ORIGINAL RESEARCH

Clinical study of various intraoperative complications observed during lower segment caesarean section surgeries at a tertiary care hospital

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ABSTRACT

Background: The cesarean section increases the likelihood of requiring a blood transfusion, the risk of anesthesia complications, organ injury, infection, and thromboembolic disease. Present study was aimed to study, various intraoperative complications observed during lower segment caesarean section surgeries at a tertiary care hospital.

Material and Methods: Present study was retrospective, descriptive study, medical records of women had intraoperative surgical complication/s during LSCS surgeries at our hospital were analysed.

Results: Incidence of intraoperative complications was 4.87 % (104 out of 2134 LSCS surgeries). Majority were from 26-30 years age group (38.46 %), had parity 1 (46.15 %), had history previous 1 LSCS (38.46 %) & previous 2 LSCS (33.65 %). Common risk factors noted were Obesity (BMI > 25 kg/m^2) (37.5 %), hypertensive disorders of pregnancy (20.19 %), Anaemia (19.23 %), previous laparotomy (17.31 %) & h/o intraoperative complication in previous LSCS surgery (16.35 %). In cases with previous LSCS, common indication was impending scar dehiscence (34.62 %) followed by elective LSCS for previous ≥ 2 LSCS (25 %), Antepartum Hemorrhage - Placenta previa (10.58 %), Fetal Distress (9.62 %), Obstructed Labour / Second stage LSCS (8.65 %). Intra-operative complications noted were extension of uterine incision (37.5 %), Dense uterine adhesions (35.58 %), intra operative atonic post-partum haemorrhage (28.04 %), scar dehiscence (18.27 %), bleeding from placental bed (14.42 %), bladder injury (3.85 %), Injury to inferior epigastric vessels (2.88 %), placenta accreta spectrum (1.92 %) & bowel injury (0.96 %). Maternal mortality was observed in 2 cases (1- placenta accreta, 1 – post-partum hemorrhage)

Conclusion: Pregnant women posted for LSCS with pre-operative high-risk factors such as obesity, hypertensive disorders of pregnancy (20.19 %), history of previous laparotomy/intraoperative complication in previous LSCS surgery are prone for intraoperative complications.

Keywords: LSCS, obesity, intraoperative complication, previous LSCS surgery

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INTRODUCTION

There has been an increasing trend in the caesarean section rate in the last two decades not just in developed countries but also in developing countries. The reason for this rise is multifactorial. An increase in urgent or emergency caesarean sections has been attributed to more advanced intrapartum fetal monitoring, allowing obstetricians to diagnose intrapartum fetal compromise earlier and more effectively.[1] While, a possible reason for increase in elective caesarean sections might be due to the preference of patients and obstetricians.[2]

There is evidence that potentially unnecessary cesarean sections may put the lives and well-being of women and their babies at risk both in the short-term and in the long-term.[3] The cesarean section increases the likelihood of requiring a blood transfusion, the risk of anesthesia complications, organ injury, infection, and thromboembolic disease.[3,4]

The risk of these morbidities is progressively increasing since the number of previous cesarean deliveries is increasing.[4] Also, along with maternal factors, different factors such as socio-economic, infrastructure, availability & skill of health care providers affect the complications observed during LSCS. factors. Present study was aimed to study, various intraoperative complications observed during lower segment caesarean section surgeries at a tertiary care hospital.

MATERIAL AND METHODS

Present study was retrospective, descriptive study, conducted in department of obstetrics & gynaecology, at XXX medical college & hospital, XXX, India. Study duration was of 1 year (January 2021 to December 2022). Institutional ethical committee approval was taken, prior to start of this study. Medical records of women had intraoperative surgical complication/s during LSCS surgeries at our hospital were analysed. We excluded women underwent upper segment caesarean section, elective caesarean hysterectomy, repair of rupture uterus from present study.

Patient related details such as age, parity, detailed obstetric history, course of present pregnancy, previous caesarean section details, any complications in previous pregnancy, any history of surgical procedure like D and C, findings of physical and obstetric examination, diagnosis, laboratory investigations, ultrasonography findings (especially for placental localization) were noted in case record proforma. Any intra-operative complication/s, surgical findings, additional procedures & their management (e.g., as uterine incision extensions, adhesions, thinned lower uterine segment, advanced bladder, extension of uterine incision, scar dehiscence, excess blood loss, uterine rupture, bladder injury, morbidly adherent placenta, caesarean hysterectomy, etc.) was noted. Follow-up details were noted.

