

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20213168>

Original Research Article

The maternal and fetal outcome of repeat previous one caesarean section

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Received: 11 July 2021

Accepted: 28 July 2021

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ABSTRACT

Background: The rates of adverse maternal and neonatal outcomes have increased significantly in the last decade. Patients with repeated caesarean deliveries also have a greater risk of placenta previa, placenta accrete, uterine rupture, bowel and bladder injury, and unplanned hysterectomy.

Methods: This retrospective study was performed between 01 April 2017 to 31 March 2021, at a private hospital to know about the surgical difficulties and maternal and neonatal complications encountered in cases of repeated LSCS. The outcome of 1028 women admitted with a history of previous LSCS was studied.

Results: The 613 patients were given a trial of labour. 40.07% of patients delivered normally. The most common indication for repeat LSCS was CPD in 20.94% and fetal distress 20.12%. The most common complication observed was adhesion in 37.65%. Scar dehiscence in 8.92%, scar rupture in 0.64%, uterine atony in 4.8%, placenta previa in 3.57%, placenta accrete in 0.64%, injury to the bladder was seen in 0.97%, caesarean hysterectomy was done in only 2 cases and gaped wound was found in 1.13% of cases. 19.15% of neonates were admitted to NICU. Apgar score <7 at 5 minutes in 14.77%. premature neonates were 8.44% RDS was found in 7.62%, birth asphyxia was found in 2.92% cases and neonatal sepsis was found in 1.13%.

Conclusions: The dramatic increase in caesarean section rates over the past three decades has been associated with a corresponding increase in maternal morbidity but there a continuous decrease in neonatal morbidity and mortality rates because of advances in neonatal medicine.

Keywords: Caesarean section, Maternal morbidity, Neonatal morbidity, VBAC

INTRODUCTION

Caesarean section is the most commonly performed surgery in obstetrics. And there has been a dramatic rise over the past few years.

The estimated global rate of the caesarean section between 1990 and 2014 was approximately 18.6%.¹ Variety of reasons responsible for the safety of caesarean section and its increasing indication and its better outcome are.^{2,3} The introduction of anaesthesia, the emergence of specialists in

obstetric anaesthesia, improvement in blood transfusions, antibiotics and thromboprophylaxis availability, improved surgical techniques, social and medicolegal expectations of a perfect perinatal outcome among patients, advanced maternal age, infertility and assisted reproductive technologies have led to a rise in the number of so-called 'premium' pregnancies, caesarean section on maternal demand (CSMD) and advances in neonatal care.

The four main indications that account for 60-90% of all caesarean sections include: repeat caesarean section (35-

40%), dystocia (20-35%), breech (10-15%) and fetal distress (10-15%), where previous caesarean section holds the maximum number.³

Over 25 years ago, Bottoms et al concluded that primary emphasis should be placed on reducing caesarean deliveries for dystocia and repeat operations as these two indications were the primary causes of the increased national rate of caesarean deliveries.⁴

The rates of adverse maternal and neonatal outcomes have increased significantly in the last decade.⁵⁻⁷ Patients with repeated caesarean deliveries also have a greater risk of placenta abnormalities, such as placenta previa, placental abruptions, placenta accrete, uterine rupture, intra-abdominal dense adhesion, bowel and bladder injury, an unplanned hysterectomy, etc. in subsequent pregnancies compared with patients whose previous deliveries were vaginal.^{8,9} Additionally, the risk of various serious maternal morbidities has increased progressively as the number of women who have undergone caesarean deliveries has grown.¹⁰

The common postpartum complications consisted of pelvic injury/wound complication, obstetric complication, venous disorders and thromboembolism, and major puerperal infection.¹¹

Even after the emergence of caesarean section at large, the maternal mortality ratio in the past several decades have remained unchanged, just there is a relative shift in the etiology. The historic HIT (haemorrhage, infection, toxemia) maternal mortality triad is being replaced by the TEC triad (trauma, embolism, cardiac). While one can argue that increasing caesarean rates are decreasing maternal deaths from some of the HIT triad (particularly haemorrhage), one can equally argue that the increasing caesarean rate is associated with an increased risk of maternal death from some of the TEC triad, particularly thromboembolic disease.^{2,3}

However, neonatal mortality rates continue to decrease, primarily as a result of continuous advancements in neonatal medicine.²

For neonatal outcomes, a previous CS is significantly associated with increased risks of NICU admission, NNM, preterm birth, and decreased risk of macerated stillbirth while there are no significant increase risks of fresh stillbirth, early neonatal death, perinatal death, low Apgar score, and low birth weight, favoring caesarean section.

