Different uterine suturing techniques during L.S.C.S. at Zagazig Maternity Hospital (short Term Comparative Study)

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Abstract: Aim: To evaluate the efficacy of both the classical and purse-string double layer uterine closure post cesarean operation with respect to short term outcomes. **Methods**: Women were divided randomly to two groups, the study group (n=44), the double-layer purse string uterine closure group and the control group (n=44), classical double layer uterine closure group. A comprehensive transvaginal ultrasound examination was performed for all subjects post cesarean section, the comparison was done for a short time (6 weeks), where a wedge shaped uterine incision scar was accepted as uterine scar fault and documented. RESULTS: 30% of all visible scar defects was recorded in the study group, whereas, it reached 40% in control group ($P < 0.001$, $\chi(2) = 15.42$) as detected by ultrasonography. A non-significant differences was recorded between the two groups with respect to operation time, preoperative and postoperative hemoglobin, demographic data and hospitalization time. **Conclusion**: With the double layer purse string uterine closure method, along short term observation, shorter in the length of uterine incision, and lower in the incidence of uterine scar defect.
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1. Introduction

Globally, the cesarean operations is considered as a routine tichnique which performed for most of women, Scarce of informations are accessible to the surgeon to choose the suitable suturing techniques for closure of uterine incision. Depending on clinical condition and physician choice, the techniques of surgical operation are different [(1)]. Uterine repair is the most controversial isssues. in A Cochrane review puplished in 2008 analyzed double layer closure techniques in comparison with single layer closure. Single layer closure was perfered than other methods due to decrease in the volume of blood losses during the operation [(2)]. Uterine rupture was reported two-fold increase with single layer closure especially locked more than unlocked suturing techniques. However with aiming to provide hemostasis, locked single layer closure method has been preferred by surgeon [(3)].

The relationship among uterine rupture and single layer closure detaulave saw, during Trial of Labour (TOL), a non-significant differences concerning the risk of uterine rupture after applying of a single layer closure and double layer closure was recorded. Higher uterine rupture risk is more linked to locked and not to unlocked single layer closure were connected with a than double layer closure in women trying a TOL [(4)]. Uterine scar defects reflect poor and may be incomplete healing of part of the hysterotomy. Impaired blood perfusion and oxygen delivery of the healing tissues may be propable underlying mechanism of defective in the uterine healing. Mechanical pressure of the lower uterine segment, can be considered cause of ischemia and subsequent negative affection of the healing wound [(5)]. Increased risk of incomplete healing of the uterine incision is also observed with urgent or emergent cesarean section in advanced labor. [(6)].

Appearance of Double layer purse string technique is the ultimate result of all above mentioned concerns. Double layer purse string closure technique, as an alternative technique that highly reduced the size of uterine incision and diminishes ultrasound detectable scar defect after parturition [(7)]. If the uterus is closed by double layer purse string method at onset of primary LSCS, it leads to formation of a little scar, which can tolerate the stress of delivery and allow for safe TOL. [(1)] Primary outcome measure aiming to access integrity of uterine incision scar was wedge shaped distortion in the scar site and accepted as scar defect ***(5).***

Maintaining the shortened length following each contraction is called physiological retraction of the uterine muscle. The main mechanism postulated for suppresing of haemorrhage during incision is through contraction of the interlacing myometrial muscle bundles which leads to constriction in the intramyometrial blood vessels and decreases the stream of blood. Consequently, another mechnnism occurred mostly represented in lessening of the lower uterine segment. The mentionded mechanisms is desirable condition and predictable [(9)]. Depending on Turan's suggestion purse-string uterine closure after

cesarean operation via an assisting in the the contraction of the lower uterine segment assistances the uterine involution after delivery. In addition, the sutures of the uterine tissues may ruptured after delivery during uterine involution, when the conventional layer by layer and side to side suturing technique, whereas, by using the purse-string double layer uterine suturing method, the opportunity of lossening of the suture is minimized greatly post uterine involution, where the distal uterine segment is constricted [7].