All the data from CRF was compiled using Microsoft Excel & analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

RESULTS

In present study, 104 cases of intraoperative complications were observed, incidence of intraoperative complications was 4.87 % (104 out of 2134 LSCS surgeries). Mean age was 24.11 ± 3.53 years, majority were from 26-30 years age group (38.46 %), 19-25 years age group (35.58%), had parity 1 (46.15 %), had history previous 1 LSCS (38.46 %) & previous 2 LSCS (33.65 %).

Table 1: General characteristics

Characteristics	No. of Cases	Percentage
Age (Years)		
19-25	37	35.58%
26-30	40	38.46%
31-35	20	19.23%
≥ 36	7	6.73%
Mean age (years)	24.11 ± 3.53	
Parity		0.00%
Nulliparous	14	13.46%
Parity 1	48	46.15%
Parity 2 or more	35	33.65%
History of Caesarean section/ hysterotomy		
None	23	22.12%
Previous 1	40	38.46%
Previous 2	35	33.65%
Previous 3	6	5.77%

Common risk factors noted were Obesity (BMI > 25 kg/m^2) (37.5 %), hypertensive disorders of pregnancy (20.19 %), Anaemia (19.23 %), previous laparotomy (17.31 %), h/o intraoperative complication in previous LSCS surgery (16.35 %), Coagulation defects (10.58 %), History of myomectomy (2.88 %) & Intra-operative adherent placenta (1.92 %).

Table 2: Preoperative high-risk factors

High risk factors	No. of Cases (n=97)	Percentage
Obesity (BMI > 25 kg/m^2)	39	37.50%
Hypertensive disorders of pregnancy	21	20.19%
Anaemia	20	19.23%
previous laparotomy	18	17.31%
h/o intraoperative complication in previous LSCS surgery	17	16.35%
Coagulation defects	11	10.58%
History of myomectomy	3	2.88%
Intra-operative adherent placenta	2	1.92%

In cases with previous LSCS, common indication was impending scar dehiscence (34.62 %) followed by elective LSCS for previous ≥ 2 LSCS (25 %), Antepartum Hemorrhage - Placenta previa (10.58 %), Fetal Distress (9.62 %), Obstructed Labour / Second stage LSCS (8.65 %), Antepartum Hemorrhage - Placental abruption (5.77 %), abnormal Presentation (2.88 %) & Cephalopelvic Disproportion (2.88 %).

Table 3: Indication of caesarean section

Indication	No. of Cases	Percentage
Impending scar dehiscence	36	34.62%
Elective LSCS for previous ≥ 2 LSCS	26	25.00%
Antepartum Hemorrhage - Placenta previa	11	10.58%
Fetal Distress	10	9.62%
Obstructed Labour / Second stage LSCS	9	8.65%
Antepartum Hemorrhage - Placental	6	5.77%

abruption		
Abnormal Presentation	3	2.88%
Cephalopelvic Disproportion	3	2.88%

In present study intra-operative complications noted were extension of uterine incision (37.5 %), Dense uterine adhesions (35.58 %), intra operative atonic post-partum haemorrhage (28.04 %), scar dehiscence (18.27 %), bleeding from placental bed (14.42 %), bladder injury (3.85 %), Injury to inferior epigastric vessels (2.88 %), placenta accreta spectrum (1.92 %) & bowel injury (0.96 %). Various surgical interventions (obstetric hysterectomy, step wise devascularization, internal iliac artery ligation, uterine compression sutures, bladder repair, bowel repair), transfusion of blood and blood products & ICU care was done for management of these complications. Maternal mortality was observed in 2 cases (1- placenta accreta, 1 – post-partum hemorrhage)

Table 4: Intra-operative complications

Intra operative complication	**No. of Cases**	**Percentage**
Extension of uterine incision	39	37.50%
Dense uterine adhesions	37	35.58%
Intra operative atonic post-partum hemorrhage	25	24.04%
Scar dehiscence	19	18.27%
Bleeding from placental bed	15	14.42%
Bladder injury	4	3.85%
Injury to inferior epigastric vessels	3	2.88%
Placenta accreta spectrum	2	1.92%
Bowel injury	1	0.96%

DISCUSSION

Though modern technology and facilities have made this operation remarkably safe, which is mainly due to availability of antibiotics, safe anaesthesia, blood transfusion facilities and recent improvement in surgical techniques but still caesarean section is associated with increased risk of maternal morbidity and mortality as compared to vaginal delivery.

