Closure Versus Non-Closure of the Visceral & Parietal Pperitoneum at Cesarean Delivery

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Abstract

Objective: To determine weather non closure of the visceral and parietal peritoneum at LSCS has advantages over peritoneal closure with regard to post operative complications and adhesions

Materials and methods: 360 patients full term pregnant women undergoing first cesarean section were divided into 3 groups, group A (non closure of parietal and visceral peritoneum). Group B (non closure of visceral peritoneum only, Group C (closure of both visceral and parietal peritoneum) post operative complications were compared. Adhesions were evaluated in 65 patients returning for a second LSCS and compared for severity of adhesions

Results : There was no significant statistical difference between group A and C , group B and C for post operative complications or number of adhesions formation. However, adhesions in the closure group were more severe.

Conclusions : Closure of visceral and parietal peritoneum has no benefit over non closure of visceral peritoneum and non closure of both visceral and parietal peritoneum at LSCS.

الخلاصة

دراسة سريرية لمقارنة إغلاق الغشاء البريتوني من عدم إغلاق الغشاء البريتوني المبطن لجدار البطن والبريتون البطني خلال العملية القيصرية

شملت الدراسة 360 امرأة حامل في الأسبوع الـ37 من الحمل؛ تم إنهاء حملهنَّ جميعا بعملية قيصرية أولية ؛ قسمت العينة الى ثلاث مجاميع من حيث طريقة إغلاق الغشاء البريتوني وتمت متابعة 65 امرأة منهن خلال العملية اللاحقة لبيان درجة الالتصاقات داخل التجويف البطني وشدة هذه الالتصاقات (قليلة، وسطى، شديدة) ومقارنة المضاعفات بعد العملية القيصرية للمجاميع الثلاث؛ أظهرت الدراسة عدم وجود فروق ملحوظة من حيث حدوث المضاعفات لكن حدوث الالتصاقات كان أكثر وبشدة اكبر في المجموعة التي تم إغلاق الغشاء البريتوني فيها.

Introduction

Cesarean delivery is the most common obstetric intraperitoneal operation and the number of cesarean deliveries is increasing world wide.

Closure of the peritoneum during lower segment cesarean section (LSCS)has long been considered procedure to:

1-restore the normal anatomy and approximate the tissue for healing .

2-reestablish the petitoneal barrier to reduce the risk of infection.

3-.reduce the risk of wound herniation or dehiscence .

4-.minnmize adhesion formation .Numerous human and animal studies have shown that there are no disadvantage to non closure of the peritoneum .The argument against peritoneal closure involve the following.(Duffy. 1994)

1-Peritoneum has the innate ability to rapidly heal itself. Being a mesothelial organ with the capacity to initiate multiple sites of repair, the peritoneum can simultaneously heal throughout the wound. Experimental studies have shown that if the peritoniem is left open,a spontaneous re- peritonealization healing after 5-6 days. (Tulandi &Al-Jaroudi , 2003)

2- studies have shown that there is no difference in post operative complication between closure and non –closure,

3- Non-closure of the peritoneum contribute to less adhesion .When injured,the peritoneum responds initially by producing a fibrin matrix and proceeds with fibrinolysis to break down the fibrin .Re-aproximation of the peritoneal edges with suture material is suspected to result in tissue ischemia ,necrosis ,foreign

body tissue reaction ,suppression of fibrinolysis and thus increased risk in adhesion formation.(Principles of Surgery 1999)

4- Non-closure of the peritoneum reduces the amount of surgical intervention and saves on valuable surgical intervention and saves on operating time and cost.

Peritoneal adhesions are of major medical importance and associated with clinical problems such as chronic pain ,infertility, and bowel obstruction . Therefore, it is important to design a study to investigate ways to decrease the incidence of surgical adhesions. The purpose of this study was to compare the short and long term post operative effects of closure versus non –closure of the visceral and/or peritoneum would reduce the amount of post operative complication and adhesion formation.