Matsubara *et al.* [8] commented on the new uterine closure technique. They suggested that the lower uterine become unequally narrow and change the configuration of muscle fibers, nerves and vessels. Also they proposed that the disadvantages of the purse string closure in the form of stretching the tissues nearby the incision location, which may lead to variation in the normal anatomy of the uterus [8]. Depending on Turan's belief, the sides of the uterine opening are stretched and constricted at the same rate, whereas, no changes are expected to occurr in the configuration of vessels, muscle fibers and nerve supply of the lower uterine segment. Therefore, the mechanical pressure on the incision wound is essential for incisional reliability, through weakening blood perfusion and oxygen supply to the healing tissues, then, the pulling of the tissues around the opening can decrease this mechanical tension. The purse string double layer closure method decrease the size of opening and stretchs the tissues at the place of incision, which reduces frequency of faults showed along short time of observation. So, the place of incision turn into thickened tissue, which may physically avoid deformity [7].

2. Patients and Method

A. Technical design:

a) This prospective randomized clinical study was conducted at Zagazig Maternity hospitals, Obstertrics and Gynecology department between February 2016 and February 2017.

b) Sample size

- Uterine incision length is shorter in the study group as in intra operative measurement.
- The percentage of patients with ultrasonographically visible uterine Scar defect 23.50% of all scar defects in the study group and 76.5% of all scar defect in the control group. At 80% power and 95% CI. The estimated sample will be 44 in each group (EPI-INPO Version.
- There are a percentage of patients who do not receive the allocated intervention and it is about 3 patients in each technique which equal about (7%).

The inclusion criteria:

- Single ton pregnancy.
- Term gestation (37-41 weeks).
- Cervical dilation < 4cm.
- Kerr incision.
- Age > 18 years.

Exclusion criteria:

- Patient's refusal.
- Absence of inclusion criteria.
- Emergency situation (fetal distress, cord prolapse, severe pre-eclampsia, eclampsia, placental abruption, placenta previa, vasa previa).
- Having a history of uterine surgery. E.g. hysterotomy, myomectomy, perforation).
- Maternal D.M. Preeclampsia - Bleeding tendancy.

Operational design

Steps of performance: All patients will undergo the following

- Consent was taken from all pateints.
- Patient's undrgoing cesarean section must have criteria into study group and agreed to paticipate.
- Patients were randimized into either double-layer purse-string (study group) or the traditional closure method (control group).
- Preoperative we do Hb level using swe lab alfa cell counter.
- 5- Intraoperative we record intraoperative stay, length of uterine incision before and after suturing and number of patients who needed additional sutures.
- Postoperative we do serum creatin kinase (CK) using photometer 5010, postoperative first day Hb, transvaginal ultrasonography 6 weeks postoperative.
- A wedge shaped defect in the uterine incision scar was accepted as uterine scar defect and recorded., **Vikhareva Osser et al, 2009 (5)** assesse the prevalence of apparent scar by transvaginal sonography by subjective evaluation thickness of remaining myometrium above the scar, thickness of myometrium next to and cranial to the defect and defined the scar as any indentation at the scar area using high-frequency transducers of 5-6MHz transvaginal probe (SonoACE R3).
- Analysis of the results.
- Preparing conclusions and recommendations.

Administrative Design:

- Approval was obtained from Institutional Review Broad (IRB), Zagazig University.
- Written informed consent was obtained from all patients.

Selected eligible cases from all the obstetric patients who applied to the delivery room within the study period. After applying exclusion criteria and patients who declined to participate randomization done using computer-generated numbers into either

the purse-string uterine closure arm (study group) or classical double layered closure (control group). The patients and the author were blinded to the groups with allocation ratio 1:1. The operations were performed randomly. Ultrasonographic examinations at the 6-week follow-up visit was performed by one operator blinded to the suturing technique.