Caesarean section is associated with risk of anesthesia, intra operative risks like blood loss requiring blood transfusion due to various causes like adhesions, extension of uterine incision, adherent placenta. risk of previous scar dehiscence, uterine rupture, thinning of lower uterine segment, organ injuries like bowel and bladder injury. The risk of placenta accreta, a potentially life- threatening condition, is increased after two Caesarean sections, along with this is a similar rise in the risk of emergency hysterectomies at delivery.[5,6]

Hemorrhage is the most frequent complication of the cesarean section during or after the surgical event, which eventually leads to additional interventions such as obstetric hysterectomy, step wise devascularization, internal iliac artery ligation, uterine compression sutures. The main complications of obstetric/peripartum hysterectomy comprise of blood and blood product transfusions, chances of surgical re-exploration because of continuous ooze and bleeding, febrile morbidity, disseminated intravascular coagulopathy, bladder/ureteral injury, postoperative depression, prolonged ICU stay or maternal death.[6]

In study by Shekhar Amale et al.,[7] incidence of intraoperative complications was more in repeat CS (5.20%) as compared to primary CS (2.46%) and difference was statistically significant. In primary CS, complications encountered were extension of uterine incision (63.64 %), excess blood loss (45.45 %) and caesarean hysterectomy (9.09 %, in central placenta previa). While, in repeat CS, complications encountered were adhesions (68.57 %),

extension of uterine incision (21.43 %), excess blood loss (20 %), advance bladder (15.71 %), uterine dehiscence (12.86 %), caesarean hysterectomy (5.71 %), placenta accreta (4.29 %) and bladder injury (2.86 %).

In study by J Vasantha Lakshmi et al.,[8] out of 200 cases 117 had one, 22 had two and 1case had three prior cesarean sections out of which 43% showed intra-operative complications, most common complications being adhesions (83.72%), thinned out lower uterine segment (37.2%), hemorrhage (10.9%), abnormal placentation (8.13%), extension of the uterine incision (6%), scar dehiscence (4.65%), bladder injury (1.2%).

Rehman BU et al.,[9] studied 602 caesarean sections, intrapartum complication (2.0%) includes postpartum hemorrhage (1.2%), CS hysterectomy (0.5%), bladder injury (0.3%) and postpartum complication (2.3%) including UTI (0.8), wound infection (0.5%), sepsis (0.5%), lactation failure (0.5%) were major maternal complication of cesarean section.

Mangi G et al.,[7] noted that out of 386 deliveries, 106 (27.5%) had one or more complications. Common early complications (24 - 72 hours after CS) were puerperal sepsis, anaesthesia-related complications, blood transfusion and ICU admission. Longer duration of surgery was significantly associated with all complications (aOR 2.90; 95% CI: 1.02 - 8.50). Grand multiparity was significantly associated with blood transfusion (7.0; 1.40 - 34.35) and PPH (6.4; 1.5 - 24.24) while pre-operative anaemia was significantly associated with blood transfusion (4.34; 1.90 - 9.45).

Deepa Shanmugham et al.[11] noted that among 200 patients undergoing repeat Caesarean section, 64 subjects showed abdominal wall adhesions, 67 (35.5%) had adhesions of abdominal wall to anterior wall of uterus, 35 (17.5 %) had bladder adhesions, scar dehiscence was observed in 42 (23%) and scar rupture was seen in 1 (0.5 %) subjects.

Singh P et al.,[12] studied 68 cases of previous two lower segment caesarean section, majority of cases were from 30-34 years age group (39.7%), the maximum number of caesarean sections were done between gestational age of 37-39.6 weeks (47.1%). Intraoperatively adhesions between uterus, anterior abdominal wall and bladder were seen in less than half of the cases i.e. in 42.6% cases. Out of 68 cases with previous two lower segment caesarean operated 13 cases had placenta previa and 4 cases had adherent placenta.