The current increase in the overall rate of caesarean section is mainly due to a dramatic decline in VBAC. Overall, the VBAC rate has decreased 63% since 1996, while the primary caesarean section rate has climbed 31% during this same interval.²

There is no consensus regarding deciding the mode of delivery in patients with previous caesarean sections.

Although many studies have been conducted regarding the outcome of VBAC, there are no standard guidelines for patients of previous caesarean section to attempt VBAC.

While the magnitude of the risk for taking TOLAC is small, physician practice patterns and medico-legal concerns will undoubtedly keep interested in VBAC low in near future.

Remarkably, nearly two-thirds of women with a prior caesarean are candidates for a TOLAC.¹² Thus, the majority of repeat operations cannot be considered elective and are influenced by physician discretion.¹³

Selection criteria for VBAC depend upon:^{2,3} 1. Type of uterine scar, 2. Labour with previous caesarean section, 3. Uterine incision closure, 4. Previous vaginal delivery, 5. Recurrent indications for caesarean section, 6. Inter-pregnancy interval, 7. Postoperative infection, 8. Twins, 9. More than one previous caesarean, 10. Measurement of lower uterine segment thickness, 11. Hospital facilities, 12. Decision aids for a mode of delivery and 13. Cost.

There is less blood loss, faster recovery, reduced risk of infection, no risk of injury to bladder and bowel and reduced risk of other complications are seen in delivery after VBAC than caesarean section but the risk of uterine rupture and poor outcome for the mother (uterine rupture and hysterectomy) and infant (perinatal, asphyxia, prenatal death and/or encephalopathy, unexplained SB) during TOLAC should be taken care of.²

ACOG states clearly that most women with one previous caesarean delivery with a low transverse incision are candidates for VBAC and should be counselled about VBAC and offered TOLAC.¹⁴

The present study is aimed to know about the surgical difficulties, maternal and neonatal complications encountered in cases of repeated caesarean section.

METHODS

A cross-sectional retrospective study was performed based on the medical records of pregnant women who gave birth between 01 April 2017 to 31 March 2021, at a private hospital in Gwalior.

Inclusion criteria

Women who delivered with a previous lower segment caesarean section between April 2017 to March 2021, a period of two years, at a private hospital Gwalior were included in the study.

Exclusion criteria

Women with previous two or multiple caesarean section and women with classical caesarean section were excluded from the study.

Data were collected from labor room logbooks, OT register and case sheets.

Socio-demographic variables and medical records of these patients as well as of their newborns were obtained inter-delivery interval, normal delivery after VBAC, the indication of repeat caesarean section, maternal and neonatal complications in repeated caesarean patients, were reviewed. Relevant data were extracted from these medical records.

All the data were analyzed using IBM SPSS ver.20 software. Cross tabulation and frequency distribution were used to prepare tables. Data are expressed as numbers, percentages and mean.

RESULTS

During the study period, 1028 women admitted with a history of the caesarean section (who had previously been delivered through caesarean section).

In our study, the most common age was 20-30 years of age 58.75%. Most of the patients were second gravida 52.72%. Most of them were unbooked 52.82%, from the rural areas 62.25% and of lower socioeconomic status 81.71%. In most of the patient's interval previous caesarean and current pregnancy was between 19-24 months.

During the study period, 1028 women admitted with a history of the caesarean section had previously been delivered through caesarean section. Elective caesarean section was done in 218 (21.20%) cases. 613 patients were given a trial of labour. (Some patients were already in labour). Successful vaginal delivery was conducted in 412 cases, repeat emergency section was done in other cases due to failed inductions and other emergency causes.

In our study delivery rate after VBAC was higher in patients with inter delivery interval of more than 24 months.

