Asian Journal of Epidemiology

ISSN 1992-1462

science alert
http://www.scialert.net

ANSInet
an open access publisher
http://ansinet.com

Asian Journal of Epidemiology 8 (2): 36-41, 2015
ISSN 1992-1462 / DOI: 10.3923/aje.2015.36.41

Structural and Anatomic Characteristics of the Uterus at 7-10 and 30-40 Days After Cesarean Section

Mojgan Barati, Leili Zarei, Sarah Masihi, Razieh Mohammad Jafari and Farideh Moramezi
Fertility, Infertility and Perinatology Research Center, Imam Khomeini Hospital, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Corresponding Author: Leili Zarei, Fertility, Infertility and Perinatology Center, Faculty of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran Tel: +98-9163420157 Fax: +98-611-3335399

ABSTRACT

This study was conducted with the purpose of presenting normal uterus ultrasonographic findings at the 7-10 and 30-40 days after an uncomplicated caesarean section. Abdominal ultrasound was performed on women who underwent cesarean section with the lower segment incision in 222 women at 7-10 and 106 women at 30-40 days after operation. Uterine dimension was measured presences of echo-free fluid, echogenicity of uterine cavity and echogenicity on uterus scar were studied. The uterus length, width and endometrial thickness were 130±20, 59±12 and 6.4±3 mm at 7-10 days after operation, respectively. The uterus length, width and endometrial thickness were 88±20, 46±14, 5.0±3 mm at 30-40 days after surgery, respectively. In 7-10 and 30-40 days after cesarean, echo-free fluid accumulation were observed in 68 (28.6) and 11 (9.6%) of women, echogenicity of intra-uterine cavity were seen in 40 (16.8) and 5 (4.3%) women, echogenicity in the scar area were seen in 102 (42.9) and 38 (33%) of participants, respectively. Pelvic ultrasound is applicable during the postpartum period. Presence of echogenicity and echo-free fluid within the uterine cavity and echogenicity of scar region are repeated finding in patients who are clinically stable.

Key words: Cesarean section, abdominal ultrasound, post partum, cesarean scar

INTRODUCTION

Caesarean section is one of the major abdominal surgeries, which were increased significantly during the past decade (Antonelli *et al*., 2004). Previous studies have been shown that infant outcome is better in cesarean section delivery. These findings have not been confirmed yet. Increasing rate of cesarean delivery and related complications would lead to the necessity of more research studies in this area. Post-partum period will begin with delivery of infant and placenta till four weeks after delivery, in which the uterus return to normal conditions before pregnancy (American College of Obstetricians and Gynecologists, 2006). Among the major and early complications of this period is vaginal bleeding. Management of bleeding after cesarean is very important and its treatment differs from using oxytocin and prostaglandins to embolization uterine artery and surgical intervention and sometimes hysterectomy (Goffinet *et al*., 2005; American College of Obstetricians and Gynecologists, 2006). Fever and post partum infection are another important complications of this procedure. Clinical evaluation findings have primary importance in assessing patient's morbidity, however, using ultrasonography will contribute with quick diagnosis of co-morbidities. The purpose of current study was identification of normal uterus

dimensions and also possible findings in uterine through application of transabdominal ultrasonography in 7-10 and 30-40 days after cesarean section for a contribution to the diagnosis and treatment of lochia period complications.

MATERIALS AND METHODS

This clinical study was conducted in the period of October 2013-2014. The study sample consists of 222 people who enrolled 7-10 days after cesarean section and 106 women who enrolled 40-30 days after caesarean section. We recorded clinical manifestations of each person. Study protocol between the patient and the medical ethics committee of the hospital was a written informed consent. The study participants consist of women who have cesarean section delivery without any complications after surgery; those who had symptoms such as fever or other complications were excluded from the study. Abdominal ultrasonography was performed at 7-10 and 30-40 days after a cesarean section. Scans were performed by three operators.

Transabdominal ultrasounds were performed at the pre-specified dates on selected samples. The uterus dimensions, endometrial thickness, presence or absence of echo-free fluids, echogenicity within the uterine cavity, echogenicity of the cesarean scar or between the uterus and bladder and dehiscence of the cesarean scar were studied using ultrasound examination.

