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Research Article

Comparative Study between Exteriorization of Uterus during Cesarean Section Versus Intraperitoneal or in-Situ Repair

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Abstract: The objectives of this study is to assess intraoperative and postoperative advantages and disadvantages following exteriorization of uterus as compared to those with intraperitoneal or in-situ repair and to assess intraoperative and immediate postoperative morbidity following exteriorization of uterus as compared to in-situ repair. In this randomized controlled, prospective study 100 women planned for LSCS were included. The women were randomly assigned to two groups, exteriorization group and in-situ group. Variables analysed were intraoperative blood loss, intraoperative and immediate postoperative nausea and vomiting, intraoperative pain, postoperative pain, postoperative analgesic requirement, postoperative fever morbidity, perioperative fall in hemoglobin and wound infection. There was significant difference in the intraoperative blood loss between the two groups. Blood loss being less in exteriorization group. P value was < 0.0014. There was significant difference in the operating time. Exteriorization required less time as compared to in-situ group. P value was <0.0001. There was significant difference in perioperative fall in haemoglobin. The fall in haemoglobin was less in exteriorization group. P value was < 0.0001. There was no significant difference in the intra-operative and post-operative nausea, vomiting , intraoperative pain, postoperative pain , postoperative analgesic requirement, postoperative febrile morbidity and wound infection between the two groups. Uterine exteriorization is a valuable technique in uterine repair in caesarean section, in terms of better visualization of scar. There was significantly less intraoperative blood loss and less fall in perioperative haemoglobin in exteriorization group. The operating time was also shorter in exteriorization group.
Keywords: Uterine repair, exteriorization, caesarean section, in-situ repair.

INTRODUCTION

Caesarean delivery defines the birth of a foetus via laparotomy and then hysterotomy[1]. It is the delivery of an infant, alive or dead, through an abdominal uterine incision after period of viability[2]. It is the most significant operative intervention in obstetrics. From 1970 to 2010, the caesarean delivery rate in United States rose from 4.5% of all deliveries to 32.8 %. [1]. In India the incidence of caesarean section has steadily increased by two to three folds from the initial rate of about 10%[4]. Though over the years there is a wider recognition of the desire to reduce caesarean section rate, there has been little debate on operating technique. Various studies on the technique of performing caesarean section have focussed on reducing the operating time, blood loss, wound infection[2]. Many variations in the surgical techniques for caesarean section have been proposed. They aim at reducing the surgical time, surgical cost, postoperative morbidity, adverse effects and hospital stay.

Majority of the surgeons prefer to undertake suture of the uterine wound with the uterus lying within the abdomen (intraperitoneal or in-situ repair). But this common practice of in-situ repair has the short comings of poor accessibility of lower uterine segment, thus ineffective suturing leading to 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[2]. 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 of the uterus and in-situ suturing. The current study encompasses intraoperative and immediate postoperative advantages and disadvantages of suturing LSCS wound by exteriorisation compared to suturing in-situ by analysis of 50 cases each with regard to operating time , blood loss, need for emergency

blood transfusion, intraoperative pain , vomiting, retching and postoperative decrease in Hb%.

AIMS AND OBJECTIVES

- To assess intraoperative and postoperative advantages and disadvantages following exteriorization of uterus as compared to those with intraperitoneal or in-situ repair.
- To assess intraoperative and immediate postoperative morbidity following exteriorization of uterus as compared to in-situ repair.

MATERIALS AND METHODS

This randomised control study included 100 women who underwent caesarean section at Gauhati medical college hospital, Guwahati from June 1st 2014 to may 31st 2015. The women were randomly allocated to exteriorization and in-situ group.

Inclusion criteria

All women with an emergency or elective indication for caesarean section after completion of 37 weeks of gestation.

Exclusion criteria

Heart disease Classical cesarean section, Inverted T incision on the uterus, J shaped incision on the uterus, Caesareans hysterectomy, Rupture of uterus, Diabetes mellitus, Previous LSCS, Chorioamnionitis and Placenta previa.

