

**A Comparative study between subcutaneous
wash and suturing among post Cesarean section infection
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Abstract

Back ground: A post-cesarean wound infection is a bacterial infection in the surgical incision following an abdominal (cesarean or C-section) delivery. This complication develops in approximately 3 to 5% of women who have a cesarean delivery. Women who develop a post-cesarean wound infection typically experience a moderately high fever and lower abdominal pain. A post-cesarean wound infection prolongs the hospital stay, usually by two days, and increases the hospitalization costs. In some cases, a wound infection can lead to severe complications, such as necrotizing fasciitis, rupturing of the fascia (the strength layer closed during surgery), or actual evisceration (opening of the wound, with the bowel protruding through the incision). Women who develop these complications must undergo at least one additional major operation and require a much longer time to recover. In rare instances, such complications have been fatal. Dealing with infections after cesarean sections is a serious business.

Aims: To identify an effective method in minimizing post cesarean section infection rate.

Method: A clinical trial study was carried out from the 1st of January 2009 to the 30th of December 2010 in Tikrit hospitals enrolled 200 cases who were subjected to Cesarean sections ,those cases were divided into 2 groups ,in the 1st group subcutaneous layer was leaved without suturing just washing with normal saline while in the second group this layer was sutured by catgut .Both groups were free from all factors that affect the outcome like age , parity or medical problems like diabetes mellitus and all cases were followed up after section to detect the postpartum infection in both groups.

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Results

There was no significant difference between the mean age of both groups by using T-test in which the mean age \pm standard deviation was for 1st group (27.6 \pm 2.95)year while for the 2nd group was (28 \pm 2.43)year. The difference in the average time for developing the post operative infection was found very significant ($p < 0.05$) between both groups so the 1st group developed the infection longer than the 2nd group (13.2 \pm 1.62)day,(11.5 \pm 1.82) days respectively .It was found that only 6 patients from 95 (6%) who were subjected to washing procedure developed infection while 69 from 97 (71%) developed infection from 2nd group who were subjected to suturing of subcutaneous layer & that was statistically significant .

Conclusion:

Washing of subcutaneous layer with normal saline without suturing was very effective than the usual method in decreasing the rate for developing postoperative infection and even need more time to develop after removing the dressing .

Key words: wound infection, cesarean section complications

دراسة مقارنة بين غسل طبقة ماتحت الجلد و خياطة الطبقة بين حالات الخمج بعد العملية القيصرية

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الخلاصة

المقدمة: ان نسبة الخمج البكتيري بعد اجراء العمليات القيصرية تشكل ما بين 3-5% من الولادات بواسطة هذه الطريقة الجراحية ومن اعراض هذا الخمج ارتفاع درجة الحرارة والام اسف البطن ومما يترتب عليه بقاء اللاتي اصبن بهذا الخمج في المستشفى مدة اطول ممن لم يصبن بهذا الخمج ومما يترتب عليه من ارتفاع نسبة المضاعفات بعد العملية مثل تقرح الانسجة و حدوث ناسور في جدار البطن قد يسبب ظهور الامعاء خارج البطن وهذا يؤدي الى ارتفاع نسبة الوفيات والتدخل الجراحي بعد ذلك.

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الهدف: لايجاد الوسيلة التي تقلل من نسبة الخمج مابعد التوليد بواسطة العملية القيصرية

طريقة العمل: تمت دراسة 200 حالة ولادة بواسطة العملية القيصرية في مستشفيات مدينة تكريت مابين الاول من كانون الثاني 2009 الى 30 كانون الاول 2010 وتم تقسيم الحالات الى 100 حالة خضعت لمحاولة غسل الطبقة التي تحت الجلد بمادة المحلول الطبيعي الطبي دون خياطة الطبقة بينما لمجموعة الثانية اجريت لهن العملية بالطريقة المعتادة وهي خياطة طبقة ماتحت الجلد وتم استثناء كافة العوامل التي التي تساعد على حصول الخمج مثل عامل العمر و الخصوبة(عدد الولادات السابقة) والامراض العضوية كداء السكر وتمت متابعة المشمولات بالبحث مابعد العملية لغرض تسجيل الحالات التي سجلت .