Transvaginal ultrasonography examination was performed with an empty bladder using high-frequency transducers of 5-6MHz probe (**SonoACE R3**).

3. Results

Group 1refers to uterine closure by purse string double layer closure technique.

Group 2 refers to uterine closure by classical technique.

Table (1): Pre and post-operative HB

	Group1 (n=41)	Group 2 (n=41)	t	P
Pre-operative HB	**10.67±0.75**	**10.55±0.78**	**0.791**	**0.431**
Post-operative HB	**9.85±0.79**	**9.74±0.81**	**0.622**	**0.535**

No significant difference between groups regarding HB neither pre or post operation

Table (2): Intra operative stay distribution among groups

	Group 1 (n=41)	Group 2 (n=41)	t	P
Intra operative Stay	**36.81**±4.95	**35.9±5.42**	**0.821**	**0.414**

No significant difference between groups

Table (3): Length of uterine incision pre and post Suturing

	Group 1 (n=41)	Group 2 (n=41)	t	P
Length of uterine incision pre suturing	**9.61±0.98**	**9.48±0.89**	**1.886**	**0.062**
Length of uterine incision post suturing	**8.43±0.8**	**3.78±0.2**	**37.11**	**0.00****

No significant difference between groups regarding length of uterine incision pre suturing but group 1significantly higher in post suturing length of uterine incision

Table (4): Post operation CK distribution

	Group 1 (n=41)	Group 2 (n=41)	t	P
Post-operative CK	**158.4**±41.1	**161.52±46.2**	**-0.334**	**0.740**

No significant difference between groups

Table (5): Uterine scar by transvaginal sonography 6 weeks distribution between groups

	Group 1 (n=41)	Group 2 (n=41)	t	P
Uterine scar TVS 6 weeks	**40±6.64**	**30±4.17**	**20.308**	**0.00****

Table (6): The need for additional Sutures distribution between groups

			Group 1	2	Total	X^2	P
The need for additional Sutures	**Needed**	N	18	11	29	**2.37**	**0.12**
		%	**45.5%**	**29.5%**	**37.5%**		
	No	N	**23**	30	**53**		
		%	**54.5%**	**70.5%**	**62.5%**		
Total		N	**41**	**41**	**82**		
		%	**100.0%**	**100.0%**	**100.0%**		

Group 1associated with more need for additional suture

Table (7): Change assessment in both group

Group		Mean	Std. Deviation	Paired t	P
1	Pre-operative HB	10.6795	0.75532	49.489	0.00**
	Post-operative HB	9.8500	0.79285		
	Length of uterine incision pre suturing	9.6136	0.98175	24.111	0.00**
	Length of uterine incision post suturing	8.4318	0.80399		
2	Pre-operative HB	10.5500	0.78073	36.045	0.00**
	Post-operative HB	9.7432	0.81737		
	Length of uterine incision pre suturing	9.4818	0.89477	55.348	0.00**
	Length of uterine incision post suturing	3.7864	0.20752		

Inignificant decrease in both group regarding to HB pre and post-operative but length of uterine incision after suturing significantly decreased in 2group

Table (8): Correlations

Group		Length of uterine incision pre suturing	Length of uterine incision post suturing	Uterine scar transvaginal sonography 6 weeks
1	Length of uterine incision pre suturing r	1	.930**	.539**
	P		.000	.001
	N	41	41	32
	Length of uterine incision post suturing r	.930**	1	.576**
	P	.000		.001
	N	41	41	32
	Post operative CK r	.128	.181	.012
	P	.409	.241	.950
	N	41	41	32
	Uterine scar TVS 6 weeks r	.539**	.576**	1
	P	.001	.001	
	N	32	32	32
2	Length of uterine incision pre suturing r	1	.854**	.305
	P		.000	.392
	N	41	41	10
	Length of uterine incision post suturing r	.854**	1	.335
	P	.000		.343
	N	41	41	10
	Post operative CK r	.223	.292	-.227-
	P	.145	.054	.528
	N	41	41	10
	Uterine scar TVS 6weeks r	.305	.335	1
	P	.392	.343	
	N	10	10	10

From the previous results it is clear that purse string double layer closure technique is more advantageous in comparison with traditional double layer closue technique

4. Discussion

Repair of the uterine tissues post cesarean section nearly to normal situation is the most debatable issues. Double layer closure methods were matched with single layer closure in former investigation at 2008. Where the studies suggested that the single layer closure method was more advantageous in some aspects regarding the decrease in blood losses during the incision [(2)].

