

Prevalence and Outcome of Repeat Caesarean Delivery: A Retrospective Review in Rasheed Shekoni Federal University Teaching Hospital Dutse, North-west Nigeria

Abdullahi Abba Habib^{1*}, Musa Saulawa Ibrahim², Yamuna Aminu Kani¹, Nabila Ado Ya'u³, Abubakar Muhammad Balili¹

¹Department of Obstetrics and Gynaecology, Federal University Dutse/Rasheed Shekoni Federal University Teaching Hospital, Dutse, PMB 7200 Jigawa, Nigeria

²Department of Community Medicine, Federal University Dutse/Rasheed Shekoni Teaching Hospital, Dutse, PMB 7200 Jigawa, Nigeria

³Department of Haematology, Federal University Dutse/Rasheed Shekoni Federal University Teaching Hospital, Dutse, PMB 7200 Jigawa, Nigeria

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*Corresponding author: Abdullahi Abba Habib

Department of Obstetrics and Gynaecology, Federal University Dutse/Rasheed Shekoni Federal University Teaching Hospital, Dutse, PMB 7200 Jigawa, Nigeria

Abstract

Background: Caesarean section is the most common Obstetric surgical procedure. Repeat CS has been a significant contributor to the overall increase in CS rate and accounts for about one-third of all caesarean deliveries worldwide.

Objective: This study aimed to determine the prevalence and outcome of repeat Caesarean section. **Materials and methods:** The study was a 3-year retrospective review of Caesarean sections, carried out between 1st July 2020 and 31st June 2023 in the department of Obstetrics and Gynecology of Rasheed Shekoni Federal University Teaching hospital. The case files of the participants were retrieved from the record department. Data analysis was carried out using IBM statistical package for social sciences (SPSS) version 26. Measured variables were expressed in frequencies and percentage. Test for association was done using chi-square non-parametric test, setting P-value at <0.05. **Results:** A total of 144 were repeat caesarean deliveries were performed out of 344 Caesarean sections done during the review period, giving an incidence rate of 41.9%. The mean age of the patients was 30.42 ± 50 years and the mean parity was 4.47±2.62. Most (51.39%) of the repeat CS were elective. Majority (93.06) of the patients had EBL ≤1000ml and most (82.6%) of the babies delivered had 5th minute Apgar score of ≥7. **Conclusion:** The repeat Caesarean section rate in this study is high. Similarly, the emergency Caesarean section rate at first and second order repeat Caesarean deliveries is high. Additionally maternal and fetal complications are higher among women lower order Caesarean deliveries.

Keywords: Caesarean, Section, Delivery, Postpartum, RSFUTH, Dutse.

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INTRODUCTION

Caesarean section (CS) is the most common major surgery performed on women globally and its rate has steadily increased over the last decade [1-3]. In 1985 in Fortaleza, the World Health Organization (WHO) recommended Caesarean section rate of 10-15% as the optimal range; declaring that lower rate suggest unmet needs of the patient, while higher rates indicate improper selection with no additional benefit to the mothers and babies [4]. Nevertheless CS should be given to any woman in need regardless of the rate [5].

The significant contributing factors to the rising incidence of Caesarean delivery (CD) include decrease use of instrumental vaginal delivery, increasing use of electronic fetal monitoring (EFM), repeat CS, decreasing rate of vaginal birth after lower segment Caesarean section (VBAC), medico-legal concerns and increasing maternal request [6, 7]. Repeat CS has been a significant contributor to the overall increase in CS rate and accounts for about one-third of all CD worldwide [8].

Although the advancement of science in aseptis, anesthesia and availability of blood transfusion services has made CS safer and more reassuring [2, 3, 9].

Still, maternal morbidities are more likely with CS than with vaginal delivery; and both maternal and fetal morbidities increase with increasing order of caesarean section [9, 10].

Some of these maternal morbidities include intra-abdominal adhesion formation, with consequent difficulties in gaining access in to the abdominal cavity, injury to the bladder or surrounding bowel and increased intra-operative blood loss. More so, the risk of placenta praevia and morbidly adherent placentation also increase with the increasing order of CD. The risk of placenta praevia following 1st repeat CD was reported to be 3.5% and increased to 22.5%, 28% and 50.0% after 2nd 3rd and 4th CD respectively [11].