النتائج:

المقدمة: ان نسبة الخمج البكتيري بعد اجراء العمليات القيصرية تشكل مابين 3-5% من الولادات بواسطة هذه الطريقة الجراحية ومن اعراض هذا الخمج ارتفاع درجة الحرارة والام اسف البطن ومما يترتب عليه بقاء اللاتي اصبن بهذا الخمج في المستشفى مدة اطول ممن لم يصبن بهذا الخمج ومما يترتب عليه من ارتفاع نسبة المضاعفات بعد العملية مثل تقرح الانسجة وحوث ناسور في جدار البطن قد يسبب ظهور الامعاء خارج البطن وهذا يؤدي الى ارتفاع نسبة الوفيات والتدخل الجراحي بعد ذلك.

الهدف: لايجاد الوسيلة التي تقلل من نسبة الخمج مابعد التوليد بواسطة العملية القيصرية

طريقة العمل: تمت دراسة 200 حالة ولادة بواسطة العملية القيصرية في مستشفيات مدينة تكريت مابين الاول من كانون الثاني 2009 الى 30 كانون الاول 2010 وتم تقسيم الحالات الى 100 حالة خضعت لمحاولة غسل الطبقة التي تحت الجلد بمادة المحلول الطبيعي الطبي دون خياطة الطبقة بينما لمجموعة الثانية اجريت لهن العملية بالطريقة المعتادة وهي خياطة طبقة ماتحت الجلد وتم استثناء كافة العوامل التي التي تساعد على حصول الخمج مثل عامل العمر و الخصوبة(عدد الولادات السابقة) والامراض العضوية كداء السكر وتمت متابعة المشمولات بالبحث مابعد العملية لغرض تسجيل الحالات التي سجلت .

النتائج: لا يوجد اختلاف ذو اهمية احصائية بين متوسط اعمار المجموعة الاولى التي متوسط العمر بالسنة ± 13.2 والانحراف المعياري كان (2.95 ± 27.6) بينما كان للمجموعة الثانية (2.43 ± 28) ولكن كان هناك اختلاف واضح في المدة الزمنية بالايام لحصول الخمج بين المجموعتين حيث كانت للمجموعة الاولى والثانية على التوالي (1.62 ± 13.2) و (1.82 ± 11.5) وكانت نسبة حوث الخمج في المجموعة الاولى 6 حالات من مجموع 95 اي بنسبة 6% بينما في المجموعة الثانية 69 حالة من 96 اي بنسبة 71% وهذا الاختلاف ذو اهمية احصائية.

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الاستنتاج: استخدام طريقة غسل الطبقة تحت الجلد بالمحلول الطبيعي افضل من الطريقة المتبعة بخياطة هذه الطبقة من ناحية حصول الخمج بعد العملية القيصرية .

الكلمات المفتاحية: الخمج البكتيري، الولادة، العملية القيصرية، الجلد، جدار البطن

INTRODUCTION

CS is the most frequent major surgical procedure performed in obstetrics, the majority of women undergoing CS are young and frequently in their first pregnancy.⁽¹⁾

It must never be forgotten that CS is a major abdominal surgical procedure and carries with it all the risks inherent in such an approach.⁽²⁾The single most important risk factor for postpartum maternal infection is cesarean delivery , and women undergoing cesarean section have a 5-20 fold greater risk of an infectious complications when compared with a vaginal delivery.These complications include fever , wound infection , endometritis , bacteraemia , urinary tract infection and other serious infections.⁽²⁾

A post-cesarean wound infection is a bacterial infection in the surgical incision following an abdominal (cesarean or C-section) delivery. Women who develop a post-cesarean wound infection typically experience a moderately high fever and lower abdominal pain. Some patients are more likely than others to develop a post-cesarean wound infection.⁽³⁾

Wound infection after cesarean delivery is a serious complication that can increase postpartum morbidity, length of hospital stay, and cost .Wound infection has been reported in 2-16% of all women who have cesarean sections .⁽⁴⁾

Recovery after cesarean section can be demanding for women who develop a postoperative surgical site infection, indeed, some of these infections can be serious.⁽⁵⁾

Patients and methods

A clinical trial study was carried out from the 1st of January 2009 to the 30th of December 2010 in Tikrit hospitals enrolled 200 cases who were subjected to Cesarean section.Written official agreement of pregnant women was obtained and those cases were divided into 2