Table 1: Demographic parameters among the study cohort.

Parameters	No. of patients	Percentage	
Age (years)	<20	16	1.55
	20-30	604	58.75
	31-40	347	33.75
	>41	61	5.93
	Total	1028	100
Parity	Second gravida	542	52.72
	Third gravida (G3)	469	45.62
	Multipara (G4+)	17	1.65
	Total	1028	100
Antenatal status	Booked	485	47.17
	Unbooked	543	52.82
	Total	1028	100
Residence	Urban	388	37.74
	Rural	640	62.25
	Total	1028	100
Socioeconomic	Upper	188	18.28
	Lower	840	81.71
	Total	1028	100

Table 2: Outcome of previous caesarean patients.

Method of delivery	No. of patients	Percentage
VBAC- normal delivered	412	40.07
Emergency caesarean section	398	38.71
Elective caesarean section	218	21.20
Total	1028	100

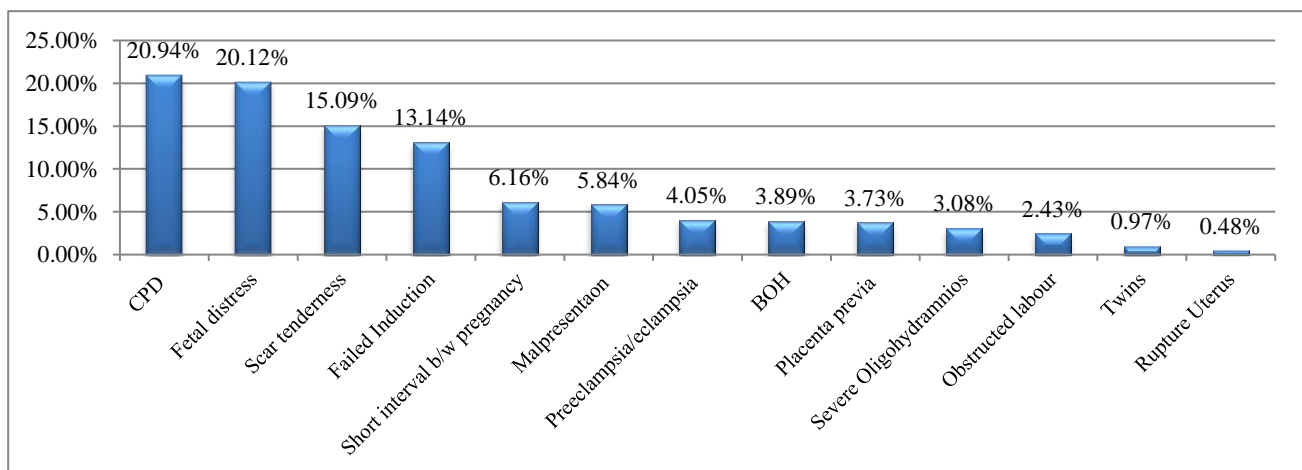


Figure 1: Indication of repeat caesarean section.

In our study, the most common indication for repeat caesarean section was CPD 20.94% and fetal distress

20.12%, scar tenderness 15.09% and failed induction 13.14%, malpresentation 5.84%, short interval b/w pregnancy 6.16% and others.

Table 3: Incidence of intra-operative and post-operative complications in the study cohort.

Intra-operative		No. of patients	Percentage (%)
Adhesion	Difficulty In opening due to Adhesion between the uterus and under the surface of the rectus sheath	140	22.72
	Difficulty in Separation of the bladder due to adhesion	92	14.93
Scar dehiscence		55	8.92
Scar rupture		4	0.64
Hemorrhage	Intra operative hemorrhage due to surgical procedure and extension of Incision	23	3.73
	Uterine atony	30	4.8
Placenta previa		22	3.57
Adherent placenta		4	0.64
Injury to the surrounding structure	Injury to bladder	6	0.97
	Injury to bowel	0	0
Anaesthetic complication		2	0.32
Caesarian hysterectomy		2	0.32
Blood transfusion (Intra-op and post-op)		63	10.22
Febrile morbidity		47	7.68
Paralytic ileus		3	0.48
Surgical site infection	Minor	36	5.84
	Gaped Wound	7	1.13
Urinary tract infection		15	2.43
Renal failure		2	0.32
Thrombotic events		1	0.16
Amniotic fluid embolism		1	0.16
Extended hospital stays		25	4.05
Maternal death		2	0.32

