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Research Article

**COMPARISON OF LOCKED AND UNLOCKED SUTURE
TECHNIQUES IN CLOSURE OF UTERINE AFTER
CESAREAN SECTION**¹Dr Zainab Asghar, ²Dr Khalid Shahzad, ³Dr Anam Naz¹Basic Health Unit, Karyala, Hafizabad²RHC Kamar Mushani, Mianwali³Children Hospital Faisalabad**Article Received:** March 2020**Accepted:** April 2020**Published:** May 2020**Abstract:**

Objective: The aim of this study is to compare the unlocked and locked closure of uterine methods regarding control of bleeding and incision healing of uterine.

Methodology: This study was conducted in children hospital Faisalabad, and the duration of this study was from April 2019 to December 2019 were recruited for this research work. We measured the count of hemoglobin and levels of serum creatinine of patients in both unlocked (35) and unlocked (47) just before and after 24 hours of surgical intervention. We compared deficit of hemoglobin, enhancement in Creatine Kinase and hemostatic sutures. We also assessed the scar healing of uterine after complete three months. We also compared and calculated the thickness of scar, percentage of scar thinning and niche of both locked (27) and unlocked (32) techniques.

Results: There was deficit of hemoglobin in patients of both groups. There was less Creatine Kinase rise in the patients of UG (Unlocked group) but it was not much significant (P value = 0.082). There was need of additional sutures in Unlocked group (P value = 0.016). Niche thickness and percentage of scar thinning site was much low in the patients of Unlocked group (P value = 0.002, P value = 0.000).

Conclusions: The unlocked method of uterine closure is very secure and it has very less impairment to myometrium.

KEY WORDS: Locked, Unlocked, Thickness, Niche, Incision, Surgical Intervention, Scar, Bleeding, Uterine, Hemoglobin.

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INTRODUCTION:

Cesarean section is a very common surgical intervention in the whole world. Various abnormalities of placenta and scar complications have association with the cesarean section. The selection of the best technique for uterine repair is a very controversial issue. One research work stated that single layer closure method is more beneficial in terms of loss of blood after surgical intersection. But there was not sufficient information to declare the more suitable technique [1]. In one other research work, the evaluation of the patients who were undergoing normal delivery after cesarean section carried out in terms of closure method of uterine and uterine rupture. There was two times more increase in the uterine rupture risk after the application of single layer closure [2]. In opposition, one research work discovered that there was association of unlocked method of single layer closing with the high rate of uterine rupture as compared to the double layer closing technique [3]. These very findings support the hypothesis of Jelsma that locked suture method can cause ischemic necrosis of tissues because of enhancement in the pressure [4]. Transvaginal ultrasound imaging can easily identify the scars of cesarean section [5-6]. There are also reports about the relationship between the thickness of scar and risk of uterine rupture in duration of labor trial [7,8]. We were not able to find any research work elaborating the association suture technique and scar image. So, in this research work, we compared the locked and unlocked single layer uterus closure methods in terms of quality and safety.

MATERIAL AND METHODS:

This study was conducted in children hospital Faisalabad. The duration of this study was from April 2019 to December 2019. Ethical committee of the hospital gave the permission to conduct this

research work. We informed all the patients who were undergoing cesarean section about the procedure to be implemented. We took the written consent from every patient after explaining them the main objective of this research work. We excluded all the patients suffering from other serious complications or history of uterine rupture or with issue of high Blood Pressure. We recorded the characteristics of demography, parity, gravidity, and characteristics of cesarean section of every patient. There were two stages in this research work.

In initial stage, there were 47 females in Locked-Group and 35 females in Unlocked group. We performed the blood test of the patients Just before and after 24 hours of surgical intervention. We measured the count of hemoglobin and then calculated the differences to identify the amount of loss of blood. The measurements of levels of Serum CK (Creatine Kinase) also carried out. The rise in the level of serum Creatine Kinase predicts the deterioration of the myometrial tissue [9]. We used the SPSS V. 22 for the statistical analysis of the collected information. We measured all the variables related with surgery.

In final stage, we invited the patients after three months. All the patients who were present with repeated cesarean section were not the participants of this research work. There were 27 females in Locked-Group and 32 females in Unlocked group. We use the standard procedure to perform ultrasonography. We recorded the ant-verted or retroverted uterus position. We measured all the associated variable as elaborated in Figure-1, 2 and 3. For the elimination of the individual differences, we modified the Osse's method and applied it on this research work. We used the Chi square method for the comparison of various variables like age, gravidity, parity number and BMI.