There is paucity of studies regarding any randomized controlled trials considering the kind of uterine surgical operation to be applied, the tools used to close the incision of the uterine tissues, or practices of suture closing (interrupted versus continuous suture). Decreasing in the volume of blood losing during the operation and the requirement for transfusion of blood was associated with blunt dissection of the uterine incision, but no other differences identified in clinical outcomes. Autosuture device was advantageous in terms of decrease in the average of blood lost during the steps of operation, but at the expense of increase in the duration of the technique after comparing with

traditional hysterotomy. Correspondingly, a non-significant variations was recorded concerning the clinical outcomes.

Using of chromic cat gut for suturing of the uterine incision post delivery was accompanied with a decreasing in the complications and in the volume of blood transfused that needing relaparotomy but without major variation in other clinical results. The most important obtained results which enable the surgeon to compare between previous different trials, is ability to use interrupted sutures, any suture technique and continuous locking.

No statistically significant differences regarding febrile morbidity risk observed between single layer closure of the uterine incision and other techniques but reduction in mean blood loss and operative duration was possible advantage. Several studies have reported superiority of single layer closure with decreased intraoperative and postoperative morbidity by reducing operative time, blood loss, febrile and infectious morbidity and hospitalization stay [(10)].

There is no evidence to show that second suture layer gives increased strength to the wound. Additional suture material may result in more tissue ischemia and necrosis and more foreign tissue in the body, which potentially favors infection, impairing wound healing [(12)].

Second layer suture prolongs operating time and increases the number of needle punctures in the uterine wall [(13)].

Increased infectious morbidity rate at caesarean delivery had been linked to prolonged operating time due to prolonged exposure of the abdominal contents and possibly more blood loss [(11)].

There are studies that concluded that the uterine rupture may be result from suturing of the uterine walls by a single layer method and other studies had related a greater risk for uterine rupture only for continuous locked suture [(14 and 15)].

Purse string uterine closure technique was evolved in order to obtain better healing by decreasing tension on lower segment. In a randomized clinical study, encouraging data concerning the comparison between traditional double layer uterine closure technique and this method regarding incidence of uterine incision defects as short term result is feasible because of encouraging preliminary data.

Our prospective, randomized clinical study, included 44woman in control group which refers to closure with traditional method, 44 women in the study group which refers to closure with purse string technique.

In the current study, the obtained results revealed that length of incision becomes shorter in size (3.78 vs. 8.4 cm) by applying the purse string repair method for the incision in the uterine layers. In comparison than in the traditional double layered uterine closure technique, uterine incision defect was noticed to be lower. Also, in the current work, the high incidence in the defects of uterine closure post-partum which showed in women may be attributed to the time of recording these defects post operation, where the time of detection of site of wound was more earlier (post 6weeks) than other data from previous studies, when acoustic window created by intrauterine fluid collection makes finding of any noticeable defaults in the uterine incision feasible.

This is compatible with results of previous studies which showed that length of uterine incision post suturing is 8.5 cm in traditional method, and 3.7cm in purse string double layer technique [(7)].

The decreased blood supply in earlier uterine Kerr incision line may be the cause for diminishing of blood and oxygen to the healing areas which consider the man factor for scar defect formation. The rate of uterine scar defect in multiparous women performed former caesarean section were 30% and 40% in study and control groups, respectively. The purse string double layer method, by diminishing the mechanical stretch in the Kerr incision place, decreased greatly the rate of uterine scar deformity in women done the caesarean section for one or more than one time which is considered clinically more imperative.