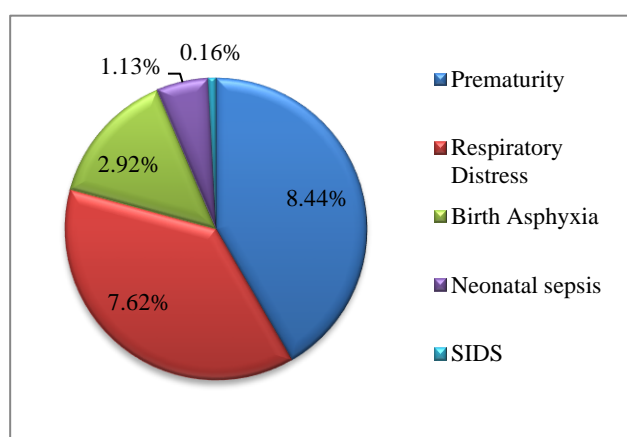


Figure 2: Pattern of neonatal morbidity and mortality.

In our study the most common complication observed was adhesion in 37.65% of cases. The most common 22.72% adhesion was found between the uterus and under the

surface of the rectus sheath. Difficulty in the separation of the bladder was seen in 14.93% of cases. Scar dehiscence was found in 8.92%, scar rupture was found in 0.64%, hemorrhage(operative) was found in 3.73%, uterine atony was found in 4.8%, placenta previa in 3.57%, placenta accrete in 0.64%, injury to the bladder was seen in 0.97%, the anesthetic complication was seen in 0.32%, caesarean hysterectomy was done in only 2 cases, blood transfusion was needed in 10.22% of cases because of anemia, postoperative febrile morbidity was found in 7.68 %, minor wound infection was found in 5.84% and gaped wound was found in 1.13% of cases. Urinary tract infection was found in 2.43%. Maternal death was found in 2 cases (1 because of amniotic fluid embolism and second because of complication of severe PIH).

In our study 43.01% of neonates were of low birth weight in our study.

In our study 19.15% of neonates were admitted to NICU. With Apgar score <7 at 5 minutes 14.77%, Premature

neonates were 8.44% respiratory distress syndrome [Transient tachypnea of newborn (TTN), meconium aspiration syndrome (MAS), hyaline membrane disease (HMD) and pneumonia] was found in 7.62%, birth asphyxia was found in 2.92% cases, neonatal sepsis was found in the 1.13% cases, in 1 case it was a sudden stillbirth.

DISCUSSION

In our study, the most common age was 20-30 years of age 58.75%. Most of the patients were Second gravida 52.72%. Most of them were unbooked 52.82%, from the rural areas 62.25% and of lower socioeconomic status 81.71%. In most of the patient's interval between previous caesarean and current pregnancy was between 19-24 months.

Our study was comparable to with study of Richa et al in which the most common age was 20-30 years and most of the patients were of lower background and unbooked.¹⁵

In our study out of 1028 women admitted with a history of caesarian section, 613 patients were given a trial of labor. The elective Caesarian section was done in 218(21.20%) cases. Successful vaginal delivery was conducted in 412 (40.07%) cases (Some patients were already in labor), repeat emergency section was done in 398 (38.71%) other cases due to failed inductions and other emergency causes. Our study was not in agreement with other studies in which the success rate of VBAC was 67.6%, 60% and 63.5% respectively.¹⁶⁻¹⁸

In our study delivery rate after VBAC was higher in patients with inter delivery interval of more than 24 months.

Huang et al had earlier concluded in their study that inter-delivery interval of less than 19 months was associated with a decreased rate of VBAC success in those who had induction but not in those who went into spontaneous labor.¹⁹

The presence of prior vaginal delivery is associated with the increased success of the trial of VBAC as seen in this study ($p < 0.001$). Zelop et al found that having a previous vaginal delivery is associated with a decreased risk of uterine rupture.²⁰

In our study, the most common indication of repeat caesarean section was CPD 20.94% and the fetal distress 20.12%, scar tenderness 15.09% and failed induction 13.14%, malpresentation 5.84%, short interval b/w pregnancy 6.16% and others.