Materials And Methods

The study was conducted at Babylon maternity and children teaching hospital, Department of obstetric and gynecology from January 2001 to December 2008, 360 full- term single fetus, primipara, delivered by LSCS, were included in the study, the inclusion criteria for woman undergo an initial cesarean procedure, always after 37 weeks of pregnancy, were breech or other mal-presentation, post term pregnancy in woman of advanced age. Or ceasarean on request, the exclusion criiteria were any previous general or gynaecologic abdominal surgery or any of the following experienced during the pregnancy: macrosomia; infection; anticoagulant therapy; pre-eclampsia; emergency cesarean delivery; ruptured membranes for more than 12 hours; placenta praevia and other placental pathologies.

All patients were operated on by the same physician. No intra- abdominal sponges, towels, or swabs used to minimize future adhesions.

Uterine incision was closed with 2 layers of continuous 1 or 2 chromic catgut suture, the peritoneum with a continuous 0 or 00 chromic catgut, and the fascia with a continuous chromic catgut 2 or Nylon suture in repeated Cesarean.

The patients divided into 3 groups,

Group A where the visceral and parietal peritoneum was left unclosed,

Group B the parietal peritoneum was closed,

Group C both the visceral and parietal peritoneum were closed routinely .The severity of adhesions following cesarean observed and it was assessed as follows:

No adhesion

Mild –A filmy vascular adhesions (< 3 cm band)

Moderate-(<3-5cm band)

Severe(more than 5cm band or it Is difficult to lysis).

A urinary catheter was routinely inserted throughout the operation and was removed after skin closure. Prophylactic antibiotic were used if it was indicated, post operative care were recorded,During first 24 hours post operative period, pain was relieved with opioid injection as it is needed and or with diclofenac sodium injection 75 mg as the patient requested then change to oral paracetamol 500mg q4 hours on day(1) When the oral diet was started (the operative day was day 0). Patient discharge from the hospital on day (3)and stitches were removed on day (7)post operatively.

Febrile morbidity was defined as non-specific fever above 38C lasting for more than 24 hours.Endomyometritis was diagnosed from uterine tenderness and offensive lochia with fever.Wound infection was diagnosed by erythema, induration, or purulent discharge.Cystitis was diagnosed by clinical dysurination or frequent micturition, with WBC>10 cells/HF from microscopic examination of midstream or catherized urine.

The second Cesarean was observed concerning intra-abdominal adhesions, including the site and degree of adhesion. Sixty-five of 360 patients underwent second LSCS(20 Patients in group A, 20 in group B, And 25 in group C).All had no other abdominal operations between the two LSCS .
The shortest interval period between the 2 operation was 1 year.

Results

Post operative complications at first LSCS are shown in table 1.There was no statistical significance when comparing group A to group C and group B to group C for post operative complications. One patient was readmitted 3 weeks post operative from puerperal sepsis .prophylactic antibiotic were more often used in group C, but no statistical significance was found .Three patients (one of each group) had prolonged hospitalization to day 8 due to infected wound and secondary suture.

Table 1. Posts operative complication at first LSCS operations

Complications	Group A N=120	Group B N=120	Group C N=120
Febrile morbidity	22	19	17
Wound infection	4	1	4
Endo myometritis	2	1	0
Cystitis	9	18	9
PPH	-	PPH 3rd wk 1	PPH 1
Other infection	-	Pneumonia 1	Puerperal sepsis ,readmission 3rd wk
Total complication	37	41	32
Prophylactic AB	58	52	63

Table(2)presents the results of adhesion formation at 2nd LSCS of 65 patients .There was no significant statistical difference between the group ,however we did not find more sever adhesion in patients in group C

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Table 2 .Infra-abdominal adhesions in 2nd LSCS

Adhesion	Group A N=20	Group B N=20	Group C N=25
No adhesion	16	17	22
Mild adhesion	1	1	0
Moderate adhesion	2	1	0
Severe adhesion	1	1	3
Total adhesion	4	3	3

Table 3. patients of postoperative adhesions

Group-no	Age	Indications for LSCS	Complication After 1st LSCS	Mild adhesion 1-3 cm	Mod. Adhesion 3-5 cm	Severe Adhesion 5cm
A-1	18	Breech	F Morbid 5d +AB	-	-	√
A-2	22	CPD	Low grade fever 2 days	√	-	-
A-3	21	CPD	Low grade fever 4 d+AB	√	-	-
A-4	35	CPD	F Morbid 4d +AB	√	-	-
B-1	26	CPD	Morbid 2d	√	-	-
B-2	23	Post term	Low grade fever 2 days	-	√	-
B-3	21	PRM	Cystitis with fever	√	-	-
C-1	18	CPD	Low grade fever 3 d+AB	-	-	√
C-2	27	CPD	Low gradefever 2 d+AB	-	-	√
C-3	20	CPD	Low grade fever 2 d	-	-	√

The details of the patients who had intra-abdominal adhesion are shown in table 3.

