



## COMPARISON OF WOUND AFTER PFANNENSTEIL KERR AND MISGAV LADACH TECHNIQUES OF CAESAREAN SECTION

### Physiology

**Manisha Kala**

Manisha Kala, Resident,,SMS.Medical college,JLN Marg,Jaipur

**Nupur Hooja\***

Nupur Hooja Professor,SMS.Medical college,JLN Marg,Jaipur.\*Corresponding Author

### ABSTRACT

Caesarean section is the most frequently performed surgery in obstetrics. To make the scar better cosmetically, it is important to know if changing the surgical technique has an effect on wound condition postoperatively hence the study was undertaken to study the effect of different techniques of caesarean section-Misgav Ladach and Pfannensteil Kerr on postoperative wound condition. It was a hospital based interventional study done in a tertiary care hospital. Operative details and Southampton wound grading of postoperative wound was noted and analysed. There was greater erythema along and around the wound on day five after the Pfannensteil Kerr method as assessed by Southampton wound grading. Also, at six weeks, the scar was better after Misgav Ladach method. Thus, it can be chosen over PK method as the surgery is simpler, quicker with better wound condition and shorter stay in hospital.

### KEYWORDS

Misgav Ladach ,Southampton wound grading, Pfannensteil Kerr .

### INTRODUCTION

The goal of abdomen closure in a surgery is appropriate skin approximation and adequate healing with maximal patient satisfaction, minimal wound complications and minimal cost. Some factors such as nutritional status of women, frequent complications of surgery in different societies, economic status of different societies and anatomic differences in individuals of different societies and ethnicity also affect the intraoperative and postoperative parameters. Since caesarean section is the commonest obstetric operation, there is a continuing search for satisfactory techniques of caesarean section. In the recent years many changes have been made in the caesarean section techniques, to make it safe, of short duration, simple having low cost, with less post-operative morbidity and mortality, giving a strong scar. Wound infection is the commonest and distressing disorder of wound healing. Surgical site infection is the second most common infectious complication after urinary tract infection following a delivery by caesarean section [Talukdar et al., 2015]. To make it better from cosmetic point of view, it is important to know if a surgical step has an effect on the wound condition postoperatively [Sharma A et al, 2013]. Objective of the study was to find if changing the technique of caesarean section affected the wound condition.

### METHODS

This was a hospital based interventional longitudinal study conducted in Department of Obstetrics and Gynaecology of a tertiary care hospital. Primigravida women undergoing caesarean section were selected. Women who had undergone any surgeries in past, anaemia, any sign of sepsis, or any medical disease or who have any surgical complications or postpartum haemorrhage were excluded. Forty women each were operated using Pfannensteil Kerr (PK) and Misgav Ladach (ML) method.

In PK technique a curved transverse supra-pubic incision in the abdominal skin, abdomen is opened by sharp dissection. Transverse lower uterine segment incision was given, uterus repaired in double layer and peritoneum was closed. [NICE] In ML method, abdominal wall was opened by method described by Joel-Cohen et al [Abalos et al, 2013] by transverse skin incision 5 cm above the symphysis pubis and blunt dissection of all abdominal walls. Suturing of the uterus was done in one layer and peritoneum was left open. [Enkin, 2000] Detailed records of intraoperative and postoperative parameters were noted. Wound assessment was done by Southampton wound grading [Williams NS et al, Love and Bailey, 25th ed]. Data collected was analysed. Unpaired t test were used for statistical significance and P value < 0.05 was taken as significant.

### SOUTHAMPTON WOUND – GRADING SYSTEM

Grade	Appearance
0	Normal healing
I	Normal healing with mild bruising or erythema
Ia	Some bruising

	Ib	Considerable bruising
	Ic	Mild erythema
II	Erythema plus other signs of inflammation	
	IIa	At one point
	IIb	Around sutures
	IIc	Along wound
	IId	Around wound
III	Clear or haemoserous discharge	
	IIIa	At one point only ( $\leq 2$ cm)
	IIIb	Along wound ( $> 2$ cm)
	IIIc	Large volume
	IIId	Prolonged ( $> 3$ days)
IV	Pus	
	IVa	At one point only ( $\leq 2$ cm)
	IVb	Along wound ( $> 2$ cm)
V	Deep or severe wound infection with or without tissue breakdown; hematoma requiring aspiration	

### RESULTS

On examining and grading the wound by Southampton wound grading on postoperative day five and comparing between the ML and PK method, the grade 2 wound i.e. those having erythema plus other signs of inflammation along and around the sutures and wound, were more in PK group than the ML group. Grade 0 implying no infection was graded in 28 women of which 78% were done by ML method. 77.5% women in ML group whereas 42.5% in the PK group had grade 0 or 1 wound. Table 1

Wound was again assessed at postoperative six weeks and there was better scar in the ML group than the women in the PK group.