Additionally, study in a Tertiary center in Riyadh, KSA reported increased incidence of extensive adhesion (41.25%), placenta accrete (28.57%) and blood transfusion (20%) among women who had repeat CD [9]. In another study by Makoha *et al.*, a steady rise in complications as the order increases from the 1st to the 6th CD was observed [12].

However, adequate population-based prevalence for CS remains a subject of strong contentions world-wide [13]. Likewise, most of the studies conducted in Nigeria are institution – based and limited by sample size. In view of this, we aimed to evaluate the prevalence of repeat CS and its outcome.

MATERIAL AND METHOD

The study was a 3-year retrospective review of repeat Caesarean sections, carried out between 1st July

2020 and 31st June 2023 in the department of Obstetrics and Gynecology of Rasheed Shekoni Federal University Teaching Hospital (RSFUTH) Dutse. RSFUTH is one of the tertiary health facilities in Jigawa state. It serves as a referral center for patients within Jigawa and neighbouring states.

The study participants were all the patients who had CS at RSFUTH during the review period. All the patients who did not have CS in the study facility were excluded.

The case files of the patients were retrieved from the record department. Relevant information obtained from the files included socio-demographic data, indication for the CS, category of CS, type of anesthesia, maternal outcome, foetal outcome and duration of stay in the hospital after CS. Data analysis was carried out using IBM statistical package for social sciences (SPSS) version 26. Measured variables were expressed in frequencies and percentage. Test for association was done using chi-square non-parametric test, setting P-value at <0.05. Ethical clearance for the study was obtained from the Ethics and Research committee of Rasheed Shekoni Federal University Teaching Hospital Dutse, Nigeria.

RESULTS

During the study period, a total of 376 Caesarean deliveries were performed out of a total 2,483 deliveries, giving a CS rate of 15.3%. However only 344 cases of CS were analyzed, out of which 144 were repeat Caesarean deliveries giving incidence rate of 41.9%. This is illustrated in figure 1 and 2.

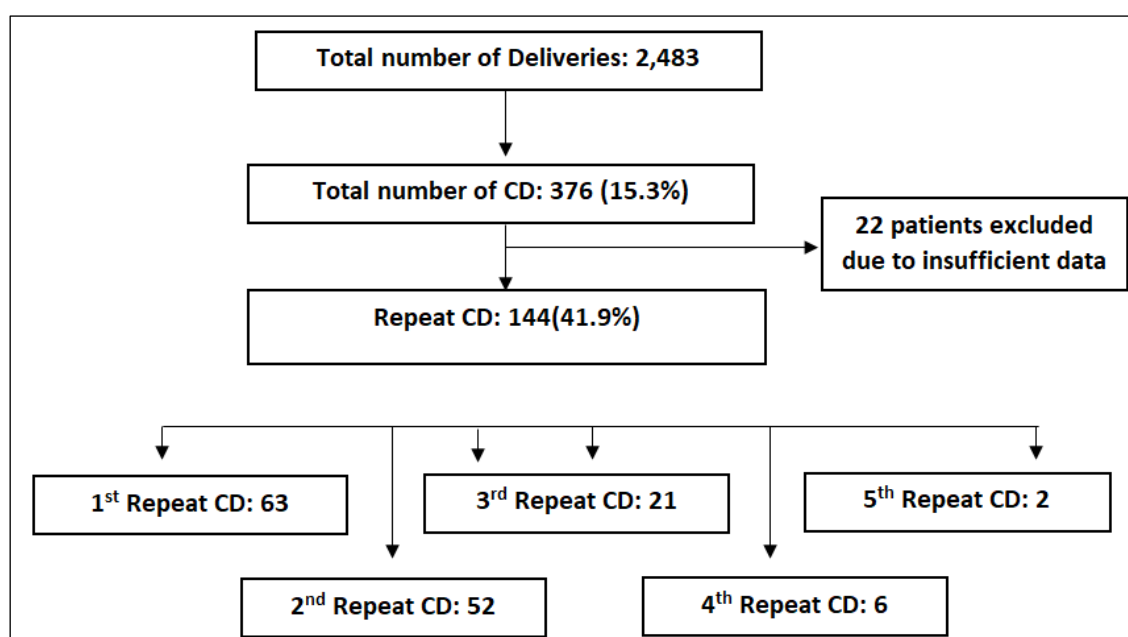


Figure 1: Stratification of study participants by the number of Caesarean deliveries