Our study was not in agreement with the study of Lydon-Rochelle et al in which failure to progress was the most common indication (60.1%) and the fetal indication was 5.8%.²¹ In the study of Peaceman et al cephalo-pelvic disproportion was the indication of repeat caesarian

section in 44.9% of cases.²² Similar results were found in the study of Richa et al, the main indication was CPD i.e., 23% and scar tenderness was another important indication (15.76%).¹⁵ Fetal distress was 19.91%, malpresentation was 9.95%. Short interval b/w pregnancy 7.46%. Placenta previa was 4.9%. BOH was 4.56%, Obstructed labor was 3.73%, In the study O.C. Ezechi et al, indication for emergency caesarean section in the failed trial of labor, cephalopelvic disproportion was (52.6%), slow progress of labor was (23.7%), fetal distress was (13.2%), cervical dystocia was (5.3%), antepartum haemorrhage was (5.3%), imminent uterine rupture was (2.6%).²³

In our study the most common complication observed was adhesion in 54.86% of cases. the most common 39.93% adhesion was found in between the uterus and under the surface of the rectus sheath. Difficulty in the separation of the bladder was seen in 14.93% of cases. Our study is similar to the study of Lyell et al. Lyell and other studies in which the rate of adhesion was more in the previous caesarian section.^{15,24-26} In the study of Bhowmk et al difficulty in opening the abdomen was countered in 74 patients (41.11%) because of adhesive between the uterus and undersurface of the rectus sheath.²⁷ Difficulty in the separation of the bladder was seen in 24% (13.33%) patients. There were 11 cases of placenta previa out of which 3 were placenta accrete.²⁷

Hemorrhage (operative) was found in 3.73%, uterine atony was found in 4.8%, placenta previa in 3.57%, placenta accrete in 0.64%, injury to the bladder was seen in 0.97%, anesthetic complication was seen in 0.32%, caesarian hysterectomy was done in only 2 cases, blood transfusion was needed in 10.22% of cases because of anemia, Postoperative Febrile morbidity was found in 7.68 %, minor wound infection was found in 5.84% and gaped wound was found in 1.13% of cases, urinary tract infection was found in 2.43%, maternal death was found in 2 cases (1 because of amniotic fluid embolism and second because of complication of severe PIH).

Our study is not similar to Bailit et al in which wound sepsis was in 0.6% of cases.²⁸

The most common complication observed in the study of Richa R et al was adhesion (51.68%).¹⁵ Scar dehiscence (8.29%) is another important complication this is encountered in our study (8.29%). Hemorrhage was 6.63%, injury to the surrounding structure was 1.56% adherent placenta was 0.83%, wound infection was 5.80%, blood transfusion was 7.88%.

In our study scar dehiscence was found in 8.92 %, which was similar to the study of various other studies in which scar dehiscence was found in 8.29, 7.69 and 6.62% of cases respectively.^{15,27,31} In our study scar rupture was found in 0.64% of cases. Which was similar to other studies.¹⁵ In the study of Bhowmik et al scar dehiscence and scar, the rupture was seen in 3.33% cases and 2.2%

cases.²⁷ In the study of Anagha et al scar dehiscence in 2.74% of cases.³⁰

In our study uterine atony was reported in 4.8% of cases. Which was similar to the study of Durnwald et al, who reported uterine atony in 4.1% of cases.³¹ In the study of Singh et al uterine atony was reported 3.5% of cases.¹⁶ Caesarean hysterectomy in 0.7% of the study population.¹⁶ In the study of Bhowmik et al PPH was found in 6.6% of cases, followed by wound extension (3.3%) of cases.²⁷ In the study of Goel et al, PPH was in 48.55% cases which were quite high.³²