Because there isn't any study in which ultrasound have been used for assessment of uterine and ovaries symptoms at 7-10 or 30-40 days after cesarean, we performed ultrasonic examination on 222 and 106 women in these times.

Statistical analysis: The study data were analyzed using SPSS version 17 software package and mean and standard deviation were calculated for description of quantitative variables and also quantitative variables were reported as relative frequencies.

RESULTS

During a 12 month study periods, trans-abdominal ultrasound examinations were performed on 222 patients at 7-10 days and 106 patients at 30-40 days after cesarean section operation. All the study participants were placed under cesarean section surgery through a low transverse incision on the inferior uterine segment. Typical age range of participants was 25 years, ranges 23-35 years.

The number of repeated cesarean delivery in day 7-10 and 30-40 groups were 70 (29.4%) and 31 (27%) cases, respectively. Gestational age was 36-40 weeks with an average of 39 weeks.

The uterine dimensions including length and width of the uterine and endometrial thickness were measured by ultrasound. The results shown that the uterus length were 130±20 and 88±20 mm, uterus width were 59±12 and 46±14 mm, endometrial thickness were 6.4±3 and 5.0±3, in the day 7-10 and 3-40 study participants.

We have studied the presence or absence of echo-free liquid (Fig. 1a), echogenicity within the uterus cavity (Fig. 1b), echogenicity of the scar area and/or echogenicity between the anterior uterus and bladder (Fig. 1c) and the dehiscence of the cesarean scar.

In present study, the presence of echo-free fluid within the uterine cavity 7-10 and 40-30 days after cesarean section was 28.6 and 9.6%. The echogenicity of the uterine cavity in 7-10 and 30-40 days samples were 16.8 and 4.3%, respectively. There was mixed echo mass at caesarean scar area in 102 (42.9%) of day 7-10 samples, with min of 5 mm and max of 70 mm and mean of 23.6±9 mm.

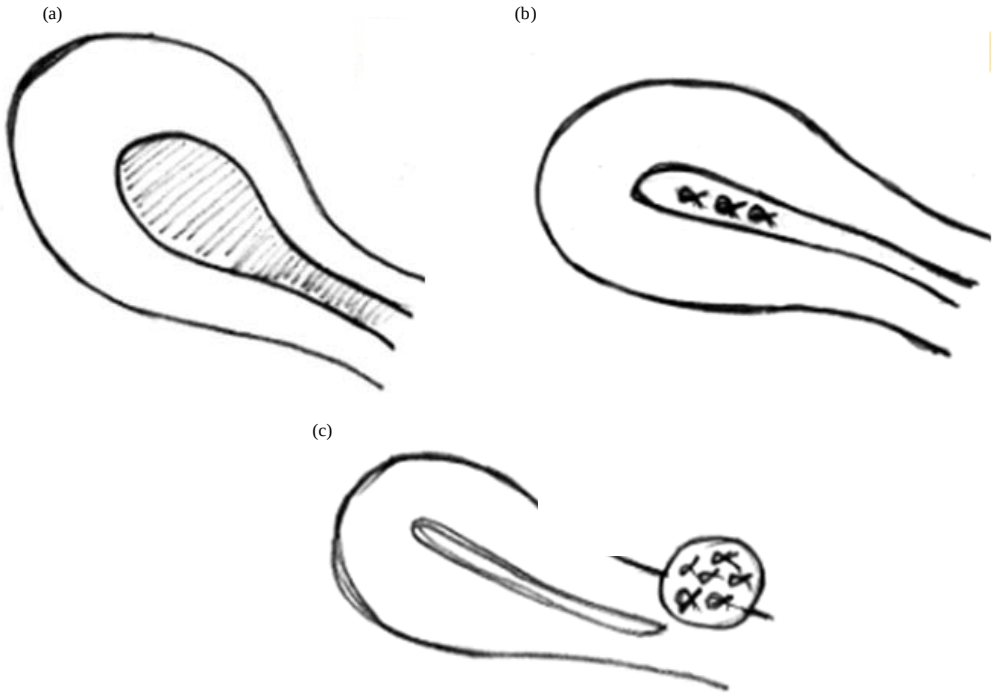

Fig. 1(a-c): (a) Intrauterine echo-free fluid, (b) Intrauterine echogenicity and (c) Echogenicity in cesarean scar