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groups each group included 100 cases ,in the 1st group subcutaneous layer was leaved without suturing just washing with normal saline while in the second group this layer was sutured by cat gut. All were elective cases & the indication was for malpresentations and previous scars. Both groups were free from all factors that affect the outcome like age, parity no medical problems like diabetes mellitus and all cases were followed up after section to detect the postpartum infection in both groups and follow up was in outpatient clinics and the time of starting infection after caesarean section was calculated. 5 cases from the 1st group were lost from follow up and 3 cases from the second group so they were excluded from the study population.Data analyzed by using soft ware program.

Results

There was no significant difference between the mean age of both groups by using T-test through which the mean age \pm standard deviation for the 1st group was (27.6 \pm 2.95)year while for the 2nd group was (28 \pm 2.43)year .The difference in the average time for developing the post operative infection was found very significant ($p < 0.05$) between both groups as the 1st group developed the infection longer than the 2nd group (13.2 \pm 1.62)days,(11.5 \pm 1.82) days respectively,as demonstrated in table 1.

Table (1) mean age and time of study population

	1 st Group	2 nd group	t- test	p-value
Mean age in years	27.6 \pm 2.95	28 \pm 2.43	1.023	> 0.05 no-significant
Mean time of infection in days	13.2 \pm 1.62	11.5 \pm 1.82	3.51	< 0.05 significant

It was found that only 6 patients from 95 (6%) who were subjected to the washing procedure developed infection while 39 from 97 (40%) developed infection from 2nd group in which

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they had suturing of subcutaneous layer & that was statistically significant as shown in table 2.

Table (2) distribution of study population according the post operative infection.

	1 st group with Wash		2 nd group with suturing		Total
	No.	Percent	No.	percent	
infection	6	6%	39	40%	45
No infection	89	94%	58	60%	147
Total	95		97		192

$X^2 = 84.7$ df-1 $p < 0.05$ significant

Discussion

This study showed decreased rate of wound infection in the first group when compared with the second group .Several mechanical prevention strategies for wound infection have been studied , including closed-suction drainage and closure of subcutaneous tissue ,with varying degree of success .⁽⁴⁾

A study done by Zhou- Fang et al. revealed that closure of the peritoneum and subcutaneous tissue provides no immediate postoperative benefits while unnecessarily lengthening surgical time and anesthesia exposure.⁽⁶⁾

Another study conducted by NASR ELAHI SH. et al comparing 3 groups: closure of subcutaneous with polyglycolic versus closure with plain and non closure after cesarean section showed no statistical difference in wound infection between 3 groups.⁽⁷⁾

On contrast, D.Chelmow et al., in their study showed that closure of subcutaneous space does not increase and may protect against wound complications in women undergoing CS.⁽⁸⁾

In current study the incidence of wound infection in second group was very high compared to other studies and also higher than figures reported from most developed countries .⁽⁹⁾

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It was assumed that local factors at hospitals and individual factors among surgeons contribute to the variation in incidence of infection, for example, a surgical team may have a combination of long duration of surgery and poor technique.⁽⁵⁾

Also suturing of the subcutaneous tissue leads to a longer operation time & the risk of developing wound infection is considerably reduced when the operation time is short. In the course of prolonged operation, there is significant tissue devitalisation resulting from tissue handling and reduced tissue perfusion.⁽⁹⁾ It is widely accepted that ischemic wounds heal poorly because of limited perfusion and delivery of fibroblasts and leukocytes⁽⁴⁾.

The survival of catgut varies considerably in different patients and dissolution is accelerated in the presence of infection (this may cause rupture). Synthetic high polymer sutures are immune to proteolytic enzymes and preserve tensile strength much longer as well as provoking much less tissue reaction⁽¹⁰⁾.

Conclusions

Washing of subcutaneous layer with normal saline without suturing was very effective than the usual method in decreasing rate for developing postoperative infection and even need more time to develop after removal of the dressing.

Recommendations

Improving hospital standards at operator rooms in order to decrease rate of post operative wound infection among CS and encourage researchers to conduct more researches to study other variables that contribute to post operative infection among CS.

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