In our study placenta previa and placenta accrete were found in 3.57% and 0.64% of cases, which was not comparable with the study of Bhowmik et al in which placenta previa was found in 5.5% of cases out of which 1.5% cases were of placenta accrete and underwent a total hysterectomy.²⁷ In our study, no patients underwent hysterectomy due to placenta accrete. The rate of placenta accrete was very low in our study Which was similar to the incident of placenta previa reported by Silver and associates 1.3%.³¹

In the study of Bhowmik et al out of 180 patients in whom LSCS was performed 48 cases (26.66%) had postoperative complications.²⁷ post-operative fever was 8.55%, atonic PPH was 1.82%, UTI was 1.43%, gaped wound was 7.5%, intra-operative hemorrhage was 1.04%, anesthetic complication was 0.91%, minor bladder injury was 0.52%. The rate of complication was slightly higher in is two studies done by Chowdhury et al and Asaduzzaman et al.^{34,35}

Blood transfusion was needed in 10.22% of cases because of anemia, post-operative febrile morbidity was found in 7.68%, minor wound infection was found in 5.84% and gaped wound was found in 1.13% of cases, urinary tract infection was found in 2.43%, maternal death was found in 2 cases (1 because of amniotic fluid embolism and second because of complication of severe PIH). In the study of Bhowmik et al post-operative complications were found in (26.66%) of cases.²⁷ Puerperal pyrexia in 9.4% cases due to UTI and wound infection and 8.3% of patients had gapping of the LSCS wound.

Blood transfusion was required in 6.6% of cases. Hospital stays ranged from 10-21 days and 1.1% of patients required CCU admission due to hypovolemic shock Bhowmik et al.²⁷ Our study is almost similar to the study of Richa et al wound infection was 5.80%, blood transfusion was 7.88%.¹⁵

In maternal complications in the study, the cohort was in the study of Anagha et al, the maternal complication was also higher in patients with repeat caesarean section in comparison to those who had a successful VBAC (12.76% vs. 2.74%).³⁰ Various studies show that a trial for labor for VBAC after a trial LSCS remain a safe form of obstetric management.³⁶

In our study 19.15% of neonates were admitted to NICU. With Apgar score <7 at 5 minutes 14.77%, premature neonates were 8.44% respiratory distress syndrome [transient tachypnea of newborn (TTN), meconium aspiration syndrome (MAS), hyaline membrane disease (HMD) and pneumonia] was found in 7.62%, birth asphyxia was found in 2.92% cases, neonatal sepsis was found in 1.13% cases, in 1 case it was a sudden stillbirth.

In the study of Singh et al low-birth-weight babies were 2.5%, admission in NICU was 2.2%, Apgar score <7 at 5 minutes was 2.2% transient tachypnea of newborn was 1.04%, neonatal sepsis was found in 2.5% cases and there was no stillbirth.¹⁶ In the study of Bailit et al NICU admission was 19.3% cases and neonatal death was 0.3% of cases.²⁸ In the study of Anagha et al perinatal morbidity was higher in cases of repeat caesarean section. In the study of Ismail et al, 23 cases 4.9% had fresh stillbirth, 1.5% perinatal death was there, in 6.6% Apgar score was less <5 at 5 minutes and 29.4% of neonates were admitted in the nursery.³⁷

Limitation

The study cohort used in our study was small hence the results could vary with larger population. Being a private hospital, many patients demanded caesarean section without a trial for labor and some had lower threshold for pain and gave up in between for VBAC.

CONCLUSION

The dramatic increase in caesarean section rates over the past three decades has been associated with a corresponding increase in maternal morbidity but there a continuous decrease in neonatal morbidity and mortality rates because of advances in neonatal medicine.

The maternal mortality ratio in the past several decades have remained unchanged, just there is a relative shift in the etiology from the historic HIT (hemorrhage, infection, toxemia) triad to TEC triad (trauma, embolism, cardiac).

The risk of potentially life-threatening complications like placenta previa, accrete, uterine rupture, blood transfusion and risk of caesarean hysterectomy has increased with increasing no of the previous caesarean.