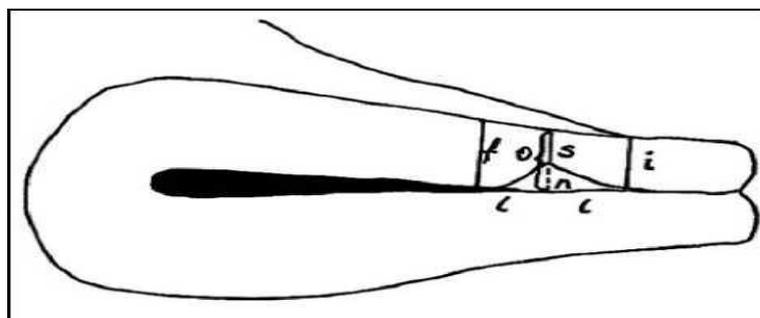


Figure-1



Figure 2



Figure 3

RESULTS:

In initial stage, there was similar age of patient, BMI, parity number, gravidity and primary rate of cesarean in patients of both groups. There was no difference in the deficit of hemoglobin. The rise of Creatine Kinase was high in the patients of Unlocked group as compared to the patients of Locked group but it was also not significant (P value = 0.0820). The amount of the patients who were in need of the additional suture was much high in the patients of Unlocked group (17.0% versus 2.0%, P value= 0.0160) as presented in Table-1.

Background Data	Locked, n=47	Unlocked, n=35
	Mean \pm SD	Mean \pm SD
Age (year)	28.4 \pm 4.8	30.2 \pm 5.3
Body Mass Index (kg/m ²)	29.7 \pm 4.2	30.6 \pm 4.6
Primary cesarean	25 (53) \pm 15 (43)	
Patients additional hemostatic suture used	1 (2) \pm 6 (17) *	
Duration of operation	20.5 \pm 2.5	21.1 \pm 1.8
Hemoglobin deficit (gm/dl)	1.09 \pm 0.75	1.1 \pm 0.7

In 2nd and final stage, there were similarity in the patients of both groups regarding the age, body mass index, gravidity and uterus as presented in Table-2.

Parameters	Locked (n = 27)	Unlocked (n = 32)
Age (year)	27.1 \pm 5.1	28.1 \pm 4.9
Body Mass Index (kg/m ²)	29.8 \pm 3.4	30.6 \pm 6.6
Retrovert uterus (n)	8 (30)	10 (31)

Data are n (%) or mean \pm SD

Although, there was thicker scar in the patients of Unlocked group but that difference was also not much different (P value= 0.057). However, there were low niche thickness and percentage of thinning in the patients o Unlocked group as compared to the patients of LG (P value= 0.0020, P value= 0.0000) as presented in Table-3.

Parameters	Locked (n = 27)	Unlocked (n = 32)	P values	95 % CI
Scar thickness (mm)	7.5+3.0	8.8 ±2.2	0.057	-2.68
Fundal region thickness(mm)	12.9+3.3	12.8±2.8	0.89	-3.18
Isthmic region thickness (mm)	11.4+3.3	10.6+2.5	0.3	-3.02
Niche thickness (mm)	4.7±2.4	2.9±1.7	0.002*	-2.16
Thinning percentage (%)	38.4+17.3	24.3±12.7	0.000*	0.26 - 0.35

DISCUSSION:

There can be adverse outcomes because of repeated cesarean section. Rupture of the uterine is the most important issue in this series. The rate of incidence of rupture of uterine is from 0.50% to 4.0%. [10,11]. Differences in application of the uterine closure methods can have influence on the durability of the scar tissue because of the attenuation of tissue [12]. Most common used procedure is the locked method and main reason of using this technique is closure of bleeding. But the tightening movement in the duration of this technique may result necrosis of myometrial tissue. Rodrigues calculated the impact of suturing on 10 various tissues like fascia, intestine, uterus and fallopian tube. He mentioned that the gentle manipulation of the tissues was the gold standard [13,14]. Gul performed a research work on sheep and he noticed the myometrial necrosis of 100% participants of sutured group and 13.30% participants of left open group [14]. Jelsma in his research work conducted in 1994 gave a comparison of locked and unlocked sutures in closing of uterine in terms of safety and bleeding control. He stated no significant difference. He also stated that the method of unlocked sutures resulted in less damage to tissues. Over time, the association between the procedure and UR was matter of study [15,16], but there was deficit in the amount of the research works providing the comparison of scar thickness. Some research works showed that damage of the muscle tissue was the cause of the increase in the level of Creatine Kinase. In addition to it, cesarean section and delivery through vagina are the acknowledged to enhance the levels of Creatine Kinase [17,18]. The deterioration of the myometrial tissue results in the increase of the serum Creatine Kinase [19].

Hebisch in his research work compared the effectivity of the ultrasonography and MRI (Magnetic Resonance Imaging) in the assessment of the scar tissue. MRI was not sufficient and ultrasonography was better in the assessment of the

wall of uterus [20,21]. Regnard adopted a changed method sono-hystero-graphy and he displayed the dehiscence of the uterine scar more clearly [22]. This method was highly invasive as compared to the transvaginal ultrasonography, the evaluation of the patients of this research work carried out with transvaginal ultrasound [23]. The period of waiting for 3 months after surgical intervention was enough for suture's resorption as well as the completion of the process of inflammation [24]. There are some limitations of this research work. We did not carry out a power analysis to find the research work of similar nature. The number of the patients recruited for this research work was very low.

CONCLUSION:

The findings of this research work conclude that it is unavoidable to escape from the formation of scar because of cesarean section. We can minimize the impact with the review of the techniques of sutures. In practices of clinical field, we should be sympathetic and kind to the related issues because there is tissue reaction against every dissection.

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