EXTERIORIZATION OR IN-SITU REPAIR, COMPARISON OF OPTIONS FOR UTERINE REPAIR AT CESAREAN DELIVERY

Bushra Zafar, Farrukh Shehzad, Azra Naseem*, C. Aqeel Safdar**

Combined Military Hospital Lahore / National University of Medical Sciences (NUMS) Pakistan, **Liver Pool Hospital Australia, ** Military Hospital / National University of Medical Sciences (NUMS) Rawalpindi Pakistan

ABSTRACT

Objective: Objective of study is to compare peri–operative complications between exteriorization and intra-abdominal repair of uterus after cesarean delivery.

Study Design: Randomized controlled trial.

Place and Duration of Study: Obstetrics and Gynecology Department of Pakistan Ordinance Factory Hospital, Wah Cantt, from 1st April 2010 to 30th September 2010.

Material and Methods: Patients planned for 1st cesarean section under spinal anesthesia were randomly allocated by lottery method to exteriorized (A) or in situ uterine repair (B) group. Patients with history of uterine surgeries and cesarean section were excluded from study. Variables analyzed were operation time, peri-operative hemoglobin (Hb) fall, nausea and vomiting during the cesarean delivery.

Results: The study analyzed 170 patients and divided them in 2 groups, having no significant difference with respect to maternal demographics, procedure statistics and indication of cesarean section. Significant difference was observed in operation time being 32.78 min in exteriorized group and 36.38 min in situ uterine repair group (*p*-value 0.0001). Hb% fall was 0.85 g/dl and 0.92 g/dl respectively in both groups (*p*-value 0.62) Nausea and vomiting was 23.5% in group A and 11.8% in group B (*p*-value 0.02, 0.04 respectively)

Conclusion: Peri-operative complications like operative time and Hb fall are less in uterine repair after temporary exteriorization as compared to intra-abdominal repair of uterus after cesarean delivery. Nausea and vomiting were increased in exteriorized group but proper regional anesthetic technique and achieving adequate analgesia can reduce patient discomfort.

Keywords: Caesarean section, Discomfort, Intra-abdominal repair, Operative delivery, Operation time, Uterine exteriorization, Vomiting.

INTRODUCTION

Caesarean section is the oldest known procedure for 400 years[1]. It is one of the most commonly performed abdominal operations on women in most countries of the world[2]. Rates have markedly increased in recent years about 20-25% in many developed countries[3].

Many variations in surgical techniques for cesarean delivery have been proposed, aimed at reducing surgical times, making it easier and more efficient, lowering costs, decreasing the risk of adverse effects and postoperative morbidity, as well as length of hospital stay[4,5]. Knowing specific aspects of caesarean section technique helps in determining which method leads to an optimum outcome for women and their babies.

Temporary removal of uterus from the abdominal cavity (exteriorization) has been postulated as a valuable technique for repair of uterine incision (hysterorraphy) after delivery of new born and placental removal either spontaneous or manual[4].

Proponents of the technique justify that exteriorization of uterus offers better exposure of the angles and results in an easier and faster repair, thus decreasing intra-operative hemorrhage and also resulting in shorter surgical time less than 45 mins (44% with exteriorized

Correspondence: Dr Bushra Zafar, Consultant Gynecologist, Main operation Theatre, CMH Lahore, Pakistan
Email: drbushra08@yahoo.com
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uterus as compared with 35.3% with in situ uterus)[6,7]. In addition, they claim that the elevation of the uterus promotes venous drainage, reduces vascular congestion, further contributing to diminished bleeding significant reduction in intraoperative blood loss and less Hb fall (p<0.05)[8].

In spite of multiple surgical merits of the techniques of uterine exteriorization the patient comfort is a disputed matter. Uterine exteriorization has been associated with adverse outcomes, including nausea and vomiting (38% with exteriorized uterus compared with 18% in situ uterus)[4], pain, hemodynamic changes, and air embolism[6].