Zia, S et al.,[13] concluded that the risk of intraoperative complications increases with successive number of Caesarean sections, such as severe intra peritoneal adhesions, thinned out lower uterine segment and bladder injury were significantly increased ($P<0.001$). No significant differences were found in blood loss, duration of surgery, post-operative hospital stay as well as birth weight and Apgar scores of new-borns.

In long term, caesarean section delivery is associated with abnormal placentation, uterine rupture in the subsequent pregnancy, adhesions, unexplained stillbirth, preterm birth especially when the previous CS was done during the second stage of labour and scar complications which includes postmenstrual spotting, endometriosis, uterine scar pregnancy, numbness, and pain.[14,15]

CONCLUSION

Pregnant women posted for LSCS with pre-operative high-risk factors such as obesity, hypertensive disorders of pregnancy (20.19 %), history of previous laparotomy/intraoperative complication in previous LSCS surgery are prone for intraoperative complications. Standard surgical practice, training of residents & surgical drills could reduce intraoperative complications & related morbidity.

REFERENCES

1. Sia ATH, Fun WL, Tan TU. The ongoing challenges of regional and general anaesthesia. Best prac Res Clin Obstetrics Gyn 2009;24:303-12.
2. Guo S. Delievery settings and caesarean section rates in China. Bulletin World Health Org 2007;85:755-62.
3. WHO recommendation: non-clinical interventions to reduce unnecessary cesarean section; 2018.
4. Deneux-Tharaux, C., Carmona, E., Bouvier-Colle, M.-H. and Bréart, G. (2006) Postpartum Maternal Mortality and Cesarean Delivery. Obstetrics & Gynecology , 108, 541-548.
5. Jillani K., Shaikh F, Siddiqui S, Siddiqui M. Repeated cesarean sections: A risk factor for rising rate of placenta previa. Gynaecology and Obstetrics. 2010; 16(3):409-412.
6. Nohira T,Onodera T,Isaka K. Emergency postpartum hysterectomy: incidence, trends, indications, and complications. Hypertension Research in Pregnancy 2014; 2: 88–93
7. Shekhar Amale, Anjali Bhirud, Pankaj Sarode. Study of intraoperative complications in lower segment caesarean section at tertiary care hospital. MedPulse International Journal of Gynaecology. July 2021; 19(1): 06-09.
8. J Vasantha Lakshmi, C Anuradha and M Rishitha, Intra-operative complications in repeat cesarean sections, International Journal of Clinical Obstetrics and Gynaecology 2020; 4(2): 144-149
9. Rehman BU, Gul H. Indication and complication of caesarean section at tertiary care hospital: a retrospective study. Int J Reprod Contracept Obstet Gynecol 2019;8:1646-9.
10. Mangi, G., Mlay, P., Oneko, O., Maokola, W. and Swai, P. (2022) Postoperative Complications and Risk Factors among Women Who Underwent Caesarean Delivery from Northern Tanzania: A Hospital-Based Analytical Cross-Sectional Study. Open Journal of Obstetrics and Gynecology, 12, 243-257.
11. Deepa Shanmugham et al.; East African Scholars J Med Sci; Vol-1, Iss-3 (Dec, 2018): 77-82
12. Singh P, Agarwal R, Yadav S. An analytical study of intraoperative, immediate post-operative and perinatal complications in previous two caesarean section. Int J Reprod Contracept Obstet Gynecol 2018;7:4239-42.
13. Zia, S., & Rafique, M. (2014). Intra-operative complications increase with successive number of cesarean sections: Myth or fact?. Obstetrics & gynecology science, 57(3), 187-192.
14. Sandall, J., Tribe, R.M., Avery, L., Mola, G., Visser, G.H., Homer, C.S., et al . (2018) Short-Term and Long-Term Effects of Caesarean Section on the Health of Women and Children. The Lancet , 392, 1349-1357.
15. Gunes, M., Kayikcioglu, F., Ozturkoglu, E. and Haberal, A. (2005) Incisional Endometriosis after Cesarean Section, Episiotomy and Other Gynecologic Procedures. Journal of Obstetrics and Gynaecology Research , 31, 471-475.