Table 1: Descriptive information of 7th and 40th days

Parameters	Frequency	Percent	Missing	Total (100%)
Descriptive information of visit at 7th day				
Echofree fluid				
Hasn't	170	71.4	0	238
Has	68	28.6		
Echogen regions				
Hasn't	198	83.2	0	238
Has	40	16.8		
Open scar				
Hasn't	217	91.2	0	238
Has	21	8.8		
Echogenicity in scar				
Hasn't	136	57.1	0	238
Has	102	42.9		
Descriptive information of visit at 40th day				
Echofree fluid				
Hasn't	104	90.4	0	115
Has	11	9.6		
Echogen region				
Hasn't	110	95.7	0	115
Has	5	4.3		
Open scar				
Hasn't	112	97.4	0	115
Has	3	2.6		
Echogenicity in scar				
Hasn't	77	67.0	0	115
Has	38	33.0		

The prevalence of echogenic mass in days 40-30 group at the scar area were 38 (33%) women with minimum size of 6mm and maximum of 30 mm and also mean of 15.8±6 mm. Examination of uterine scar at incision site shown that approximately all the scars were healed; although there was dehiscence of the cesarean scar in 21 (8.8) and 3 (2.6%) of participants of day 7-10 and 30-40 groups, respectively (Table 1).

DISCUSSION

Normal abdominal sonographic findings on 7-10 and 30-40 days after cesarean section were evaluated, presence or absence of echo-free fluid, echogenicity within the uterus cavity, echogenicity of caesarean scar and/or between the lower uterus and bladder were studied in patients without any complication. In present study, the echo-free fluid within the uterine cavity at 7-10 and 30-40 days were 28.6 and 9.6%, respectively. The echogenicity of the uterine cavity in 7-10 and 30-40 days were observed in 16.8 and 4.3% of samples, respectively. There were mix echo mass in the scar area of 40 (16.8%) of samples at days 7-10 after surgery and 5 (4.3%) of women at days 30-40 after surgery.

Some other researchers have described ultrasonographic findings after regular vaginal delivery; Lipinski and Adam (1981) have been performing abdominal ultrasound at 24 h after vaginal delivery. They have proposed three uterus types: Empty uterus, cavity filled with clots or blood, uterus with echogenic areas that represent the residual placental tissue (Lipinski and Adam, 1981). Carlan *et al*. (1997) have been explained residual products of pregnancy immediately after discharge of placenta. Sokol *et al*. (2004) were discussed the ultrasound results at 48 h after normal delivery, in which they have observed inter-cavity echogenicity in 40% of asymptomatic patients. Edwards and Ellwood (2000) were explained the presence of echogenic mass in 51, 21 and 6% of women at days 7, 14 and 21 post normal delivery, respectively.

Many studies have focused on postpartum ultrasound for assessing cesarean section complications and their relationships with postoperative morbidity rates. Burger *et al*. (1982) stated that accumulation of fluids between anterior uterus and bladder fluid can indicate the accumulation of fluid or blood in the uterine cavity. Faustin *et al*. (1985) have estimated that accumulation of fluid or blood in the anterior uterus and bladder region would be seen in 29% of caesarean section cases, which were more serious in surgeries that takes more than 90 min, or blood loss is more than 1000 cc, or patient receives blood transfusion. If the bladder flap hematoma was larger than 3 cm, the women would experience more postpartum morbidities such as fever or prolonged hospitalization more than 8 days and also more antibiotics requirements. Koskas *et al*. (2008) have not found any fluid in the space between the uterus and bladder in ultrasound examinations that performed 24 h after cesarean.

Reproductive system of women will recover to its previous physiological state about six weeks after giving birth; however, full closure of cesarean scar can take more than six weeks (Dosedla *et al*., 2012). We examined the openness of the scar area inn this study. Dicle *et al*. (1997) found that caesarean scar healed after more than six weeks using magnetic resonance imaging.

Ofili-Yebovi *et al*. (2008) were performed ultrasound on 324 women at 3 months after their cesarean section and found that 63 women have a cesarean scar defect, which is more prevalent in repeated cesarean or those suffered from uterus retroversion.

Many studies have been conducted in the postpartum period but none of them have been able to accurately measure the size of the uterus at 7-10 and 30-40 days after cesarean.