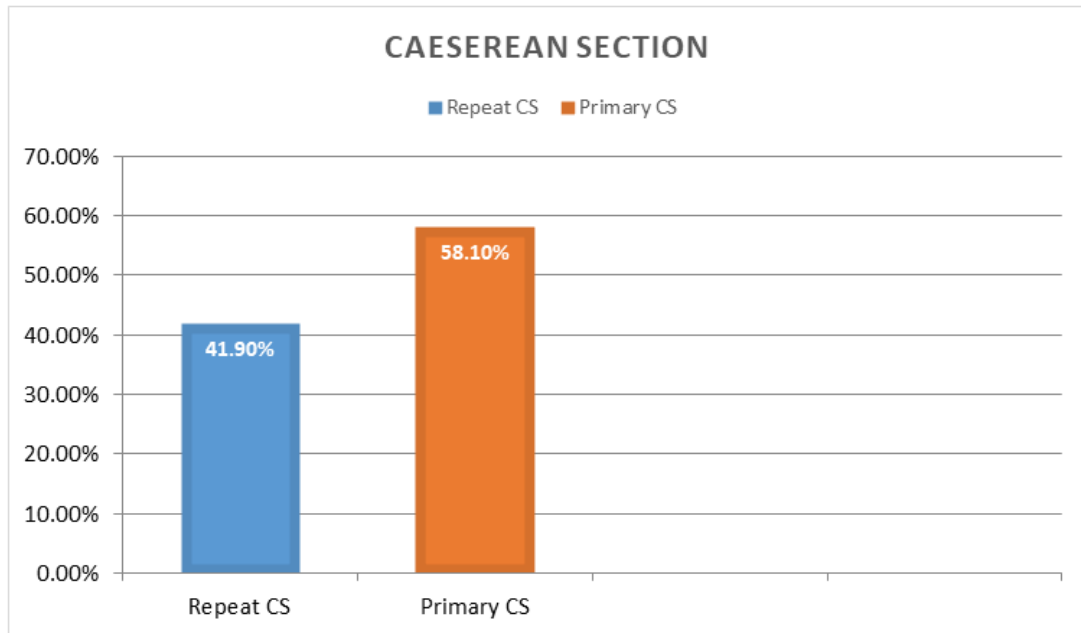


Figure 2: Incidence of Caesarean section

As shown in Table 1, the mean age of the women was 30.42 ± 5.1 years and the age range was 21-45 years. The repeat CS rate was highest (56.9%) among women aged 30-39 years.

The mean parity was 4.47 ± 2.6 . Most (65.3%) of the women were multiparous, with parity ranging

between 2 and 12. Similarly, majority of the women had secondary education as their highest educational attainment. More so, most of the women reside in urban areas (73.6%) and booked for antenatal care in the study facility (62.50%).

Table 1: Socio-demographic characteristics of the participants

Variables	Frequency (n)	Percentage (%)
Age: mean- 30.42± 5.1, range- 21-45		
20-29	57	39.60
30-39	82	56.90
≥40	5	3.50
Parity: mean- 4.47±2.6, range- 2-12		
2-4	94	65.30
≥5	50	34.70
Education		
No formal	34	23.61
Primary	37	25.69
Secondary	54	37.50
Tertiary	19	13.20
Residence		
Urban	106	73.60
Rural	38	26.40
Booking status		
Booked at study hospital	90	62.50
Booked elsewhere	41	28.47
Un-booked	13	9.03

Out of the 144 repeat Caesarean deliveries, 74 (51.39%) were elective and 70 (48.61%) were emergency. Spinal anesthesia was the most common

(84.03%) method of anesthesia used. This is shown in Table 2 below.

