found no statistically difference in occurrence of fever between the 2 groups.

In our study wound complications in the form of infection, hematoma, breakdown is found in 3(4.62%) out of 65 cases and 5(7.69%) out of 65 control which is not statistically significant (P = 0.715) and occurrence of urinary tract infection is in 3(4.62%) cases and 5 (7.69%) controls. The difference in this outcome also does not come out to be significant (P = 0.715). Similarly Sood Atul Kumar et al[4] found in significant trend toward decreased infections morbidity in the form of endomyometritis cystitis and wound infection in exteriorisation. He found cystitis in 2.7% case and 7.4% control (P < 0.05, Or = 0.35) wound infection in 2.7% case and 6.4% controls (P < 0.05, Or = 0.40). Also Cochrane systematic review showed no difference in the incidence of wound infections.

Ma Wahab et al[7], Nafisi S[12] also did not found any difference in wound infection between the 2 group. Further, Countinho et al[5] reported no statistically significant difference between 2 groups concerning the rate of surgical site infection (7.1% in cases as compared to 8.7% in controls). Dr. KK Das[15] found that there was no significant difference between study and control group in relation to wound complication and cystitis.

Conclusion

The striking difference between the two groups were noted for perioperative blood loss, operating times and postoperative febrile morbidity which were all less in external repair group. Personal preference for performing a determined technique is the main guide for choice because in either technique some data justify a choice. One should be trained in both techniques because some situa-tions obligate the surgeon to use one or the other.

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