Sokol *et al*. (2004) have been performed transabdominal sonography 48 h after normal labor and reported that ET = 1.1±0.6 cm, uterus length were 16.1±1.7 cm and uterus width were 8.7±1 cm. Dosedla *et al*. (2012) have been performing abdominal ultrasound six weeks after cesarean section and estimated the uterus length about 76.6±6.7 mm and width of 51.9±6.3 mm. Koskas *et al*. (2008) have been preforming abdominal ultrasound 24 h after a cesarean section, reported ET = 10±2 mm, the uterine length of 155±13 mm and uterine width of 101±10.

CONCLUSION

This study may lead to this conclusion that the patient's clinical symptoms are of primary importance in the diagnosis of postpartum complications, however, ultrasound can be used to identify the causes as soon as possible, especially in patients who are clinically unstable.

ACKNOWLEDGMENTS

This study was supported by a research grant from Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran. The present study is extracted from medical doctorial thesis of Dr. Maryam Baghaei nezhad. The authors wish to acknowledge the efforts of Dr. Masoud Hemadi (Vice Chief of the Fertility, Infertility and Perinatology Research Center, Ahvaz Jundishapur University of Medical Sciences (AJUMS), Ahvaz, Iran) for their generous help in processing the study.

REFERENCES

American College of Obstetricians and Gynecologists, 2006. ACOG practice bulletin: Clinical management guidelines for obstetrician-gynecologists number 76, October 2006: Postpartum hemorrhage. Obstetr. Gynecol., 108: 1039-1047.

Antonelli, E., M.A. Morales, P. Dumps, M. Boulvain and A. Weil, 2004. Sonographic detection of fluid collections and postoperative morbidity following Cesarean section and hysterectomy. Ultrasound Obstetr. Gynecol., 23: 388-392.

Burger, N.F., B. Darazs and E.G. Boes, 1982. An echographic evaluation during the early puerperium of the uterine wound after caesarean section. J. Clin. Ultrasound, 10: 271-274.

Carlan, S.J., W.T. Scott, R. Pollack and K. Harris, 1997. Appearance of the uterus by ultrasound immediately after placental delivery with pathologic correlation. J. Clin. Ultrasound, 25: 301-308.

Dicle, O., C. Kucukler, T. Pirnar, Y. Erata and C. Posaci, 1997. Magnetic resonance imaging evaluation of incision healing after cesarean sections. Eur. Radiol., 7: 31-34.

Dosedla, E., T. Kvasnicka and P. Calda, 2012. Ultrasonography of the uterus within 6 weeks following Cesarean section. Cent. Eur. J. Med., 7: 235-240.

Edwards, A. and D.A. Ellwood, 2000. Ultrasonographic evaluation of the postpartum uterus. Ultrasound Obstetr. Gynecol., 16: 640-643.

Faustin, D., H. Minkoff, R. Schaffer, W. Crombleholme and R. Schwarz, 1985. Relationship of ultrasound findings after cesarean section to operative morbidity. Obstetr. Gynecol., 66: 195-198.

Goffinet, F., F. Mercier, V. Teyssier, F. Pierre and M. Dreyfus *et al*., 2005. [Postpartum haemorrhage: Recommendations for clinical practice by the CNGOF (December 2004)]. Gynecologie Obstetrique Fertilite, 33: 268-274, (In French).

Koskas, M., J. Nizard, L.J. Salomon and Y. Ville, 2008. Abdominal and pelvic ultrasound findings within 24 h following uneventful Cesarean section. Ultrasound Obstetr. Gynecol., 32: 520-526.

Lipinski, J.K. and A.H. Adam, 1981. Ultrasonic prediction of complications following normal vaginal delivery. J. Clin. Ultrasound, 9: 17-19.

Ofili-Yebovi, D., J. Ben-Nagi, E. Sawyer, J. Yazbek, C. Lee, J. Gonzalez and D. Jurkovic, 2008. Deficient lower-segment Cesarean section scars: Prevalence and risk factors. Ultrasound Obstetr. Gynecol., 31: 72-77.

Sokol, E.R., H. Casele and E.I. Haney, 2004. Ultrasound examination of the postpartum uterus: What is normal? J. Maternal-Fetal Neonatal Med., 15: 95-99.