As intra-abdominal repair of uterus is commonly practiced in our obstetrical departments so, rationale of the study is to compare which of the two procedures is better in terms of less intra operative complications and thus the procedure could be set as protocol.

MATERIAL AND MATERIALS

After obtaining institutional ethical committee approval, this randomized controlled trial was carried out in Obstetrics and Gynecology Department of Pakistan Ordinance Factory Hospital, Wah Cantt, from 01st April 2010 to 30th September 2010. The inclusion criteria was any women with singleton pregnancy at term having an indication for elective cesarean delivery. Exclusion criteria was any women with history of myomectomy or surgery for uterine malformations, repeated cesarean deliveries (2 or more), chorioamnionitis, endomyometritis, placentaprevia, placenta accreta and any bleeding disorders. Total of 70 patients were included in study through non probability consecutive sampling and were randomly divided into two groups. Group-A Uterine repair after temporary exteriorization (85), Group-B 9 Intra-abdominal repair of uterus (85). An informed consent was taken from all the participants of the study. Random allocation of patients to either group was done by lottery method. All women received prophylactic antibiotics, abdomen was opened with Pfannenstiel incision. Uterus was incised in lower segment, after delivery of baby, placenta was allowed to separate spontaneously and removed by controlled traction. In group A Uterus was drawn from the pelvis to rest on the anterior abdominal wall so that the uterine incision can clearly be visualized. Uterus was repaired with continuous locking absorbable synthetic suture and then returned to the pelvis. In group B uterine incision was repaired while in the pelvis (in-situ). Visceral and parietal peritoneum was not closed. Day of operation was considered as day 0. Operation time was noted by the first assistant from skin incision till last suture of the skin. Peri-operative fall in Hb was calculated by difference between pre-operative and 48 hours post-operative Hb, for which the blood sample was drawn and sent to hospital laboratory for Hb measurement. Presence of intra-operative nausea and vomiting was noted and compared between two groups.

Data was collected on a standardized Proforma form designed for the study and analyzed through SPSS version 15. For quantitative variables (Age, gestational age, hemoglobin fall and operation time) mean and S.D were calculated. For qualitative variables (nausea and vomiting) frequencies and percentages were calculated. For comparison of quantitative variables by both procedures independent sample t-test was used. For comparison of qualitative variables chi square test was used. Paired sample t-test was used to compare (peri-operative) pre and post procedure hemoglobin fall. A p-value <0.05 was considered statistically significant.

RESULTS

Total of 170 patients were included in the study. They were divided in 2 equal groups of 85 patients each. Mean maternal age and gestational age in both groups was from 28-29 years. and 38-39 weeks respectively (table-1).

The mean operation time in Group A was 32.78 ± 1.11 min and in Group B it was 36.38 ± .049 min. (p<0.0001.)

Pre-op Hb in group A was 11.86g/dl ± 1.46 & in group B it was 12.19 ± 0.97, which is similar in both the groups (*p* 0.09). Post op Hb in group A was 11.13g/dl ± 1.45 & in group B post operation Hb was 11.32 ± 0.97, with similar Hb levels in both the groups (*p* 0.36). Fall in Hb was insifnificant with group A (*p* 0.62) as well as in group B (*p* 0.62). Fall in Hb was similar between both the group with insignificant difference (*p* 0.62).

Thirty eight patients (44.7%) had nausea in group A while in group B only 19 (22.4%) had nausea,with a significant difference in frequency (*p* 0.02). Frequency of vomiting was also high in Group A 20 (23.5%) while in group B only 10 patients (11.8%) had significant vomiting (*p* 0.04).

DISCUSSION

Cesarean delivery is one of the most frequently performed surgical procedures worldwide[4,9]. This study was undertaken to compare the two techniques (exteriorized and in situ) of uterine repair and parameters considered were surgical time, hemodynamic changes, and patient comfort, in patients undergoing elective cesarean delivery under a strictly standardized spinal anesthesia[6,9].