Variables analysed were intraoperative blood loss, intraoperative and immediate postoperative nausea and vomiting, intraoperative pain, postoperative pain, postoperative analgesic requirement, postoperative fever morbidity, perioperative fall in hemoglobin and wound infection

Methodlogy

Uterus was exteriorized after delivery of placenta. Uterine incision was closed in two layers with vicryl-1(Polyglactin) and chromic catgut no 0. Parietal peritoneum was closed with catgut. Rectus sheath was approximated with Vicryl no 1. Skin was sutured with Ethilon(Nylon) 2-0. Intraoperative visual blood loss was measured by measuring blood in suction apparatus + number of packs soaked + blood on sterile drapes. In cases operated under regional anesthesia, intraoperative pain, nausea, retching and vomiting were noted.

The outcomes measures noted were operating time, intraoperative blood loss, and postoperative pain as assessed by oral analogue scale (OAS), number of analgesic doses given in the second postoperative day, postoperative febrile morbidity and postoperative wound infection.

Postoperative pain was measured once employing oral analogue scale (absence of pain-0, presence of pain- 1 & 2-patient desired more analgesics) within 24 hours following surgery. Analgesics were given as needed, and the doses of analgesics administered during 2nd postoperative day were recorded.

Perioperative decrease in hemoglobin was calculated from preoperative and third postoperative day hemoglobin estimations. Operation time was abstracted from operation notes.

Comparison between the two groups was done by student's't' test for continuous data and chi-square test and fisher's test for categorical data.

RESULTS

The two groups were similar in their age distribution, indication for caesarean section, contraception method applied, period of gestation and gravidity.

The intraoperative blood loss was less in the exteriorization group (table 1). The P value for intraoperative blood loss was 0.0014, which is considered statistically significant. The operating time was shorter in the exteriorized group(table no 4). The difference in mean operating time for both techniques was 6.1 minutes. The P value for operating time was <0.0001, considered extremely significant. The P value for perioperative fall in hemoglobin was <0.0001 which is considered statistically significant. The perioperative fall in haemoglobin was less in the exteriorized group (table no 8). The mean fall in haemoglobin was 0.9820 for in-situ group and 0.5360 for exteriorization group. The two groups did not vary much with respect to intraoperative and postoperative pain (table no 2 and table no 5).The P Value for intraoperative pain and postoperative pain were 1.0000 and 0.8894 respectively, both were statistically not significant. The exteriorization and in-situ group did not vary with respect to incidence of intraoperative and postoperative nausea and vomiting(table no 3 and 6). The P value was 1.0000, considered insignificant. The groups did not differ in relation to postoperative analgesic requirement (table no 7) (P value 1.0000), postoperative febrile morbidity (table no 9) P value is 0.4949 and postoperative wound infection (table no 10)(P value is 1.0000).

Table 1: Comparison of intraoperative blood loss

	EXTERIORIZED	IN-SITU	TOTAL
<400ml	47	43	90
400-600ml	3	6	9
>600ml	0	1	1
TOTAL	50	50	100

P value is 0.0014, considered statistically significant.

Table-2: Comparison of intraoperative pain

PAIN	EXTERIORIZED	IN-SITU	TOTAL
YES	1	1	2
NO	49	49	98
TOTAL	50	50	100

P value is 1.0000, considered not significant.

Table -3: Comparison of intraoperative nausea and vomiting

NAUSEA AND VOMITING	EXTERIORIZED	IN-SITU	TOTAL
NO	46	47	93
YES	4	3	7
TOTAL	50	50	100

P value is 1.0000, considered not significant.

Table-4: Comparison of operating time.

Group	N	Mean
Exteriorization	50	31.1
In-situ	50	37.2

P value is <0.0001, considered extremely significant

Table-5: Comparison of postoperative pain with usual dose of analgesics.

Postoperative pain	Exteriorization	In-situ	Total
0-Absence of pain	33	33	66
1-presence of pain	15	14	29
2-desires more analgesics	2	3	5
Total	50	50	100

P value is 0.8894, considered not significant

Table-6: Comparison of postoperative nausea and vomiting

Nausea and vomiting	Exteriorized	In-situ	Total
Yes	1	0	1
No	50	49	99
Total	50	50	100

P value is 1.0000, considered not significant.

Table-7: Comparison of postoperative analgesic requirement

Analgesic requirement	Exteriorized	In-situ	Total
2 doses	47	46	93
>2 doses	3	4	7
Total	50	50	100

P value is 1.0000, considered not significant.