This is compatible with results of previous studies which showed that uterine scar defect in traditional method equals 74.3% and 33.3% in new versus classic closure technique. [(7)].

The type of surgical techniques are responsible for reducing the incidence of uterine incision defaults and also are very critical in complications associated to cesarean section [(5)]. Occurrence of various C.S related complications like abnormal uterine bleeding, and dysmenorrhea between pregnancies, morbidly adherent placental complications [(16)] such as the rupture of the uterus during a subsequent pregnancy, cesarean scar, ectopic pregnancy and postoperative pelvic adhesions.

Aiming at shortening operating time, simplification the operation and increasing efficiency, reduce the risk of adverse side effects, reduction of costs, period of hospital stay and diminished postoperative morbidity. In the present study, there were no differences in operation time, morbidity or duration of hospital stay, preoperative and postoperative HB%, length of uterine incision before suturing and postoperative serum creatin kinase (CK), between the purse string double layer technique and traditional closure technique. This also compatible with results from other studies which showed the same findings.

Though, the frequency of deformity in the site of operation, is determined as one of more important

factor in adverse side effects after the surgical operation of the uterus, this factor was low significantly during application of the purse string double layer closure method in matching with the traditional closure method, which give an advantage to method of the purse string double layer closure and become more favorable. In addition, to the mentioned previously, the quantity of suturing string materials used was less during applying of the purse string uterine closure method than that used in the traditional closure method, thus play a role in reducing the costs of operation.

Moreover, by applying purse string suture, the volume of blood lost or required for transfusion to compensate the lost blood was decreased significantly (29.5% vs 45.5 %), which considered as important factor in cesarean operations**,** So, the need of additional single sutures for hemostasis was less significantly in the purse string closure group, which added more benefits of this method in hemostasis. This compatible with studies which showed that, the need for additional sutures in classical method is 43.1%, and in purse string uterine closure technique is 27.5%.

In the current investigation, some cases were excluded from the study where it was in active labor (>4 cm dilatation), where a thinned uterine wall in effaced and dilated cases may varied in respond. Some authors found that cesarean section in progressive delivery is accompanied with increased risk of retardation in the healing processes of site of operation.

Generally, post labor of the placenta, the uterine muscles are contracted which helps in the involution of uterus. One of the most characters of the mymometrium is the ability to retract which is essential for sustaining the shortnes in the muscle fibers after repeated contractions. One of the mechanisms to prevent the bleeding is supposed to happen through contractions of the uterine muscles which leading to constricton of the the intramyometrial blood vessels, consequently decrease blood flow [(9)].

In Turan's suggestion the purse-string uterine closure post delivery, the constricting of the lower uterine segment post partum uterine accelerate the involution processes, and the probability for suture rupture is minimal after uterine involution due to narrowing in the lower uterine segment [(7)].

Matsubara et al. [(8)] suggested that the lower uterine segment might become un equally narrow and change the configuration of muscle fibers, nerves and vessels. They also proposed that the purse string closure can stretching the uterie tissues in and around the site of operation, which may advesely affect on the anatomical feature of the uterus [(8)].

With respect to the suggestion of Turan, both rims of the incised uterus are stretched and consequently narrowing at the same level with a non-vital variations in configuration of nerves, blood vessels and muscle fibers of the lower uterine segment. In addition, tight suture with stretching at the site of incision is fundametal for intergrity of incision through altering in blood perfusion and decease in O2 supply to the healing tissues, therefore, stretching the tissues in the periphery of the wound will decrease this mechanical tension. The purse string double layer closure method decreased the size of incision and stretchs the tissues nearby the operation, which may illustrate the reduced frequency of faults noticed for short time post-partum. The place of operation becomes more thich, which may physically decrease the incidence of deformity [(7)].

