

SUBCUTANEOUS DRAIN FOR ABDOMINAL INCISION IN CAESAREAN SECTION CASES FOR EFFECTIVE WOUND HEALING

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ABSTRACT

BACKGROUND

Caesarean section is a very commonly done lifesaving procedure. Despite being that common, surgical techniques and steps do widely vary. The most common complications of caesarean section are superficial surgical site complications including sepsis, seroma formation, partial/ full thickness wound break-down. The aim of this study was to compare the results of abdominal wound healing of caesarean sections where subcutaneous drain was used with cases where subcutaneous drain was not used.

MATERIALS AND METHODS

This retrospective cohort study performed on 219 patients was undertaken at Department of Obstetrics and Gynaecology, Sri Adichunchanagiri Institute Of Medical Sciences, from January 2017 to December 2017. The case sheets were retrieved from medical records department and the details were gone through. The number of cases where drain was kept after meeting the inclusion criteria, were 525. The total number of cases where drain was not kept after meeting the exclusion criteria, were 656. Wound induration, wound seroma superficial surgical site infection, post-operative pain, post-operative febrile morbidity, partial or full thickness wound dehiscence requiring dressing and resuturing, duration of hospital stay were tabulated in each wing and compared.

RESULTS

There was significant difference between group I (without drain group) and group II (with drain group) regarding wound seroma (30 cases without drain versus 5 cases with drain respectively), superficial surgical site infection (25 cases without drain versus 4 cases with drain), full thickness wound gaping (16 cases without drain versus 3 cases with drain), superficial skin break down (40 cases without drain versus 6 cases with drain), postoperative fever (70 cases without drain versus 30 cases with drain).

CONCLUSION

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

KEY WORDS

Drain, Caesarean Section, Wound Healing, Wound Gaping

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BACKGROUND

Caesarean section is a very commonly done lifesaving procedure. Despite being that common, surgical techniques and steps do widely vary. The most common complication of caesarean section are superficial surgical site complications including sepsis, seroma formation, partial/ full thickness wound break-down. One of the common, yet debatable, practices in caesarean section is to use a subcutaneous drain for the wound. Subcutaneous space is a potential dead space where blood and serous fluid can accumulate.

This may prevent effective granulation tissue formation and can also act as culture medium for sepsis to occur. Keeping a subcutaneous drain to avoid this possible accumulation, is a well-known practice though not practiced universally. Some surgeons, however, have raised much arguments about the value of subcutaneous drains and emerging evidence raised concerns about its effectiveness. Despite this, it is evident that it is still widely used in the clinical practice.¹ Most non-randomized controlled trial on this issue have concluded evidences against the use of drain. Most of the studies referred in the trials were from developed countries where facilities are readily available and optimum. This fact raises concerns about how this evidence can be applicable in developing countries with weak health care systems and low level of awareness. So this study was undertaken to find an answer to this controversial issue.

Objective

To compare the results of abdominal wound healing of caesarean sections with subcutaneous drain kept, with those where subcutaneous drain was not kept.

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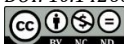
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MATERIALS AND METHODS

This retrospective cohort study performed on 219 patients was undertaken at Department of Obstetrics and Gynaecology, Sri Adichunchanagiri institute of medical sciences, from January 2017 to December 2017. Sample size was taken for convenience.

As cases, where the author has done caesareans, were all drain kept cases irrespective of indications and patient demographics, only these cases are included in the drain kept cases wing. Even if the drain kept cases done by others were there for consideration, they were excluded. As the surgeons were choosing cases at occasions depending on risk factors. Since most of the caesareans are done through Pfannenstiel incision, infrequently done cases with other than Pfannenstiel incision were not included. Since this was a retrospective study of accumulated data, the need for patient consent and ethical committee clearance did not arise. These inclusion and exclusion criteria were followed to avoid confounding variables.

Statistical Analysis

A Chi-Square test and a Students unpaired t test was conducted respectively, A P-value <0.005 was taken as significant. SPSS version 17 was used for statistical analysis.

Drain Used for Study Purpose

Among all the surgeons in the department few surgeons [including the author] were routinely keeping the subcutaneous drain for all their laparotomy cases irrespective of the indications and patient variables. The rest of the faculty were not keeping the drain, or they were keeping it in some patients where the risk of collection is more due to variable reasons like obesity, maternal diabetes, etc. We found a good opportunity to have an audit about the drain versus no drain in wound healing, for accumulated cases over a time line that is one-year time in this discussion.

RESULTS

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

Sl. No.	Variables	Drain Mean	Drain SD	No Drain Mean	No Drain SD
1	Age in Years	25.15	3.96	25.19	4.04
2	BMI(Kg/m2)	23.16	2.87	23.32	2.85
3	Parity	1-2		1-2	
4	Gestational Age in Weeks	38.27	2.8	38.34	1.4

Table 1. Demographic Data of The Studied Patients

In present study, the mean hospital stay in patients without drain were 9.5 days and patients with drain were 8.2 days.

Hospital Stay in Days	Without Drain	Standard Deviation	With Drain	Standard Deviation	P value
Mean	9.5 Days	1.71	8.2 Days	0.839	<0.01

Table 2. Post-Operative (Mean) Hospital Stay (In Days)

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

Mean HB%	Without Drain	Standard Deviation	With Drain	Standard Deviation	p-Value
MEAN	9 gm%	1.58	9.8 gm%	1.56	0.55

Table 3. Post-Operative (Mean) Haemoglobin Concentration (gm%).