The lack of consensus about the optimal site for performing hysterorrhaphy is reflected by variations in surgical practice[10]. However, temporary removal of the uterus from the abdominal cavity (exteriorization) has been postulated as a valuable technique for repair of the uterine incision (hysterorrhaphy) after delivery of the newborn and placental removal.

There are few randomized controlled trials but the results are discordant[11]. Some studies suggest that uterine exteriorization is associated with a reduction in postoperative morbidity, in addition to decreasing the occurrence of peri-operative bleeding and reduction in postoperative hematocrit[4].

In our study there was reduction in operation time of about 3.6 minutes (*p*-value 0.0001) when uterus was exteriorized for suturing. This is a statistically significant finding. A systematic Cochrane review evaluated the same parameter in six studies and no significant difference was found[12]. In a controlled trial conducted in 2007 significant reduction in time for uterine repair was observed, but overall surgical time of the procedure was not shortened[4]. Increased operating time has been associated with increased infectious morbidity rate at cesarean delivery, entails the use of longer-acting agents for regional anesthesia, and results in the use of supplemental general anesthesia, prolonged exposure of the abdominal contents, and possibly more blood loss.

Table-1: Demographic profile of both groups.

Demographic factor	Uterine exteriorization group (mean ± S.D)	Intra-abdominal group (Mean ± S.D)	*p*-value
Age (years)	28.81 ± 4.58	28.76 ± 5.00	0.94
Gestational age (weeks)	38.611 ± 1.110	38.602 ±1.144	0.96
Parity	1.6 0 ± 1.54	1.55 ± 1.30	0.83

The amount of blood loss is significantly associated with the type of placental removal spontaneous or manual[13,14]. In this study blood loss was estimated by the difference between levels of hemoglobin measured immediately preoperative and 48 hours postoperative periods. There was no statistically significant difference in both groups and this finding was same as a study conducted internationally[4]. Exteriorization of uterus for repair is thought to be associated with easier and faster repair as there is clear visualization of uterine margins, increased venous drainage and reduced vascular congestion, all of this contributes to diminished bleeding. Decreased intraoperative blood loss and perioperative Hb fall reported in some studies have been replicated in our study. The overall intra operative patient discomfort in

terms of nausea and vomiting was found higher in uterine exteriorization group 44.7% as compared 22.4%. Different factors have been implicated in the etiology of nausea and vomiting. Hypotension and visceral pain are the most importantly highlighted and they are preventable. Regional anesthesia is being in practice for cesarean sections. Adequate pre-loading, left uterine displacement by giving mother a left lateral tilt and vassopressors are incorporated to maintain blood pressure. Phenylepherine is the vasopressor of choice in obstetrics[15]. Strict blood pressure control can dramatically reduce intraoperative emetic symptoms. Proper regional anesthetic technique and achieving adequate analgesia can reduce patient discomfort.

This result regarding patient discomfort was same as in a study conducted by Siddique and colleagues. They observed that patient discomfort in terms of nausea and vomiting was more in exteriorization as compared to in situ group 37.5% and 15% respectively[6]. The results of the systematic review of Cochrane library using a large group consisting 325 patients state that there is no significant difference in patient discomfort depending on the type of procedure used[4].

To validate the superiority or otherwise of the uterine exteriorization for hysterorrhaphy larger multi-centric prospective studies are needed.

CONCLUSION

Uterine exteriorization at cesarean section is associated with lesser operating time, intra-operative blood loss, peri-operative haemoglobin fall as compared to intra-abdominal repair of uterus. The incidence of nausea and vomiting is slightly more in uterine exteriorization group. Provision of adequate anesthesia and analgesia for women undergoing caesarean section is of paramount importance, so the need for suitably qualified anesthetist can't be over-emphasized.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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