There must be genuine trial for vaginal delivery in patients of lower segment transverse caesarean section owing to the smaller number of complications observed in them. They should be offered TOLAC and counseled about VBAC.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

- Betran AP, Ye J, Moller AB, Zhang J, Gulmexogly AM, Torloni MR. The increasing trend in caesarean section rates: global, regional and national estimates: 1990-2014. *PLoS One.* 2016;11(2):ee0148343.
- Queenan JT, Spong CY, Lockwood CJ. The textbook of Management of high-risk pregnancy an evidence-based approach., Fifth edition, Michael w. warner Chapter 45, Caesarean delivery. Vaginal birth after caesarean delivery. 2015;389-96.
- Munro Kerr's Operative Obstetrics 12th Edition Chapter 13. Caesarean Section, Vaginal Birth After Caesarean Section. 2014;14;132-51.
- Bottoms SF, Rosen MG, Sokol RJ. The increase in the caesarean birth. *N Engl J Med.* 1980;302:559-63.
- Deneux-Tharoux C, Carmona E, Bouvier-Colle MH, Breast G. Postpartum maternal mortality and caesarean delivery. *Obstetr Gynecol.* 2006;108(3-1):541-8.
- Loston RM, Liu S, Joseph KS. Maternal mortality and severe morbidity associated with low-risk planned caesarean delivery versus planned vaginal delivery at term. *Canadian Med Association J.* 2007;176:4:455-60.
- Gregory KD, Jackson S, Korst L, Fridman M. Caesarean versus vaginal delivery: whose risks? Whose benefits? *Am j perinatol.* 2012;29(1):7-18.
- Gurol-Urganci I, Cromwell DA, Edozien LC. Risk of placenta previa in second birth after first birth caesarean section: a population-based study and meta-analysis. *BMC Pregnancy childbirth.* 2011;11(1):95.
- Curtin SC, Gregory KD, Korst LM, Uddin SF. Maternal Morbidity for Vaginal and caesarean deliveries, according to previous caesarean history: New Data from the Birth Certificate. 2013.
- National vital statistics reports: from the Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital statistics system. 2015;64(4):1-13.
- Marshall NE, Fu R, Guise JM. Impact of multiple caesarean deliveries on maternal morbidity: a systematic review. *Am J Obstetr Gynecol.* 2011;205(3):262.e1-262.8.
- Liu S, Heaman M, Joseph KS. Risk of maternal postpartum readmission associated with mode of delivery. *Obstetr gynecol.* 2005;105(4):836-42.
- Flamm BL. Vaginal birth after caesarean section: controversies old and new. *Clin Obstet Gynecol.* 1985;28:735-44.
- Goldman G, Pineault R, Potvin L, Vlasi R, Bilodeau H. Factors influencing the practice of vaginal birth after caesarean section. *Am Public Health.* 1993;82:1104-8.
- American College of Obstetricians and Gynecologists. Vaginal birth after previous caesarean delivery: clinical management guidelines for obstetrician-gynaecologists. *ACOG Practice Bulletin* 5. Washington DC. 1999.
- Richa R, Mohanty S, Priyadarshini S. Uterine Scar Condition and Complications Associated with Repeat Caesarean Section: A study in a Tertiary Care Hospital. *Int J Contemporary Med Res.* 2019;6(12):2454-7379.
- Nilanchali S, Reva T, MalaYM. Maternal and fetal outcomes in patients with previous caesarean section undergoing a trial of vaginal birth at a tertiary care centre in north India. *J pregnancy child health.* 2014;1:1.
- George A, Arasi KV, Mathai S. Is vaginal birth after caesarean delivery a safe option in India. *Int J Gyneacol Obstet.* 2004;85:42-3.
- Sen S, Malik S, Salhan S. Ultrasonographic evolution of lower uterine segment thickness in patients of previous caesarean section. *Int J Gynecol Obstet.* 2004;87:215-9.
- Huang WH, Nakashima DK, Rumney PJ, Keegan KA, Chan K. Interdelivery interval and the success of vaginal birth after caesarean delivery. *Obstet Gynecol.* 2002;99:41-4.
- Zelop CM, Shipp TD, Cohen R, Lieberman E. Effect of previous vaginal delivery on the risk of uterine rupture during a subsequent trial of labor *Am J Obstet Gynecol.* 2000;183:1184-6.
- Lydon Rochelle MT, Gardella C, Cardenas V, Easterling TR. Repeat Caesarean Delivery: What indications are recorded in the medical chart. *Birth.* 2006;33:4-11.
- Peaceman AM, Gersnoviez R, Landon MB, Spong CY, Leveno KJ et al. The MFMU Caesarean registry; Impact of fetal size on the trial of labor success for patients with the previous caesarean for dystocia. *Am J Obstet Gynecol.* 2006;195:1127-31.
- Exechi OC, Exeobi PM, GabOkafor CV, Edet A, Nwoloro CA, Akinlade A. Maternal and Fetal effect of Misgav Ladach Caesarean Section in Nigerian Women: A Randomized Control Study. *Ann Med Health Sci Res.* 2013;3(4):577-82.
- Lyell DJ. Adhesions and perioperative complications of repeat caesarean delivery. *Am J Obstet Gynecol,* 2011;205:11-18.
- Tulandi T, Agdi M, Zarai A. Adhesion development and morbidity after repeat caesarean delivery. *Am J Obstet Gynecol.* 2009;201:et-612.
- Kaplanoglu M, Bulbul M, Kaplanoglu D, Bakacak SM. Effect of multiple repeat caesarean section on maternal morbidity; Data from southeast Turkey, medical science monitor. *Int Med j experimental clin res.* 2015;21:1447-53.
- Bhowmik J, Kyal A, Das I, Berwal V, Kanti Das P, Mukhopadhyay P. Pregnancy with previous caesarean section; An overview of adverse fetomaternal sequelae. *Int J Repord Contracept Obstet Gynecol.* 2018;7(5):1817-21.
- Bailit JL, Landon MB, Thom E, Rouse DJ, Spong CY. The MFMU caesarean registry; Impact of time of day on caesarean complications: *Am J Obstet Gynecol.* 2016;195:1132-7.

