



Maternal Outcomes After Trial of Scar in Women with Previous One Lower Segment Cesarean Section in Duhok

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Article History	Abstract
<p>Received: 02 May 2023 Revised: 05 August 2023 Accepted: 21 August 2023</p>	<p>Background: Cesarean section (C/S) technique has been developed over a period of one thousand years. It is remarkable that it is still a serious operation, and it is connected with special complications and risks, potentially resulting in short and long-term consequences for the mother and neonate. The rate of the cesarean section has increased with different variation in countries. Women with prior cesarean section constitute to be a high-risk group in obstetrics.</p> <p>Aim: To assess the maternal outcome in previous C/S women given a trial of labor and to determine the influenced causes behind C/S.</p> <p>Methods: A cross sectional study conducted at Duhok hospital of obstetrics and gynecology, using the medical records of 700 women with previous one cesarean section and their gestational age > 37 weeks who delivered between 1st of January to 31st of December 2020.</p> <p>Results: Their age ranged between 15 and 44 years. Out of the 700 cases, elective C/S was decided for 186 (26.6%). Patient attended with early labor and needed C/S were 54 (7.7 %) on arrival. What have been left are 460 (65.7%) who had trial of scar, 264 (57.4%) ended with vaginal birth and 196 (42.6%) had C/S after failed trial. The most common reason for elective was previous delivery within 18 months (27.1%). The most common indications for failed trail of scar were failure to progress in labor (49%), fetal distress (46.4%) and ante-partum hemorrhage (4.6%).</p> <p>Conclusions: Trial of scar after one previous cesarean section is safe and often successful with satisfactory outcomes, on basses of accurate selective criteria, with minimal maternal complications.</p>
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1. Introduction

Worldwide C/S is one of the most common operations performed abdominally. It aims to decrease both maternal and fetal morbidity and mortality with cautions and careful approach. It has become the mode of birth in over a quarter of all the deliveries (Singh *et al.*, 2016). The most common complications during the C/S include entrapment of the fetal head within the pelvis, damage to the uterine vessels with extension to the cervix, uterine atony, bleeding from the placental bed, damage to the nearby structures and thrombo-embolism (Miller *et al.*, 2019). The cesarean section side effects are evaluated to 12% -- 15%. Complications of elective C/S (2.6 to 6.8%) is less than the emergency one (5.2 to 14.8%). It is meanly due to unprepared patient in the emergency one. (Jafarzadeh, 2019)3. Over the first half of the 19th century, the maternal mortality rate due to cesarean section was 60%-

100%. Risk of death after cesarean section was 21.9 per 100,000 C/S (86/393,443) versus 3.8 deaths per 100,000 vaginal births (Kallianidis *et al.*, 2018).

The clinical criteria for trial of vaginal birth include previous low segment scar with a single fetus. Risk of the uterine rupture and other morbidities remains a concern for many practitioners. (Wanyonyi and Ngichabe, 2013).

WHO in 2015 suggested that C/S rates in women with a prior CS in high-income countries ranged between 78.1 and 79.4%, in middle income countries 85.2 and 87.5% which is high due to using of obstetric interventions (induction, pre labor C/S, and overall caesarean section that increased over time, and 63.2 and 72.1% in low-income countries. Trial of scar has been offered to reduce C/S rates (Vogel *et al.*, 2015).

A small study carried out at Baghdad Teaching Hospital, included 73 women with previous one C/S, (45.2%) had elective repeated C/S and the remaining 54.8% women had a trial of scar, equal percentage 20 (27.3%) had successful vaginal delivery and same had C/S for failed trial (Al-Naddawi and Ibrahim, 2017).

In Democratic Republic of Congo study carried out on 231 cases with previous scar, more than have succeeded in delivering vaginally. The main cause of failure was large size babies. (Marovi R *et al.*, 2021).

At Karbala maternity hospital A total of 100 women with previous scars been given trial of labor 55% had vaginal birth. The most common cause for failed trial (45%) was failure to progress in labor (Majeed AH, 2016). But the success rate for vaginal birth after CS was 73% in a retrospective study in the same hospital 2016 (Razzak *et al.*, 2018).

