



## A COMPARATIVE STUDY OF SINGLE LAYER VERSUS DOUBLE LAYER CLOSURE OF UTERUS IN LOWER SEGMENT CAESAREAN SECTION.

### Obstetrics & Gynaecology

<b>Dr. Yalamanchili Nirupa</b>	Postgraduate Department of Obstetrics and Gynaecology, Alluri Sitarama Raju Academy of Medical Sciences Eluru, West Godavari District Andhra Pradesh 534005 India
<b>Dr. K. Sri Tanaya</b>	Professor Department of Obstetrics and Gynaecology, Alluri Sitarama Raju Academy of Medical Sciences Eluru, West Godavari District Andhra Pradesh 534005 India
<b>Dr. K. Vandana*</b>	Professor & HOD Department of Obstetrics and Gynaecology, Alluri Sitarama Raju Academy of Medical Sciences Eluru, West Godavari District Andhra Pradesh 534005 India*Corresponding Author

### ABSTRACT

**BACKGROUND AND OBJECTIVES:** To evaluate whether single layer closure of uterus without peritoneal closure at lower segment cesarean section is beneficial or not when compared to conventional two layer closure of uterus with peritoneal closure. **MATERIAL AND METHODS:** In this study 100 pregnant women undergoing emergency or elective lower segment cesarean section during February 2019 to January 2020 in the department of Obstetrics and Gynecology in ASRAM Medical college, were considered and randomized in to two groups, Group I and Group II. In Group I, the study group, consisting of 50 cases, uterus was closed in single layer with no closure of either visceral or parietal peritoneum. In Group II, the control group, consisting of 50 cases, the uterus was closed in two layers with closure of both visceral and parietal peritoneum. Out comes measured were operating time, amount of suture material used, immediately post operative morbidity in terms of febrile morbidity, wound infection, Endometritis, DVT, Paralytic Ileus, Cystitis, perioperative fall in Hemoglobin%, hours at ambulation and duration of hospital stay. **RESULTS:** The mean maternal age was 23.5 yrs in group I 24.6 yrs in group II. 44% in group I and 58% in group II were primigravidae. 56% in group I and 42% cases in group II were multigravidae. 58% and 68% cases in group I and group II had primary LSCS respectively. 32% and 42% cases in group I and group II respectively were repeat LSCS. 74% and 68% in group I and group II were transverse incisions. 26% and 32% were in group I and group II were vertical incisions. There was a significant reduction in operative time in group I by 15 min as compared to group II. The amount of suture material used was also significantly less in group I. Febrile morbidity was seen in 4% and 14% , Urinary tract infection in 2% and 10% , Wound infection in 12% and 26% of cases in group I and group II respectively. All these parameters were significantly lower in group I. **INTERPRETATION AND CONCLUSION:** Single layer uterine closure without closure of visceral and parietal peritoneum at cesarean section is having several advantages over double layer uterine closure with closure of both peritoneum in terms of reduced operative time, amount of suture material required immediate post operative morbidity and duration of hospital stay.

### KEYWORDS

Single layer closure; double layer closure; cesarean section; peritoneal closure; post operative morbidity; uterine incision.

#### INTRODUCTION:

Cesarean section is defined as birth of the fetus through incisions on the abdominal wall and the intact uterine wall. This definition does not include removal of fetus from the abdominal cavity in the case of rupture of the uterus or in the case of an abdominal pregnancy.<sup>1</sup>

There are many ways of approach to abdominal delivery of fetus (Vertical, Transverse, Extraperitoneal) uterine incision (Classical, lower segment transverse, vertical), removal of placenta, closure of uterus, peritoneum and abdominal wall. There is conflicting opinions among obstetricians about the advantages and disadvantages of one over the other. For example, single layer over double layer closure of uterine incision, closure or non closure of visceral/parietal peritoneum, exteriorization of uterus or no exteriorization, Misgav Ladach over standard Pfannenstiel approach.

Till the 1980's, uterus was closed in double layer and peritoneum was closed, in 1990's single layer uterine closure, and non closure of visceral/parietal peritoneum came in to use.

Theoretically single layer closure takes lesser operating time, causes lesser tissue trauma, ischemia & necrosis, introduces lesser foreign material in uterus, lesser blood loss, better uterine wound healing, lesser scarring of myometrium. Suture materials commonly used are plain or chromic catgut, delayed absorbable synthetic sutures like polyglactin.<sup>2,3</sup>

Peritoneum which has been made ischaemic by suturing tightly loses its fibrinolytic activity to form adhesion and is associated with higher incidence of febrile morbidity, wound infection and cystitis. It is said that suturing peritoneum causes sub peritoneal pockets which fill with blood and secretions from uterine incision and serves as a nutrient media for bacteria. Also suturing the peritoneum will cause both excessive manipulation and ischemia of peritoneum leading to increased pain and hence higher analgesic requirement.