The rate of CS is women globally is increased, leading to elevation in the number of ladies at risk of potential complications at short and long term. In labour and surgery following CS, factors that can be modified such as surgical technique, management of labour and postpartum care are important to investigate in relation to complications to prevent future maternal morbidity.

The probability of uterine rupture in the second trial of parturition by caesarean section did not differ between single and double layer closure of the uterus.

Major maternal complications occurred more frequently in extremely pre term compared with term CS, but there was no increased blood loss. In the extremely preterm period, maternal complications could not be attributed to the gestational week and the surgical procedure but were more related to the indication of the CS.

Number of CS was the most important obstetric factor for formation of adhesions after caesarean delivery. A history of CS was associated with increased risk of pre and postoperative complications in hysterectomy. The risk of bladder injury during hysterectomy after previous CS was almost doubled, regardless of route of hysterectomy, maternal characteristics and uterine weight but was not always attributed to presence of adhesions.

Uterine rupture occurred in 1.3% of women attempting a TOL, which is a higher rate compared with 0.6 % in a retrospective cohort by Lydon Rochelle but similar to the 1.5% reported in a prospective study [(17)]. The rate of uterine rupture is influenced by selection of patients for TOL and obstetric management.

Major maternal complications were assessed in 7% of extremely preterm CS. Interestingly, blood loss was not increased in extremely preterm compared to term, and there was a low rate of corporal incisions (12%) compared with other settings [(18)].

The incidence proportion of adhesions after CS in gynaecologic surgery depended on exclusion criteria. In a non-selected group of women undergoing hysterectomy, adhesions were recorded in 23% (45% of women with prior CS and 17% in women with no prior CS). In women with no other prior surgery in the abdomen except CS, adhesions were reported in 32.59%, depending on prior numbers of caesarean deliveries. A similar increase in rates of adhesions according to numbers of CS has been reported at time of repeat caesarean delivery [(19).]

The single layer closure in comparison with double layer closure of the uterus does not rise the rate of uterine rupture in subsequent labour is in concordance with results from the largest RCT (CORONIS) that has investigated short and long term effects of different CS techniques. In the trial, risk of uterine rupture did not vary between single and double closure techniques, although it was under powered to detect modest differences ***(20).*** This reflects the methodological difficulties encountered when studying rare out comes. In both the CORONIS trial and the Caesar trial, none of the different parts of the JoelCohen technique was proven superior to the other, in respect to short term complications [(21 and 22).]

The role of peritoneal closure for development of adhesion related complications was also investigated in CORONIS. They found no difference in rates of pelvic pain, bowel obstruction, infertility or ectopic pregnancy following a CS with peritoneal closure or non-closure. A clear advantage is that assessment of adhesions was by direct visualisation and not restricted to symptoms associated with adhesions. women with a first CS during 1997-2013 had 47% increased rates of adhesions present at gynaecologic surgery compared with women with prior CS 1973-1996. This finding might be interpreted as indication of an association with the introduction of the new surgical technique of CS and adhesions. This is in accordance with results from two systematic reviews from 2009 and 2011, suggesting a benefit of peritoneal closure at CS in respect to formation of adhesions [(23 and 24).]

A personal history of CS increased the risk of organ injury, independent if hysterectomy was abdominal or by minimally invasive route. In a case control study, previous CS doubled the risk rates of incidental cystotomy according to type of hysterectomy were 0.76% in abdominal, 1.3% with vaginal and 1.8% with laparoscopic assisted vaginal hysterectomy; a [(25).] Increased risk of bladder injury at surgery is well documented in women with prior CS [(26)], In a review of 307 women with prior laparotomy undergoing laparoscopic, surgery, there was no increased risk of organ injury or conversion to laparotomy after CS, but prior myomectomy posed an almost five fold risk [(27).] During vaginal hysterectomy, bowel injury was reported in 1.4% of women with prior CS compared with 0.14% of women with no history of CS [(28).]