A prospective observational study was carried out in 2015 at Sulaimani maternity teaching hospital, in which 200 pregnant women with previous one scar was planned for vaginal delivery. The successful rate was 63.4%, with the minimum maternal and neonatal complications (Fattah & Jalal H., 2017).

In a study at the maternity hospital in Erbil 2015, the results showed a rising rate of the CS from 28.5% in 2010 to 35.8%. The main overall indications for CS were previous CS (70.5%) (Ahmed and AL-Tawil, 2018).

2. Materials And Methods

A cross-sectional study was carried out to collect the information of maternal outcomes in women after one previous lower segment C/S. It was conducted in the departments of obstetrics and gynecology at Duhok Hospital of obstetrics and gynecology, Kurdistan Region, Iraq. It is the main tertiary hospital the city from the period 1st of January to the 31st of December 2020.

The information was withdrawn from the women's case sheets (700 pregnant with a previous C/S at term). The study plan was approved by the Research Ethics Committee, Directorate of Health of Duhok.

The data included maternal demographic profile (age, occupation, body mass index and parity). The second point was to look for the indications of the previous CS which involved fetal distress, failure to progress in labor, mal-presentation, maternal demand and ante-partum hemorrhage (APH). The mode of delivery in the current pregnancy was elective, emergency C/S after failed trial or vaginal delivery. Causes of emergency C/S found to be failure to progress, fetal distress and APH. Causes of elective C/S included the following, large size baby more than 4kg, , mal-presentation, cephalo-pelvic disproportion (CPD), post-term and post-maturity, bad obstetrical history (B.O.H), last delivery less than 18 months (according to the hospital protocol), severe Oligohydramnios + intrauterine growth restriction (IUGR), developmental dislocation of the hip (DDH), in vitro fertilization (IVF), anterior-posterior (AP repair) and disk prolapsed). The maternal complications took place after deliveries were perineal & vaginal tears, postpartum hemorrhage (PPH) and blood transfusion.

Data of the present study were analyzed using the Statistical Package Software (SPSS) system, Version 23, though the adopting of descriptive statistical data analysis approach as (frequency,

percentage, mean and standard deviation). P value ≤ 0.05 is regarded as significant. The inferential statistical data analysis as Chi-square and Fisher's exact tests been used for the advantage of the study.

3. Results and Discussion

Table 1, the age ranged between 15 and 44 years and the mean were 28.03 years (SD \pm 5.312). Most of the women were housewives (95.6%) and (4.4%) were employees. The BMI of 37.7% of them was in the obese group. The majority of the women were a multipara 87.1% and the mean was 1.69 (SD \pm 1.383).

Table1: Socio-demographic & Obstetrical Characteristics of the Study Sample

Women's characteristics		No. (%)	Mean (\pm SD)
Age (years)	15-24	182 (26.0)	28.03 (5.312)
	25-34	428 (61.1)	
	35-44	90 (12.1)	
Occupation	Housewife	669(95.6)	
	Employee	31 (4.4)	
BMI (kg/m ²)	Underweight: BMI is less than 18.5	40 (5.7)	26.3543 (6.67904)
	Normal weight: BMI is 18.5 to 24.9	247 (35.3)	
	Overweight: BMI is 25 to 29.9 Obese:	149 (21.3)	
	BMI is 30 or more	264 (37.7)	
Parity	Primi-para	8 (1.1)	1.69 (1.383)
	Multi-para (2-4)	610 (87.1)	
	Grand-multi para (≥ 5)	82 (11.7)	

Table2. The outcome was in three categories (ERCS and CS after failed trail, VB), 240 women (34.3%) had no trial of scar including 186 (26.6%) had ERCS and 54 (7.7%) of women who came with labor pain and need immediate CS without any trial. The TOS was in 460 (65.7%) of the study sample, the failed TOS were 196 (28 %) underwent emergency CS, and 264 (37.7 %) had VB, among them 11 women had an assisted forceps delivery.