**Table 1 : Condition of the wound**

Southampton wound grading	ML Group (N = 40)	PK Group (N = 40)	P value
0	22 (55%)	6 (12.5%)	0.943 (NS)
1	9 (22.5%)	11 (30%)	0.796 (NS)
2	4 (10%)	18 (45%)	0.001 (S)
3	4 (10%)	5 (12.5%)	1.000 (NS)
4	1 (2.5%)	0 (0%)	1.000 (NS)

The mean time of skin incision to closure in ML group was  $(29.0 \pm 4.6)$  min and it was significantly less than the PK group  $(34.8 \pm 5.3)$  with P value of less than 0.001. The Misgav technique has fewer steps hence the operative time was shorter. Table 2

The mean duration of hospital stay was also shorter in the Misgav Ladach group,  $5.25 \pm 0.59$  days than the group with Pfannenstiel Kerr ( $5.38 \pm 0.67$ ) with a p value of  $<0.001$ . The women in the ML group were more comfortable in the postoperative period, had better wound condition and hence had shorter hospital stay. Table 2

**Table 2 : Operative Time And Hospital Stay In the Two Groups**

Parameters	ML Group Mean +SD	PK Group Mean +SD	P value
Skin incision to closure time (minutes)	$29.0 \pm 4.6$	$34.8 \pm 5.3$	$<0.001$ (S)
Hospital stay (Days)	$5.25 \pm 0.59$	$5.38 \pm 0.67$	$<0.001$ (S)

## DISCUSSION

We observed better wound condition after ML technique, both on the 5th postoperative day and at six weeks. [Adama O et al, 2017] compared ML versus PK technique of caesarean section and reported that the average time of wound healing was less in ML method, 16.33 days for ML versus 21.27 days for PK ( $p = 0.0001$ ). [Hudić I et al, 2012] observed that the ML technique was associated with lower wound infection compared to the PK. ( $p < 0.05$ ).

However, few authors, [Ghazala Mahmud et al, 2013] [Xavier P, 2005], [Naki MM et al, 2011] found no difference in wound infections between the two methods.

Peritoneal nonclosure [The CORONIS Trial Collaborative Group Follow up Study, 2016] results in a shorter operating time. In Misgav Ladach technique peritoneum is not closed, besides other changes. Misgav-Ladach technique proved to be associated with shorter operating time, so it is preferred in all cases where a quick operation was required [Shrinivas N et al, 2017], [Iftikhar R et al, 2010], [Hofmeyr G et al, 2010].

On comparing ML method and PK method, [Sahin N et al, 2018], [Naki MM et al, 2011], there was significant reduction in total operating and extraction time in the ML group ( $p < 0.001$ ).

In Misgav Ladach Method, there is a reduction in mean operating time because technically, steps to perform are simpler and reduced. The less operative time reduces the duration of exposure to anaesthesia to both mother and fetus and also the exposure of wound to external environmental contaminants [Tabasi, 2013]. Decrease in operating time not only leads to decrease risk of anaesthetic complications, wound infection and thromboembolic complication but leads to more efficient use of theatre time, thus reducing the total cost. [Noreen, 2015]

We observed significantly shorter duration of stay in the ML group [Jindal M et al, 2017] also observed that women operated by ML technique had statistically significant ( $p < 0.05$ ) shorter hospital stay. Misgav-Ladach and PK method of caesarean section were compared [Sahin N et al, 2018], [Adama O et al, 2017], [Ghazala et al, 2013] and observed that there was no statistically significant differences in length of hospital stay. Better wound condition resulted in a sense of general being and earlier discharge.

## CONCLUSION

Caesarean section should be done by Misgav Ladach method unless otherwise indicated. It results in cosmetically better postoperative wound condition, lesser duration of surgery and is more cost effective. CONFLICT OF INTEREST: The author(s) declare(s) that there is no conflict of interest regarding the publication of this article.

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