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Original Research Article

A clinical study to compare drain versus no drain in post cesarean section

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ABSTRACT

Background: Cesarean section is one of the commonest hospital based surgical procedure in obstetric mainly done to facilitate delivery in case where vaginal delivery is either not feasible or poses undue risk to mother, baby or both. The most common complications of CS are superficial surgical site complications including sepsis, seroma formation and breakdown.

Methods: A prospective study done on 100 patients admitted in labour room of Department of Obstetrics and Gynaecology, Kamla Raja Hospital, G.R.M.C., Gwalior between November 2015 to March 2016. Study divided into two groups: group I, including women who had no subcutaneous drain left and group II, including women who had a subcutaneous drain left before closure of the skin; Each group has 50 patients. The study included term pregnant women with pre-operative Hb >9 gm%, BMI >30 kg/m² and were taken for emergency cesarean sections (for cephalopelvic disproportion, fetal distress, abnormal presentations) with no intraoperative complications (hemorrhage, blood transfusion).

Results: VAS median grade in patients without drain was G3 (46%), followed by G2 (28%), G4 (14%). VAS median grade in with drain group was G2 (68%), followed by G1 (24%) and then G3 (08%). Wound infection was noted in 4 (08%) patients in both the groups. Both groups were administered same group of intravenous antibiotics for 5 days. The mean hospital stay in patients without drain were 9.4 days and patients with drain were 8.2 days. The mean haemoglobin in patient with drain was 8.6 gm% and patients without drain was 9.4 gm%. Wound seroma in 13 cases and superficial breakdown in 4 cases in non-drain group versus 5 cases and 2 cases in drain group respectively. There is significant difference in postoperative pain and non-significant difference in postoperative fever.

Conclusions: Patients in with drain group have reduced rates of wound seroma, postoperative pain, shorter hospital stay, but there is insignificant benefit regarding post-operative fever, superficial SSI, wound breakdown and hemoglobin concentration.

Keywords: Cesarean section, Drain, VAS

INTRODUCTION

Cesarean section is one of the commonest hospital based surgical procedure in obstetric mainly done to facilitate delivery in case where vaginal delivery is either not feasible or poses undue risk to mother, baby or both.^{1,2} Cesarean delivery is defined as the birth of a fetus

through incisions in the abdominal wall (laparotomy) and the uterine wall (hysterotomy). The most common complications of CS are superficial surgical site complications including sepsis, seroma formation and breakdown.³ Obesity is currently prevailing diseases. CS procedures performed in obese women are increasing nowadays.⁴

Benefit of cesarean delivery on perinatal, maternal morbidity and mortality are well documented. Maternal morbidity and mortality following cesarean delivery vary greatly from series to series, but are consistently higher than vaginal delivery both in developed and developing countries.^{1,5} But this is attributable not only to the surgical procedure itself, but also to indications. Risk factors for cesarean related morbidity and mortality include un-booked status, emergency compared to elective procedure, use of general anesthesia, anemia, and dehydration, prolong labour and repeated vaginal examination. Most cesarean section are performed as emergency procedures with an elective rate of less than 4%.⁶⁻⁹

The advantage of placing a subcutaneous drain to drain any blood or serous fluid that may accumulate in the subcutaneous space, which cause post-operative pain or provide a good medium for microbial growth and infection.¹⁰ Some surgeons, however, have raised much argument about the value of subcutaneous drains.¹¹

METHODS

A prospective study done on 100 patients admitted in labour room of Department of Obstetrics and Gynaecology, Kamla Raja Hospital, GRMC, Gwalior between Nov. 2015 to Mar. 2016. Informed consent was taken. The study included term pregnant women with pre-operative Hb >9gm%, BMI >30kg/m² and were taken for emergency cesarean sections (for cephalopelvic disproportion, fetal distress, abnormal presentations) with no intraoperative complications (hemorrhage, blood transfusion).