Table 2: Shows Mode of Delivery in the Study Sample (No.700)

Mode of delivery	No. (%)	Total no. (%)
Elective repeated cesarean section (ERCS)	186 (26.6)	240 (34.3)
+ in labor CS (No trial)	54 (7.7)	
Vaginal birth (VB) after trail of labor	264 (37.7)	460 (65.7)
CS after failed trail	196 (28)	

Table3. the most common cause for the elective CS in the current pregnancy was the previous delivery within 18 months (27.1%) , the 2nd cause was mal-presentation (23.3%), and most of them were in breech presentation, other causes were prolonged pregnancy extended beyond 40 weeks (12.1%), B.O.H (11.2%) which included (history of intrauterine death, recurrent abortions, infertility whether primary or secondary), cephalopelvic disproportion (either due to inadequate pelvis or large fetus) (9.2%), macrosomic baby (5.8%) the weight more than 4 kg, severe Oligohydramnios + IUGR (4.2%), those who developed dislocation of the hip joint (1.7%) (DDH), history of Anterio-posterior colporrhaphy (2.9%) (AP repair) and disc prolapsed (2.5%).

Emergency CS was seen in 196 who failed the trail of labor. Failure to progress (plotted on the partogram) was the most common cause 49%. The fetal distress was the 2nd cause 46.4% and APH (Abruptio placenta and placenta Praevia) was in 4.6%.

Table 3: The Indications for the Elective Repeated CS with No Trial of Scar (No.240) and Emergency CS with Failed Trial of Scar (No. 196).

Indications for repeated CS	Frequency	(%)
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Indications for elective repeated CS with No Trial of Scar (No.240)		
Previous delivery within 18 months	65	27.1
Mal-presentation	56	23.3
Prolonged Pregnancy	29	12.1
B.O. H	27	11.2
CPD (Recurrent Cause)	22	9.2
Macrosomic (Big baby)	14	5.8
Severe oligohydramnios+ IUGR	10	4.2
DDH	4	1.7
Previous AP repair	7	2.9
Disk Prolapsed	6	2.5
Causes of failed trial of scar (n=196)		
Failure of progress of labor	96	49
Fetal distress	91	46.4
APH	9	4.6

Table 4. Those with previous history of fetal distress (188 case), 70 (10%) ended with vaginal delivery as well as elective C/S & emergency C/S 48(6.58%). For prior malpresentation (229 case), their current vaginal delivery was 92(13.14%), elective C/S 70(10%) and emergency C/S 67(9.57%). Patients (258) who failed trail of labor previously, 98 (14%) had ERCS, 85(12.14%) ended with vaginal delivery and 75(10.71%) had emergency C/S (failed trail of labor). A significant association was observed between indication of the prior C/S and mode of birth in the current pregnancy ($P=0.034$),

Table 4. The Indications of Previous CS and its Correlation to the Current Mode of Delivery

Causes of the previous CS	Mode of delivery			Total	P value
	VB (%)	Elective C/S (%)	Emergency C/S (%)		
Fetal distress	70 (10%)	70 (10%)	48 (6.58%)	188	
Mal-presentation	92 (13.14%)	70 (10%)	67 (9.57%)	229	
Failure to progress in labor	85 (12.14%)	98(14%)	75(10.71%)	258	
Maternal demand	4 (0.57%)	0 (0.0)	2(0.3%)	6	0.034*
Ante-partum hemorrhage	13 (1.85%)	2 (0.3%)	4 (0.57%)	19	
Total	264 (37.7)	240 (34.3)	196 (28.0)	700 (100.0)	

* Chi Square

Table 5. In general, there was on uterine rupture or dehiscence of scar as a serious complication in all modes of deliveries. Patients after a successful trail of labor (25.13%) developed small vaginal lacerations and perineal tears which were sutured with no complications and (2%) had postpartum hemorrhage which needed transfusion. Only (1%) developed PPH cases in the elective operations. Cases who ended with C/S after failed trail (0.43%) developed PPH.