Table 2: Surgical characteristics of the Participants

Variable	Frequency (n)	Percentage (%)
Category of CS		
Elective	74	51.39
Emergency	70	48.61
Anesthesia		
Spinal	121	84.03
General	23	15.97

In Table 3, the study participants were categorized according to the order of their repeat CS. Among these participants, 63(43.8%) had 1st repeat CS, while 52 (36.1%), 21(14.6%), 6(4.2%) and 2(1.4%) had undergone 2nd, 3rd, 4th and 5th repeat CS respectively. Majority (65.08%) of the 1st repeat CS were emergency

CS. Most (53.85%) of the repeat CS among the women with 2 previous CS were elective CS; however a significant number (42.3%) of these women presented in labour and subsequently had emergency CS. Finally, almost all the CS performed on account of 3, 4 and 5 previous CS was elective.

Table 3: Order of CS at the time of the Repeat CS and Category CS

Order of CS	Frequency (n)	Percentage (%)
I-1 Previous CS n=63(43.8%)		
1- Elective	22	34.92
2- Emergency	41	65.08
II- 2 Previous CS n=52(36.1%)		
1- Elective	28	53.85
2- Emergency	24	46.15
a- Presented in labour	22	91.70
b- Severe Pre-eclampsia	2	8.30
III- 3 Previous CS n=21(14.6%)		
1- Elective	17	80.96
2- Emergency	4	19.04
a- Presented in labour	2	50.00
b- Severe Pre-eclampsia	1	25.00
c- APH (Placenta praevia)	1	25.00
IV-4 Previous CS n=6(4.2%)		
1- Elective	5	83.30
2- Emergency (In labour)	1	16.70
V- 5 Previous CS (Elective) n=2(1.4%)		

Table 4 shows the indication for repeat CS among those with primary CS. Fetal macrosomia was the commonest (40.91%) indication among those with

elective, while failed VBAC was the commonest (58.5%) indication among those with emergency repeat CS.

Table 4: Indications for Repeat CS among participants with 1 previous CD

Indication for repeat CS	Frequency (n)	Percentage (%)
I-Elective n=22 34.92%		
Macrosomia	9	40.91
Malpresentation	3	13.63
Bad Obstetric History	3	13.63
Maternal request	3	13.63
Twin gestation	2	9.10
Previous 4 th degree perineal tear	2	9.10
II-Emergency n=41 65.08%		
Failed VBAC	24	58.50
Severe Pre-eclampsia	7	17.10
Antepartum hemorrhage	3	7.30
Postdate	2	4.90
Fetal distress	3	7.30
Premature rupture of membrane	2	4.90
Total	63	100%

Majority of the intra-operative findings were that of clean abdominal-pelvic cavity with either mild or no adhesions. However, there was documented presence

of moderate to dense adhesions (56), extension of uterine incision (6) and other complications as illustrated in Table 5 below.

Table 5: Intra-operative complications of Repeat CS

Intra-operative complications	Frequency (n)	Percentage (%)
Adhesions	56	81.20
Extension of uterine incision	6	8.70
Bladder injury	2	2.90
Scar dehiscence	2	2.90
Placenta praevia	2	2.90
Bowel injury	1	1.40

Majority (93.06%) of the participants had estimated blood loss (EBL) of less than or equal to 1000mls. The mean estimated blood loss (EBL) was 546.53±319ml and range of 150-2200mls. The mean unit of blood transfused was 0.78±0.93 units. Regarding the fetal outcome, majority (82.6%) of the babies delivered had 5th Apgar score of ≥ 7. There were 20

(13.8%) neonatal intensive care unit (NICU) admissions and 6(4.2%) fetal death. About one third of the CS had Consultant as the lead surgeon. Furthermore, the mean postoperative admission day was 4.92±1.36 days and majority of the participants were admitted for 4-7 days. Majority (81.3%) of the participants had no post-operative complication. This is shown in Table 6 and 7.