Table-8: Comparison of perioperative fall in haemoglobin

Postoperative fall in Hb%	Exteriorized	In-situ
Mean fall in Hb% (Preoperative Hb%-postoperative Hb%)	0.5360	0.9820
Number	50	50
Standard deviation	0.1562	0.2833
Standard error	0.02209	0.04007
Median	0.5000	0.9000
Lower 95% CI	0.4916	0.9014
Upper 95% CI	0.5804	1.063

P value is< 0.0001, considered extremely significant.

Table-9: Comparison of postoperative febrile morbidity

Fever	Exteriorized	In-situ	Total
Yes	0	2	2
No	50	48	98
Total	50	50	100

P value is 0.4949, considered not significant.

Table-10: Comparison of wound infection

Wound infection	Exteriorized	In-situ	Total
Yes	1	2	3
No	49	48	97
Total	50	50	100

P value is 1.0000, considered not significant.

DISCUSSION

In the first comparative study byHershey and Quilligan in 1978 similar blood loss, duration of surgery, hospital stay and rates of puerperal febrile and infectious morbidity were reported in their groups of women who underwent either uterine exteriorization or in-situ repair. They reported higher vomiting in the exteriorization group and a higher mean haematocrit drop in those who had in-situ repair[5].

Edi-Osagie et al in 1998 in a study comparing the influence of exteriorization versus in-situ repair on caesarean section morbidity demonstrated that uterine exteriorization and in-situ had similar effects on perioperative caesarean morbidity. Intraoperative pain reflected inadequacy of anaesthesia, while vomiting reflected inadequacy of preoperative preparation of patients. They concluded that exteriorizing the uterus at caesarean section is a valid option[6].

The Cochrane Collaboration concluded that there was not enough information to evaluate the routine use of exteriorization of the uterus for repair of the uterine incision[7].

SoodAtul Kumar conducted a study on 219 women scheduled for LSCS to assess intraoperative and postoperative morbidity following exteriorization at caesarean section. The conclusion of the study was exteriorization of uterus at caesarean section is associated with lesser operative intraoperative blood loss, perioperative haemoglobin fall and reduced febrile morbidity as compared to intraperitoneal repair of the uterus[8].

Coutinho IC conducted a randomized study for exteriorized uterine repair versus in situ uterine repair. Conclusion was that there is no significant difference between extra-abdominal and intra-abdominal repair of the uterine incision at caesarean delivery, but the number of sutures is lower and surgical time is shorter with extra-abdominal repair, although moderate and severe pain at 6 hours is less frequent with in situ uterine repair[9].

Humera Nasir conducted a randomised controlled study on 260 women who underwent caesarean section and concluded that uterine exteriorization was a valuable technique in uterine repair during caesarean delivery, in terms of better visualisation of wound. There was no significant difference in blood loss and number of sutures. Length of procedure was shorter in uterine exteriorization group as compared to in-situ repair group[10].

In this present study there was no significant difference between the two groups with regard to intraoperative pain, intraoperative nausea and vomiting,

postoperative pain, postoperative analgesic requirement, postoperative febrile morbidity and wound infection.

There was significant difference in the operating time, intraoperative blood loss and postoperative fall in haemoglobin. The operating time was shorter in the exteriorization group and the blood loss and the perioperative fall in the haemoglobin were less in the exteriorized group.

CONCLUSION

Exteriorization of uterus at caesarean section is associated with lesser intraoperative blood loss, lesser perioperative haemoglobin fall and reduced operative time as compared to intra peritoneal repair of the uterus.Exteriorization of uterus often has more advantages. The incision and bleeding points are visualized more easily and repaired quickly;especially if there have been extensions laterally.Relaxed atonic uterus can be recognized quickly and massaged. If B lynch sutures have to be applied, it can be put quickly without wasting time at the crucial moment. Another advantage of exteriorization is early recognition of anatomical defect of uterus if present. It is also helpful in finding the rent in the posterior wall of uterus which can be missed in in-situ repair. It also helps in identifying adnexal mass if present.

In brief, exteriorization of uterus at caesarean section has the advantages of

- Less operating time
- Less intraoperative blood loss
- Less perioperative fall in haemoglobin
- Good exposure
- Good access to incision angle ,especially when the angles are extended in case of difficult extraction
- Easy identification of uterine anomaly
- Easy identification of adnexal mass if present
- Good exposure of the posterior aspect of uterus especially the lower segment in case of obstructed labour

Thus, exteriorization of uterus at caesarean section is a valid option.

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