Shorter operative time with non closure reduces wound infection rate. Some studies suggest that single layer closure without peritonisation is optimum technique while others have reported a 4-6 fold increase in the incidence of scar rupture in subsequent pregnancy.<sup>4,5,6,7</sup>

Considering the above factors this study is done to evaluate and assess the advantages or disadvantages of single layer uterine closure without peritonisation over the conventional closure.

#### AIMS AND OBJECTIVES:

- 1) To Compare operative time in both groups.
- 2) To assess cost effectiveness.

- Amount of suture material required.
- Duration of hospital stay.

- 3) To assess immediate post operative morbidity.

- Febrile morbidity
- Wound infection.
- Endometritis
- Paralytic ileus
- Cystitis

#### PATIENT AND METHOD:

It is a comparative study conducted at ASRAM Medical college Eluru, the study includes 100 pregnant women undergoing emergency or elective lower segment cesarean section and divided in to two groups to compare whether single layer closure of uterus without peritoneal closure at lower segment cesarean section(50) is beneficial or not when compared to conventional two layer closure of uterus with peritoneal closure(50) from December 2018 to November 2019.

#### INCLUSION CRITERIA:

All women undergoing elective/emergency LSCS regardless of indication, type of skin incision, medical complications, high risk factors, parity, number of previous LSCS

**EXCLUSION CRITERIA:**

- 1) Inverted TIncision.
- 2) Extension of incision in to uterineangles.
- 3) Visceral injuries – bladder, bowels, ureters
- 4) Cesarean hysterectomy

**RESULTS AND DISCUSSION:**

Total number of cases taken were 100, who were randomized to either Group I single layer closure without peritonisation 50 cases or Group II double layer closure with peritonisation 50 cases.

**TABLE 1: Operative Characteristics Time taken**

	Group I	Group II	Z	P	CON.
Uterus to skin	27.6	39.9	5E-15	<0.05	S
Total duration	38.08	53.7	4.8E-15	<0.05	S

The average time taken from closure of uterus to skin was 27.6 min in Group I and 39.9 min in Group II which was statistically significant. In Group I the time taken ranged from 19 to 47 min, in Group II it ranged from 33 to 60 min.

The time taken for the total duration of surgery varied from 29 to 60 min in Group I with a mean time of 38.08 min in Group I and in Group II the range was 40 to 80 min with a mean time of 53.7 min which was statistically significant.

In the study by Sood in Single layer Group it was 31.3± 6.4 min and Double layer it was 33.1 ± 4.6 which was significantly lower in SL Group.

In the study by Hauth et al in Single layer Group it was 39.2 min, and double layer it was 44.8 min which was significantly lower in SL Group.

In the study by Grundsell et al the Group with closure of peritoneum and two layer closure of uterus it was 41.3 ± 6.9 min and non closure 33.4±6.2 which was significant lower in the latter.

**TABLE 2: Suture material- Amount and type**

(In cm)	Group I	Group II	Z	P	CON.
Vicryl No I	109.68	162.3	0	<0.05	S
Chromic catgut NoI	16.2	41.12	0	<0.05	S

In Group I, Vicryl No I needed was on an average 109.68 ± 21.7 cms and chromic catgut No 1 was 16.2 ± 13.7 cms whereas, in Group II it was 162 ± 23 cms and 53.7 ± 12.8 cms respectively

**TABLE 3: Post Operative Outcomes**

	Group I	Group II	Z	P	CON
Pre op Hb% (Avg)	10.2	10.3	0.386	>0.05	NS
Post op Hb% (Avg)	9.6	9.7	0.468	>0.05	NS
Perioperative fall in Hb%(avg)	0.624	0.6	0.468	>0.05	NS

The average preoperative Hb% was 10.27 gm in Group I and 10.368 % in the Group II postoperative Hb% was 9.65 gm% in Group I and 9.75 gm% in Group II which was not statistically significant.

Average perioperative fall in Hb% was 0.624 % in Group I and 0.612 gm% in Group II which was not statistically significant.

The average Hb% in Group I was 10.2 and in Group II 10.36 in which is comparable to 10.5% and 10.47% respectively in the study by Sood.

The average post op. Hb% was 9.65% in Group I and 9.75 % in Group II which is again comparable to Sood 9.63 % and 9.53% respectively.

The perioperative fall in Hb% was an average of 0.624% in Group I and 0.612% in Group II which is lesser than in the study by Sood which was 0.86% & 0.94% respectively. In the present study it was not significant in contrast to the study by Sood.