Table 6: Peri-operative events of the study participants

Variable	Frequency (n)	Percentage (%)
EBL (ml) , mean= 546.53±319ml, range= 150-2200mls		
≤ 1000	134	93.06
>1000	10	6.94
Blood transfusion (unit), mean= 0.78±0.93 unit, range=0-4		
0	73	50.60
1	38	26.40
2	26	18.10
3	6	4.20
4	1	0.70
Neonatal outcome		
I-5 th Minute Apgar score		
< 7	25	17.40
≥ 7	119	82.60
II-NICU Admission	20	13.80
III-Perinatal death	6	4.20
Cadre of Surgeon		
Consultant	54	37.50
Senior Registrar	52	36.10
Medical Officer	38	26.40
Post-operative admission, mean=4.92±1.36 days, range= 3-9 days		
≤ 3	24	16.70
4-7	116	80.60
>7	4	2.80
Maternal post-operative complication		
Nil	117	81.30
Postpartum hemorrhage	15	10.40
Surgical site infection	12	8.30

Table 7: Association between booking status, blood transfusion, Post-operative complications, 5th Minute Apgar, Cadre of Surgeon and Order of Caesarean section at the time of surgery

Variable	Order of CS at the time of repeat surgery					Total
	1	2	3	4	5	
Booking status						
Booked	25	40	18	5	2	90(62.50%)
Elsewhere	32	5	3	1	0	41(28.47%)

Variable	Order of CS at the time of repeat surgery					Total
	1	2	3	4	5	
Un-booked	6	7	0	0	0	13(9.03%)
Blood transfusion						
Nil	38	24	7	2	2	73(50.6%)
1	19	10	6	3	0	38(26.4%)
2	3	18	5	0	0	26(18.1%)
3	2	0	3	1	0	6(4.2%)
4	1	0	0	0	0	1(0.7%)
Post-operative complications						
Nil	56	40	14	5	2	117(81.3%)
PPH	5	5	4	1	0	15(10.4%)
SSI	2	7	3	0	0	12(8.3%)
5TH Minute Apgar score						
0	1	3	2	0	0	6(4.2%)
1-6	9	7	3	0	0	19(13.2%)
≥7	53	42	16	6	2	119(82.6%)
Cadre of Surgeon						
Consultant	14	16	17	5	2	54(37.50%)
Senior Registrar	28	20	3	1	0	52(36.10%)
Medical Officer	21	16	1	0	0	38(26.40%)

There was statistically significant association between postoperative complication and booking status

of the patient ($X^2 = 28.442$, $df=9$, $P=0.001$). These findings are illustrated in Table 8.

Table 8: Association between Booking status and Post-operative complications

Complications	Booking status			Total
	Booked	Elsewhere	Un-booked	
Nil	84	26	7	117(81.3%)
PPH	2	9	4	15(10.4%)
SSI	4	6	2	12(8.3%)
	90	41	13	144(100%)

DISCUSSION

Repeat Caesarean section accounts for about one-third of all Caesarean deliveries worldwide [8]. In the current study the repeat CS rate is 41.9%. This is higher than 22.4% reported in Bangladesh and much higher than the 14.4% reported in Abakaliki, Nigeria [14, 15]. Additionally repeat CS has been a significant contributor to the overall increase in CS rate [8]. Although, the total CS rate of 15.3% in this study falls approximately within the WHO recommended rate. The high repeat CS rate observed could be due to the relative higher rate (43.8%) of repeat CS among women with primary CS. As there are few absolute indications for repeat Caesarean delivery following primary CS, most women are eligible to attempt vaginal birth after lower transverse Caesarean section (VBAC). The choice of either repeat CS or VBAC is driven by the woman's preference in addition to social, psychological and medical considerations [16]. VBAC is one of the strategies used to reduce CD rate [24, 25].

The mean age in this study was 30.42 ± 5.1 . This is in agreement with other studies [14, 17, 18]. Likewise the mean parity was 4.47 ± 2.6 , which is

similar to the findings of Obuna *et al.*, [15]. However, it is in contrast with the 1 ± 1.25 reported by Okunola *et al.*, [18]. Majority of the women had secondary education and reside in urban areas. This is in contrast with the finding of the study by Umme Ayesha *et al.*, in which majority of the women had primary level of education [14]. Majority of the women booked for antenatal care. This is also in keeping with the findings of some studies [15, 18]. However, this is in contrast with the findings of Ghani *et al.*, in which 60% of the participants had irregular antenatal care [19].