Variables	Without Drain	With Drain	p-Value
Superficial SSI	25	4	0.002
Wound Seroma	30	5	0.002
Full Thickness Wound Gaping	16	3	<0.05
Superficial Skin Breakdown	40	6	0.002
Postoperative Fever	70	30	0.002

Table 4. Superficial SSI, Wound Seroma, Wound Gaping, Wound Breakdown, Postoperative Fever and Pain in Both Study Groups



Figure 1. Plastic Suction Tube In Which Holes Are Made 1 Cm Apart



Figure 2. Fixing Suction Catheter After Closing the Rectus Sheath



Figure 3. Nick In The Skin Lateral To Incision To Bring Catheter Out

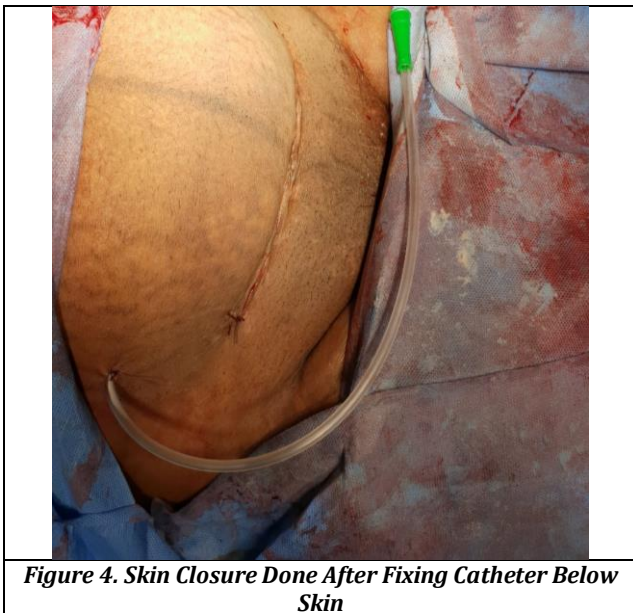


Figure 4. Skin Closure Done After Fixing Catheter Below Skin

DISCUSSION

The number of cases where drain was kept after meeting the inclusion criteria, were 525. The total number of cases where drain was not kept after meeting the exclusion criteria, were 656.

There were no significant differences between two studied groups regarding; operative time and subcutaneous layer thickness.

There was no significant difference between group I (Without drain) and group II (With drain) regarding; mean age (25.15 ± 3.96 years versus 25.19 ± 4.04 years respectively), mean BMI (23.16 ± 2.8 kg/m² and 23.32 ± 2.8 kg/m² respectively), mean gestational age (38.27 ± 2.8 versus 38.4 ± 1.4 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 haemoglobin changes (Without drain - 9 gm% and with drain - 9.8 gm%) and mean hospital stay (Without drain -9.5 days and with drain - 8.2 days).

There was significant difference between group I (Without drain group) and group II (With drain) regarding; wound seroma (30 cases without drain versus 5 cases with drain respectively), superficial surgical site infection (25 cases without drain versus 4 cases with drain), full thickness wound gaping (16 cases without drain versus 3 cases with drain), superficial skin break down (40 cases without drain versus 6 cases with drain), postoperative fever (70 cases without drain versus 30 cases with drain).

A study conducted by Jyothi et al. in 2017 to compare drain versus no drain in post caesarean section, 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 revealed 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 haemoglobin concentration.^[2]

An old Cochrane systematic review conducted by Enkin, to evaluate role of routine wound drainage in caesarean section in which two trials included.^[3,4] Enkin concluded that the use of such drainage may be of benefit if haemostasis is

inadequate, but a benefit from a routine use has not been established.^[5]

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. Ten trials that recruited 5248 women were included in the review. Meta-analysis found no evidence of a 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 (RR 5.42, 95% CI 1.28 to 22.98). No differences in outcomes were found between subcutaneous drainage and subcutaneous suturing in the three trials that made this comparison.^[1]

Study done by CAESAR study collaborative group to evaluate effect of alternative surgical techniques in women undergoing caesarean section including liberal versus restricted use of drains concluded there is a significant reduction of post- operative pain after usage of subcutaneous drain in caesarean section.^[3,6]

Same conclusion was given in a study by Kumar, 2004. Both Kumar and CAESAR studies used the VAS as a semi-objective tool for assessment of pain.^[6,7]

CONCLUSION

Patients with drain group have reduced rates of wound seroma, postoperative pain, shorter hospital stay, wound breakdown, but there is insignificant benefit regarding post-operative fever, superficial surgical site infection and haemoglobin concentration. After analysing the differences, it was found that on a large scale accumulation of data like in meta-analysis studies, suggestions may seem relevant to give opinions against the usage of drain. But when individual studies like the present one was seen, the relevance of drain advantages still appears useful. Making a simple, inexpensive drain, which can be instantly made using easily available suction cannula and the simplicity of its use without altering or harming the patient's anatomy when it is not necessary, but preventing occurrence of above said morbidities in patients when it occurs is the important observation.

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