Patients who were delivered by cesarean section included in the study. Patients who underwent cesarean section elsewhere than transferred/referred to Kamla Raja Hospital, Gwalior and patients who refuse consent and patients who met intraoperative complications excluded from the study.

The included women randomly allocated to one of two groups: group I, including women who had no subcutaneous drain left and group II, including women who had a subcutaneous drain left before closure of the skin; and Each group has 50 patients.

CS procedures performed by senior residents on emergency duties who had passed the residency program for 3 years with M.S. degree.

In studied women, the skin incised through a low transverse incision. Sharp dissection always followed. The lower uterine segment opened through a C-shaped incision. After delivery of the fetus, the placenta and membranes delivered by controlled cord traction. The uterine incision is closed in two continuous layers using number 1 delayed absorbable polyglatin (Vicryl) stitches. The visceral and parietal layers of peritoneum not closed.

The rectus sheath was closed using number 1 continuous delayed absorbable polyglatin (Vicryl) stitches. In women of both groups, the subcutaneous fat was closed by number 2/0 interrupted delayed absorbable polyglatin (Vicryl) stitches. The skin closed using nonabsorbable 2-0 silk mattress sutures. The drain left in women of group II was infant feeding tube that was manually fenestrated (4-5 fenestrae) using a pair of scissors and was exited from the skin through a separate opening about 2 Cm lateral to one of the wound angles. The drain stitched to the skin, connected to a 10cc syringe vacuum created and left in place for 48 hours. Women who had major intraoperative complications as; bowel or urinary tract injuries or massive blood loss or transfusion excluded from the study. In all included women, the subcutaneous layer thickness measured using the scalpel hand, which then measured against a standard ruler.

The primary outcome measures; rate of superficial surgical site infection, defined as presence of wound discharge that yielded a positive result on bacteriological culture.

Secondary outcome measures; wound seroma, superficial wound breakdown (defined as skin and/or subcutaneous dehiscence with intact fascial layer), postoperative fever (defined as temperature 38⁰C, 24 hours postoperatively) and postoperative pain (judged after 24 hours, through visual analogue scale (VAS) and duration of hospital stay.

RESULTS

Table 1: Post-operative pain.

Pain	Without drain		With drain		Total	
	No.	%	No.	%	No.	%
G0	0	0	0	0	0	0
G1	06	12	12	24	18	18
G2	14	28	34	68	48	48
G3	23	46	04	08	27	27
G4	07	14	00	00	07	7
G5	0	0	0	0	0	0

In this present study VAS, median grade in patients without drain was G3 (46%), followed by G2 (28%), G4 (14%). VAS median grade in with drain group was G2 (68%), followed by G1 (24%) and then G3 (08%).

Table 2: Post-operative wound infection.

Wound infection	Without drain	With drain
Absent	46 (92%)	46 (92%)
Present	04 (08%)	04 (08%)

In the present study, wound infection was noted in 4 (08%) patients in both the groups. Both groups were administered same group of intravenous antibiotics for 5 days.

Table 3: Post-operative (mean) hospital stay (in days).

Hospital stay (in days)	Without drain	With drain
Mean	9.4	8.2

In present study, the mean hospital stay in patients without drain were 9.4 days and patients with drain were 8.2 days.

Table 4: Post-operative (mean) hemoglobin concentration (gm%).

Hb (gm%)	Without drain	With drain
Mean	9.4	8.6

Postoperative blood sample were sent after removal of drain. In present study, the mean haemoglobin in patient with drain was 8.6 gm% and patients without drain was 9.4 gm%.

Table 5: Demographic data of studied patients.

Variables	Without drain	With drain
Age (years) Mean±SD	27.7±4.6	28.2±5.3
BMI (kg/m ²) Mean±SD	32.2±1.6	32.1±1.8
Parity median (range)	1 (1-2)	1 (1-2)
Gestational age (weeks) Mean±SD	38.4±1.6	38.2±1.8

There is no significant difference in the two groups with above mentioned variables.

Table 6: Superficial SSI, wound seroma, wound breakdown, postoperative fever and pain in both studied groups.