Spinal anesthesia was used for the majority of the women in this study. There is global trend towards increasing use of spinal anesthesia because of its advantages over general anesthesia, including better neonatal outcome [20]. In the current study, majority (51.39%) of the repeat CS was elective. This is similar to the findings of Sharma *et al.*, [17]. It is in contrast with the findings of some studies, in which majority of the repeat CS was emergency [14, 15, 18, 21]. Elective surgery allows for adequate preparation and optimization. Emergency surgical procedures are often

performed at odd hours, as such associated with higher maternal morbidity and mortality [22, 23].

Additionally, majority (65.08%) of the women with single previous CS had emergency repeat CS and failed VBAC was the commonest indication. Proper selection and follow up of pregnant women for trial for labour after Caesarean section (TOLAC) during antenatal care and use of partograph to monitor labour positively impact on the success of VBAC [26]. However, it is not certain whether the women who had failed VBAC in this study were properly selected as only 39.7% of the women booked for ANC and delivered in the study facility.

A significant number (42.3%) of the women with history of 2 previous CS presented to the delivery room in established labor and subsequently had emergency CD. There is conflicting evidence regarding any increased risk of uterine rupture with trial of labour after more than one prior CS and it does not seem to impact negatively on vaginal birth rates [27]. Studies have shown similar VBAC success rate of 62-75% with ≥ 2 previous CS and single prior CS. Therefore women with 2 previous lower transverse CS remain candidates for trial of labor [25]. However, this is not practiced in the study facility as well as in many other facilities in the region. Parturients with history of 2 previous CS are not often encouraged to have vaginal delivery. These women are usually delivered by emergency CS when they present in labour. Exceptions are those women who present in the 2nd stage of labor or with imminent delivery and do not have contraindications to vaginal delivery. Paucity of equipment for electronic monitoring of labour, inadequate staffing and medico-legal concerns are part of the reasons why CS is usually opted for.

With increasing order of repeat CS, access to the abdominal cavity may be difficult due to adhesion formation. In the current study, adhesion formation was the commonest (81.2%) intraoperative complications. Some studies reported similar finding [19, 28]. Sonoli *et al.*, reported 40.8% and 65.9% adhesion formation following 1 previous LSCS and 2 previous LSCS respectively [19]. These intra-abdominal adhesions are associated with increased risk of intra-operative blood loss and blood transfusion, bladder injury, bowel injury and increased intra-operative time [14, 29]. With increasing order of CS, these intra-abdominal adhesions increase the complication rate from 4.3% to 12.5% [29].

The mean EBL in this study was 546.5 ± 319 mls. Similar finding was reported in a study by Okunola *et al.*, [18]. Additionally, 51.4% of the women had intra- or post-operative blood transfusion. This is higher than 36% reported in a study by Umme Ayesha *et al.*, [14].

However among the women who had blood transfusion, only 1.4% had massive blood transfusion (4

units of blood and more) which is much lower than the 5% and 8.16% reported by Umme Ayesha *et al.*, and Okunola *et al.*, respectively [14, 18]. More so, Okunola *et al.*, reported a significant increase in blood transfusion from the 1st repeat CS to the 5th [18]. But the reverse situation was observed in the current study. The women with highest order repeat CS had less blood transfusion. The highest order Caesarean sections in this study were mainly elective, with adequate preparation and were performed mainly by the most experienced Consultants.

The newborn intensive care unit (NICU) admission in this study was 6.9%. This is lower than 9.5% reported in a study by Christie *et al.*, [30]. More so, in the current study 16(11.2%) neonate had 5th minute Apgar score of less than 7 and 5(4.2%) perinatal death. Okunola *et al.*, reported much higher NICU admission and 5th minute Apgar of less than 7; however reported similar perinatal death of 4.8% [18].

Additionally, 17 (18.7%) women had postpartum complications and PPH being the commonest (55.8%) postpartum complication. This is similar to the findings of another study in which 18.1% had postpartum complication with PPH also being the commonest [18]. However, this is contrary to the findings of a study by Ghani *et al.*, in which 23.8% had complications, and wound infection was the commonest [19]. While no maternal death was reported in this study; some studies reported 0.98%, 3% and 5% maternal death [14, 18, 19].