The more serious the indication for LSCS in group A and B resulted in more server adhesion .one patient from group A(A-1) who had severe adhesion ,had febrile morbidity with antibiotic use (Fmorbid+AB) lasting for 5 days after LSCS . Another patient from group A(A-4) also had previous prolonged febrile morbidity ,but presented with mild adhesion .

Three cases from group C had only low grade fever with prophylactic antibiotics, of the 2cases (C-1,C-2) yet resulted in sever adhesion . All of mild adhesions appeared along the incision of the abdomen ,always involving the omentum. The more severe adhesions extended to the lower uterine segment and bladder wall area. The mild and moderate adhesions in group B also appeared on the abdominal wall along the incision line. There were no other sites of adhesions in the abdominal cavity .we did not find any intra abdominal infections,wound herniation, or wound dehiscence.

Discussion

The peritoneal defect is restored simultaneously by "metastasis " of near by mesothelial lining cells, and the duration of repair is independent of the size of the peritoneal defects. Adhesion formation is suspected to relate to tissue ischemia and necrosis , infection ,foreign body contamination and surgical technique . From animal

studies ,closure of the parietal peritoneum is associated with more adhesion formation when compared to non –closure for spontaneous healing. (Elkinse, *et al.*1987).Therefore,suturing the peritoneum may actually increase the risk of adhesion development .

In human subjects, many reports have expressed different findings ,comparing closure and non –closure of the peritoneum.studies have found no difference in post operative complications,febrile morbidity,wound dehiscence. Return of bowel function,urinary tract infection ,post operative pain and length of hospital stay on the other hand peritoneal closure correlated with asignificantly higher incidence of febrile morbidity ,and wound infection ,cystitis ,endometritis ,increased post operative pain with more narcotic use, prolonged hospital stay, and antibiotic use. (McDonald *et al.*1988)

Tulandi ,*et al,* performed in 2003 second look laproscopy one year after reproductive surgery in 333 patients .They confirmed that that non closure of the parietal peritoneum did not increase adhesion formation when compared to the closure group.(Hojberge *et al,*1998)

Rosete ,et al ,mentioned in 29 out of 144 followed patient for subsequent abdominal surgery after LSCS , they found that adhesions was more for closure group who underwent subsequent surgery.(Hull ,1988)

From many studies,it has been concluded that routine closure of visceral and parietal peritoneum should be omitted during cesarean delivery. However,today peritoneal closure is used as a routine standard procedure and is incorporated into the training experience . It is probable that this procedure has been used for along time previously, since no definite serious complications were found. (Tulandi& Gelfand,1988)

BY short term evaluation of post operative and post- partum period of the first LSCS, We found no significant statistical difference of post operative complications, among three groups. By process of operation , it is clear that operating time, anasthetic exposure ,and operative cost reduced in the non- closure group so it was not studied

Long term evaluation , during second cesarean ,showed no significant statistical difference in the number of patients who had adhesions. However , the adhesions were more severe in the closure group. When the peritoneum left unclosed , tissue healing allowed were more severe in the closure up.(Iron &BeGuin ,1996).

For restoration of normal pelvic anatomy .From the present study ,it was suggested that closure of visceral and parietal peritoneum may be omitted in LSCS .

Peritoneal closure did not demonstrate any benefits to more adhesions than non-closure .The limitation of this study was the small small sample size .However, the results of the study are favorable on non-closure of both parietal and visceral peritoneum, Further studies are suggested to confirm this finding .(Nagele *et al,*1996)

Conclusion

The present study showed that closure of visceral and parietal peritoneum has no benefit over non –closure of the visceral peritoneum and non closure of both visceral and parietal peritoneum At LSCS, However adhesion was less severe in non –closure patients.

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