However, the risk of organ injury in minimally invasive techniques is closely related to volume of surgical procedures and experience of the surgeon ***(29)***. In the survey from Finland, the proportion of vaginal hysterectomy increased from 18% to 44% from 1996 to 2006; simultaneously, bowel injury rates decreased from 0.5% to 0.1% in vaginal approaches. Also, following laparoscopic hysterectomy ureter complications decreased from 1.1% to 0.3%.

Advanced maternal age in conjunction with CS was associated with both uterine ruptures in subsequent labour and development of adhesions. Advanced maternal age increases the risk of complications during pregnancy and labour such as hypertensive disorders, diabetes, dystocia and high birth weight The results are in agreement with a Norwegian population based register study where maternal age ≥40 years doubled the risk of rupture [(30).] This could be attributed to increased risk of advanced maternal age of impaired healing at first CS, or more augmented labours at subsequent deliveries with age.

Obesity is accompanied with increased incidence of infection and suboptimal wound healing post CS [(31),] and obesity could also decrease fibrinolysis, leading to more adhesions [(32).] In concordance, they found that BMI ≥30 at CS, regardless of number of CS, almost doubled the rate of adhesions at subsequent gynaecologic surgery. Age and obesity are factors to consider when counselling women and the risks of a trial of labour must be balanced against risk of repeat CS and the development of adhesions.

Obesity at hysterectomy and caesarean section is a known risk factor of postoperative complications such as thrombosis, wound dehiscence and infection [(33),] whereas the risk for organ injury in fact might be decreased [(34).] Modifiable risk factors for uterine rupture included induction of labour and epidural analgesia. Results from a population based study concluded that an increasing trend of uterine rupture in Norway from 1967 to 2008 could be attributed to induction with prostaglandins and more labours augmented with oxytocin in women with a scarred uterus. In protracted labour, epidural analgesia is more frequently used and repeated epidural dosing has been suggested as a warning sign for uterine rupture [(35).]

Adhesions in subsequent gynecological surgery result mainly from multiple abdominal deliveries being most common operation performed worldwide. Number of CS can to some extent be modified by avoiding CS in the first delivery and by encouraging a trial of labour after CS.

The high maternal morbidity observed after an

extremely preterm CS could be result of the indication for delivery that often is related to maternal complications such as hypertensive disorders, abruption and sepsis., maternal complication rates did not differ between gestational weeks 22, 24 and 25,27, but a maternal indication of delivery carried a higher risk of complications compared with fetal indication of an extremely preterm **CS. Reddy et al.** *(18)* analysed women with placental conditions (previa, accreta and abruption) separately, and a serious maternal complication was recorded in 26% (GW 23-27), 31% (GW 28-31) and 35% (GW 32-33).

The incidence of a postoperative infection reported in MBR and PAR after CS was 4% Infectious morbidity was much higher after extremely preterm CS (18%) Complication rates vary by method of collecting data and postoperative infection following CS, including all febrile morbidity requiring antibiotic treatment, was estimated to 17% in the Caesar trial with prospectively collected data *(22)*, results indicate that extremely preterm CS is a high risk procedure in terms of infectious morbidity, which may result from of preterm birth etiology. Postoperative infection was a risk factor for both uterine rupture and adhesions, making measures to prevent the occurrence of postoperative infections important also for complications occurring in the long term. The majority of women had received prophylactic antibiotics in the cohort (67%) and among extremely preterm (84%). According to a review of, prophylactic antibiotics halves rates of wound uterine infections following both elective and emergent CS *(36)*.

Conclusion

Purse string double layer closure technique in comparison with the traditional closure technique obviously leads to statistically significant lower frequency of defects in the uterus post operation, Being the more significant factor in adverse postoperative properties, decreasing it makes the purse string double layer closure method promising, decreasing in the consumed suturing string material in the purse-string uterine closure method other than in the traditional closure technique and The necessity was less significantly for additional single sutures to stop bleeding in the purse-string closure group (29.5% vs 45.5 %), displaying superiority of this method in preventing hemorrhage.

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