The higher order repeat CS was observed to have decreased rate of blood transfusion and postoperative complications; and better 5th minute Apgar score. This is in contrast with the report of a study by Makoha *et al.*, in which there was a steady rise in complications as the order of CS order increases from the 1st to the 6th [12]. Okunola *et al.*, also observed highly significant increase in PPH and blood transfusion from the primary to the 5th CS [18]. The observed trend in this study could be associated with higher rate of ANC visit among women with higher order repeat CS. Antenatal care positively impacts on the outcome of pregnancy [31]. Additionally, majority of the higher order repeat CS was elective and performed by more experienced Obstetricians. Elective CS are associated with lower maternal morbidity and mortality [22, 23]. More so, the higher order repeat CS were performed under spinal anaesthesia. Spinal anaesthesia is associated with better maternal and neonatal outcome [20]. Statistically significant association was established between the booking status and postoperative complications.

CONCLUSION

The repeat Caesarean section rate in this study is high. Similarly, the emergency Caesarean section rate at first and second order repeat Caesarean deliveries is high. Additionally maternal and fetal complications are higher among women lower order Caesarean deliveries.

Adequate counseling on need for antenatal care in addition to education on dangers of attempting home delivery and vaginal birth after 2 or more Caesarean section is imperative to avert maternal and neonatal complications.

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REFERENCES

- Makinde, O. I., Oriji, P. C., & Osegi, N. (2020). Towards Optimizing Caesarean Section: The Challenges of Concurrent Underuse, Unsafe Use and Overuse in Developing Countries. *Yenagoa Medical Journal*, 2(1), 157-170.
- Daniel, S., Viswanathan, M., Simi, B. N., & Nazeema, A. (2014). Study of maternal outcome of emergency and elective caesarean section in a semi-rural tertiary hospital. *National journal of medical research*, 4(01), 14-18.
- Garba, N. A., & Muhammad, Z. (2011). Caesarean Morbidity and Mortality at Aminu Kano Teaching Hospital, Kano: A Two Year Review. *BOMJ*, 8(1), 11-14.
- World Health Organization. (1985). Appropriate technology for birth. *Lancet*, 2, 436-437.
- Betran, A. P., Torloni, M. R., & Zhang, J. J. (2016). WHO statement on caesarean section rates. *BJOG*, 123, 667-670.
- Silver, R. M., Landon, M. B., Rouse, D. J., Leveno, K. J., Spong, C. Y., Thom, E. A., ... & National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. (2006). Maternal morbidity associated with multiple repeat cesarean deliveries. *Obstetrics & Gynecology*, 107(6), 1226-1232.
- Alfirevic, Z., Devane, D., & Gyte, G. M. L. (2006). Continuous cardiotocography (CTG) as a form of electronic fetal monitoring (EFM) for fetal assessment during labour. *Cochrane Database Syst Rev*, 3, CD006066.
- Cheng, Y. W., Eden, K. B., Marshall, N., Pereira, L., Caughey, A. B., & Guise, J. M. (2011). Delivery after prior cesarean: maternal morbidity and mortality. *Clinics in perinatology*, 38(2), 297-309.
- Osman, S., Farid, G., Kamal, R. M., Ali, S. R., & Swaraldahab, M. A. (2018). Perinatal Morbidity & Mortality following repeat Cesarean section due to five or more previous Cesarean Section done in Tertiary centre in KSA. *Clinical Journal of Obstetrics and Gynecology*, 1(2), 45-51.
- Forde, B., & DeFranco, E. A. (2020). Association of prior cesarean delivery with early term delivery and neonatal morbidity. *Obstetrics & Gynecology*, 135(6), 1367-1376.
- Parvin, Z., Das, S., Naher, L., Sarkar, S. K., & Fatema, K. (2017). Relation of placenta praevia with previous lower segment caesarean section (lucs) in our clinical practice. *Faridpur Medical College Journal*, 12(2), 75-77.
- Makoha, F. W., Felimban, H. M., Fathuddien, M. A., Roomi, F., & Ghabra, T. (2004). Multiple cesarean section morbidity. *International Journal of Gynecology & Obstetrics*, 87(3), 227-232.
- Baron, Y. M. (2016). Does the 10–15% caesarean section rate threshold established by the WHO in 1985 still apply for modern obstetrics in developed countries?. *European Journal of Obstetrics and Gynecology and Reproductive Biology*, 206, e81.
- Umme Ayesha, M. S. T., Rehana, R., Kamrun, N., Ferdousi, S., Alina, P., & Juthi, B. (2023). Evaluation of complication of Repeat caesarean section: A study of 100 patients in a Tertiary care Hospital in Bangladesh. *Sch int J obstet Gynec*, 6, 207-214.
- Obuna, J. A., Ugboma, H. A. A., Ejikeme, B. N., Umeora, O. U. J., & Agwu, U. M. (2012). Pattern and outcome of higher order caesarean section in a secondary health facility in Nigeria. *Research in Obstetrics and Gynecology*, 1(3), 19-22.
- Lundgren, I., Begley, C., Gross, M. M., & Bondas, T. (2012). ‘Groping through the fog’: a metasynthesis of women’s experiences on VBAC (Vaginal birth after Caesarean section). *BMC pregnancy and childbirth*, 12(1), 1-11.
- Lakho, R., Mahmood, A., & Lakho, N. (2022). Frequency of Repeat Caesarean Section at Tertiary Care Hospital. *Pakistan Journal of Medical & Health Sciences*, 16(10), 593-593.
- Okunola, T. O., Bola-Oyebamiji, S. B., Sowemimo, O., Ajenifuja, K. O., & Kutu, O. (2022). Obstetric Outcomes in High-Order Repeat Caesarean Deliveries in Nigeria: A Single-Center Retrospective Study. *Journal of Family & Reproductive Health*, 16, 254-263.
- Ghani, A., Ila, I. J., Ferdouse, J. A., Sultana, N., & Sultana, J. (2018). Repeat caesarean sections: complications and outcomes. *Journal of Shaheed Suhrawardy Medical College*, 10(2), 74-79.
- Imarengiaye, C., Asudo, F., Akinmola, A., & Lawal, B. (2017). A snap-shot survey of spinal anaesthesia for caesarean section: The Nigeria experience. *Journal of Clinical Sciences*, 14(4), 173-177.
- Makwana, N., & Tejal, I. P. (2017). A study of postoperative complications of caesarean section. *Int J Sci Res*, 6, 370.
- Yakasai, I. A., Ibrahim, S. A., Abubakar, I. S., Ayyuba, R., Mohammed, A. D., & Gajida, A. U. (2014). Surgical procedures in obstetrics and gynecology department of a teaching hospital in Northern Nigeria: A 5 year review. *Archives of International Surgery*, 4(2), 104-107.
- Zambouri, A. (2007). Preoperative evaluation and preparation for anesthesia and surgery. *Hippokratia*, 11(1), 13-21.
- Caesarean childbirth. (1981). Summary of an NIH consensus statement. *Br med J*, 282, 1600-1604.