Variables	Without drain	With drain
Superficial SSI number (%)	4 (8%)	4 (8%)
Wound seroma number (%)	13 (26%)	5 (10%)
Superficial breakdown number (%)	4 (8%)	2 (4%)
Postoperative fever number (%)	8 (16%)	5 (10%)
Postoperative pain median (range)	5 (3-6)	16 (12-18)

In this study, this table showed superficial SSI same in both the groups. Wound seroma in 13 cases and superficial breakdown in 4 cases in non-drain group versus 5 cases and 2 cases in drain group respectively. There is significant difference in postoperative pain and non-significant difference in postoperative fever.

DISCUSSION

One hundred eligible women were studied and randomly divided into two groups. Each group has 50 patients.

There were no significant differences between two studied groups regarding; operative time and subcutaneous layer thickness. In addition, there was no significant difference between two studied groups regarding; superficial SSI, superficial wound breakdown and post-operative fever.

There was no significant difference between group I (without drain) and group II (with drain) regarding; mean age (27.7 ± 4.6 versus 28.2±5.3 years respectively), mean BMI (32.2±1.6 and 32.1±1.8 respectively), mean gestational age (38.4±1.6 versus 38.2±1.8 weeks respectively). In addition, there was no significant difference between group I and group II regarding; median parity (1 (Range; 1-2) versus 1 (Range; 1-2); respectively), mean hemoglobin changes (without drain - 9.4 and with drain - 8.6) and mean hospital stay (without drain - 9.4 and with drain - 8.2).

There was significant difference between group I (without drain group) and group II (with drain) regarding; wound seroma (13 cases (26%) versus 5 cases (10%) respectively).

This study showed significant difference between group I and group II regarding; wound seroma (13 cases (26%) versus 5 cases (10%) respectively) and postoperative pain required analgesics (median 16 (range; 12- 18) versus 5 (range; 3-6) respectively). However, the benefit of subcutaneous drain regarding; post-operative fever, superficial SSI, wound breakdown, hemoglobin concentration and mean hospital stay were statistically insignificant.

Seven trials (1993 women) were included in the review conducted by Gates et al, to compare the effects of using a wound drain versus no drain at caesarean section wound, on maternal health and healthcare resource use.¹⁰ Meta-analysis found no difference in the risk of wound infection, other wound complications, febrile morbidity or endometritis in women who had wound drains compared with those who did not. There was some evidence that caesarean sections may be about five minutes shorter and that blood loss may be slightly lower when drains were not used.¹⁰

Recent large Cochrane systematic review done by Gates and Anderson (2013) to compare the effects of using a wound drain versus no drain at caesarean section wound, and of different types of drain, on maternal health and healthcare resource use.¹⁰ Meta-analysis found no difference in the risk of wound infection, other wound complications, febrile morbidity or pain in women who had wound drains compared with those who did not. There was some evidence from one trial that a

subcutaneous drain may increase wound infection compared to a sub-sheath drain. No differences in outcomes were found between subcutaneous drainage and subcutaneous suturing in the three trials that made this comparison.¹⁰

Study done by CAESAR study collaborative group to evaluate effect of alternative surgical techniques in women undergoing cesarean section including liberal versus restricted use of drains concluded there is a significant reduction of post-operative pain after usage of subcutaneous drain in cesarean section.^{11,12} Same conclusion was given in a study by Kumar, 2004.¹³ Both Kumar and CAESAR studies used the VAS as a semi-objective tool for assessment of pain.^{12,13}

An old Cochrane systematic review conducted by Enkin, to evaluate role of routine wound drainage in cesarean section in which two trials included.^{11,14} Enkin concluded that the use of such drainage may be of benefit if hemostasis is inadequate, but a benefit from a routine use has not been established.¹⁵

CONCLUSION

Patients in with drain group have reduced rates of wound seroma, postoperative pain, shorter hospital stay, but there is insignificant benefit regarding post-operative fever, superficial SSI, wound breakdown and hemoglobin concentration.

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