**TABLE 4**

	Group I	Group II	Z	P	CON
Febrile morbidity	2	7	0.038	<0.05	S
Endometritis	0	0	-	-	-
UTI	1	5	0.044	<0.05	S
Wound infection	6	13	0.035	<0.05	S
Paralytic ileus	0	0			

2 cases (4%) in Group I and 7 cases (14%) in Group II had febrile morbidity which was statistically significant.

None of the cases had endometritis or paralytic ileus Urinary tract infection was seen in 1 case (2%) in the Group I and 5 cases (10%) the Group II which was statistically significant Wound infection was seen in 6 cases (12%) in Group I and 13 cases (26%) in the Group II which was statistically significant.

**Febrile morbidity:**

In the study by Sood it was seen in 11.8% of Single layer group and 23.6% of double layer group.

In the study by Grundsell H.S. et al it was seen in 3.8% in Closure of peritoneum and 1.7% in non closure group.

Paralytic ileus It was not seen in any cases in either of the groups This is in accordance Grundsell et al study where as in a study by Nabendu et al 37 it was 2.2%. Cystitis – It was seen in 2% of group I and 5% of group II which was significantly higher in the Group II.

**Wound infection:**

It was seen in 12% of group I and in 26% of group II which was statistically higher in group II.

In the study by Sood, it was 3.9% in SL Group and 8.5% in DL Group. P >0.05

**TABLE 5**

	Group I	Group II	Z	P	CON
Ambulation (avg hrs)	42.74	45.4	2E	<0.05	S
Duration of hospital stay ( avg. days )	8.32	9.32	1E-03	<0.05	S

The average time of ambulation was 42.74 hrs in Group I and 45.44 hrs in Group II which was significantly earlier in the Group I.

The average duration of hospital study was 8.32±1.65 days in Group I and 9.32 ±1.58 days in Group II which was significantly lower in the Group I.

In the study group the range of hospital stay varied from 7 to 13 days, where as in control group it varied from 7-12 days.

**Ambulation<sup>\*</sup>**

In the study by Bjorklund et al. average time of ambulation in uncomplicated cases was 26.1 hrs in Misgavladach and 42.8 hrs in the conventional closure group, where as in complicated group it was 33.5 hrs and 47 hrs respectively. Ambulation was earlier in group I because of lesser post operative pain in nonclosure of peritoneum.

**Duration of hospital stay:**

The reduced duration of hospital stay is due to reduced infections morbidity in group I. This results in reduced cost for group I as compared to group II.

**CONCLUSION:**

Cesarean section is a very commonly performed surgery Many technical approaches to the surgical techniques are available Single layered uterine closure without closure of visceral and parietal peritoneum is having several advantages over double layered closure with closure of visceral and parietal peritoneum in terms of

- 1) Reduced operative time
- 2) Reduced amount of suture material required
- 3) Reduced immediate post operative morbidity
- 4) Reduced hospital stay.

All of these translate into a simple and cost effective procedure of

single layer uterine closure without peritonisation at LSCS  
Further studies are needed to assess the outcome of next pregnancy  
with respect to prior closure technique.

**REFERENCES:**

1. Cunningham et al . Cesarean Delivery and Peripartum Hysterectomy. In Williams Obstetrics; 22nd ed, USA; McGraw - Hill companies. 2005 : 588-598.
2. Jelsema RD, Wittingen J A, van der Kolk KJ. Continuous, nonlocking, single-layer repair of the low transverse uterine incision. *J Reprod* 1993; 38:393-6.
3. Hohlagschwandtner M, Chalubinski K, Nather A et al. Continuous vs interrupted sutures for single-layer closure of uterine incision at cesarean section. *Arch Gynecol Obstet* 2003; 268:26-8.
4. Chapman.S, Owen J, Hauth JC. One versus two layer closure of a low transverse cesarean: The Next Pregnancy. *Obstet Gynecol* 1997; 89: 16-8.
5. Tucker et al. Trail of labor after a one or two layer closure of a low transverse uterine incision. *Am J Obstet Gynecol* 1993; 168: 545-6
6. Durnwald.C, Mercer B. Uterine Rupture, preoperative and perinatal morbidity after single layer and double-layer closure at cesarean delivery. *Am J Obstet Gynecol* 2003: 189:925-9.
7. Bujold E et al. The Impact of a single layer or double layer closure on uterine rupture: Am J Obstet Gynecol 2002: 186: 1326-30.
8. Bjorklund K et al. Introduction of Misgav Ladach cesarean section at an African tertiary center A Randomised Controlled Trial. *BJOG* 2000; 107(2): 209-216.