Table 5. The Association between the Maternal current Complications with Mode of Delivery

Maternal complications	VB (%)	Mode of delivery		P value
		ERCS (%)	CS after failed (%)	
With no Complication	74 (10.57%)	233 (33.3%)	193 (27.57%)	
Perineal tear & injury	176 (25.14%)	0	0	
PPH and blood transfusion	14 (2%)	7 (1%)	3 (0.43%)	$\leq 0.001^*$
Total	264(37.7%)	240 (34.3%)	196 (28%)	

* Chi Square

There has been a significant rise in the CS rate worldwide, despite variations according to the age of the patient, place of residence, and cultural conditions. Repeated cesarean deliveries are mostly

related the presence of previous one which could carry more of the maternal & fetal complications (Ganiga and Rudrappa, 2019).

Women with previous CS are registered as high-risk group. Vaginal birth after C/S (VBAC) is considered as one of the modern obstetric practices (Al-Naddawi and Ibrahim, 2017). Patients with previous C/S carry the fear of scar rupture, as well as the presence of associated complications, and prior stillbirth. All these are factors that may interfere with the obstetrician decision to cease (stops) or continue vaginal delivery; bearing in mind the advantages of vaginal birth which exceeds the risks associated with repeated C/S. This can encourage the process for trail of labor (Razzak et al., 2018).

Unnecessary CS due to maternal request could be related to the panic from having vaginal delivery (avoiding delivery pain), social reasons, and believing of more safety to the mother and the newborn. (Razzak et al., 2018)¹⁰. The current study was carried out in governmental hospital that is way we see a smaller number of C/S as maternal demand.

The success of the vaginal delivery after C/S (VBAC) in the present study was (57.4%) which was higher than the reported in Baghdad hospital (27%) by Al-Naddawi and Ibrahim, (2017)⁷, on the other hand higher results (73.9%) were achieved by Alkhamis, (2019) in Saudi Arabia & Singh *et al.* (2016). (68.92%) in Uttar Pradesh, India. In comparison to other studies like in USA, the success rate ranged between 60- 80 %. In Australia vaginal achievement was 81 %¹⁶. The high success rate of VBAC in these studies was supported to the well skillful staff and adopting excellent protocol management regarding the mode of delivery Alkhamis (2019).

Most of our women after CS had a poor knowledge about family planning and they used natural method for contraception (improperly), which caused unplanned pregnancy (short interval between pregnancies). Previous study in Duhok (same city) showed that 77% of the studied sample used natural methods (abdulmalek and Ibrahim,2016), The ERCS was high in patient with previous delivery within 18 months followed by mal-presentation unlike the study carried in Rural Rwanda, Africa (Kalisa *et al.*, 2017) breech presentation was the dominant one (29.7%).

The mean causes behind failed trail of scar were failure to progress in labor and fetal distress that developed during the trail. Similar findings reported in Baghdad by Al- Naddawi et al. (2017), in which failure to progress was (55%) and fetal distress (45%). In Taiwan highly difference was recorded in which failure to progress was (79.6%) and fetal distress was (14.3%) Li *et al.*, (2016), In Missan hospital by Majeed, (2016), failure to progress was 84%.

The complications developed after trail of scar were minimal and it was easy to handle. Vaginal delivery was considered to be safe in most of the causes. Very few needed transfusions. These findings were not in agreement to a study carried out in Sulaimani in which higher number of patients needed transfusion (7.5%) after developing post-partum hemorrhage (Fattah & Jalal, 2017).

There was on recorded cases of uterine rupture for the conditions that had a successful vaginal delivery after the trail of scar which could be related to the continuous CTG monitoring and the good close monitoring. In contrast to our results in Rawanda, Africa (Kalisa et al, 2017) had 5 cases (1.6%) of uterine rupture and one case (0.3%) hysterectomy. In Western India Devkare *et al.*, (2017) (2%) had uterine rupture. However, the rates of uterine rupture vary according to whether VBAC labor is spontaneous (0.2–0.4%), induced (0.5–1.4%) or augmented (0.9–1.9%) (Fitzpatrick *et al.*, 2012).

4. Conclusion

Trail of scar after one previous C/S is successful and safe in carefully selected cases. The pregnant woman with a history of previous operation less than 18 months has a positive impact and increased rate of recurrent C/S.

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