25. Royal College of Obstetricians & Gynaecologists. (2015). Birth after previous caesarean birth. *Green-top guideline*, (45).
26. Tefera, M., Assefa, N., Teji Roba, K., & Gedefa, L. (2021). Predictors of success of trial of labor after cesarean section: A nested case-control study at public hospitals in Eastern Ethiopia. *Women's Health*, 17, 17455065211061960.
27. Trojano, G., Damiani, G. R., Olivieri, C., Villa, M., Malvasi, A., Alfonso, R., ... & Cicinelli, E. (2019). VBAC: antenatal predictors of success. *Acta Bio Medica: Atenei Parmensis*, 90(3), 300.
28. Shanmugham, D., Jayakumar, H., Ramany, C., & Varghese, J. (2018). Intraoperative difficulties encountered in women undergoing repeat caesarean section. *East African Scholars J Med Sci*, 1(3), 77-82.
29. Somani, S. S., Sudhir, S., & Somani, S. G. (2018). A study of intra-operative maternal morbidity after repeating caesarean section. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 7(1), 291-297.
30. Christe, D. M., Gunasingh, S. T., & Bharani, V. (2018). Delivery by repeat caesarean section today: an overview. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, 7(10), 4127-4133.
31. Danadji, I., Ngaba, E. A., & Mapa, C. (2022). Does safe delivery depend on antenatal care in Cameroon. *African Journal of Health Sciences*, 35(6), 721-733.