30. Nazaneen S, Kumari A. Fetomaternal Outcomes of Pregnancy with Multiple Repeat Caesarean Sections in a Tertiary Hospital in North-East India. *IOSR-JDMS.* 2017;16:77-82.
31. Anagha A, Jinturkar D, Dipti. Study of the obstetric and fetal outcome of post caesarean section pregnancy at the tertiary care centre. *Int J Recent Trends Tech.* 2014;10(3):530-7.
32. Durnwald CP, Rouse DJ, Levano KJ. The maternal-fetal medicine units caesarean registry; Impact of time of day on caesarean complications. *Am J Obstet Gynecol.* 2006;195:1132-7.
33. Goel SS, Tiwari M, Hariharan C, Shrivastava DS. Outcome of post caesarean pregnancy and comparison of maternal and foetal outcome following vaginal birth versus repeat caesarean section in the hospital. *Int J Reprod Contracept Obstet Gynecol.* 2013;2(1):16-22.
34. Silver RM, Landon MB, Rouse DJ. Maternal morbidity associated with multiple repeat caesarean deliveries. *Obstet Gynecol.* 2006;107:1226.
35. Chowdhury SB, Newaz R, Begum A, Dewan Z. Indications and complications of caesarean section: a study of 1083 cases. *Bangladesh J Obstet Gynecol.* 1994;9:1-7.
36. Asaduzzaman K. A study on factors and outcome of cesarean section among the patients admitted in a tertiary care hospital, (Dissertation), Dhaka, Bangladesh College of Physicians and Surgeons. 1996.
37. ACOG Practice bulletin. Vaginal birth after previous caesarean delivery; Clinical management guidelines for obstetricians gynecological; American college of obstetricians and gynecology. *Int J Gynecol Obstetric.* 1998;66:197-204.
38. Ismail S, Umbeli T, Kunna A, Elmahgoub A. Maternal and neonatal complications associated with caesarean section in the second stage of labour at Omdurman maternity hospital during 2012-2013. *Merit Res Med Medical Sci.* 2014;2(10): 225-8.

Cite this article as: Jain U, Jain D, Sengar S, Gupta P. The maternal and fetal outcome of repeat previous one caesarean section. *Int J Reprod Contracept Obstet Gynecol* 2021;10:3307-14.