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Original Research Article

Relaparotomy after caesarean section: a retrospective observational study in a tertiary medical college

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ABSTRACT

Background: Relaparotomy is the term which defines operations performed within 60days after the initial surgery. Ralaparotomy following caesarean section may happen and that's why a study was done to evaluate the risk factors, indications, procedures done during relaparotomy after caesarean section.
Methods: A retrospective observational study was conducted in the department of obstetrics and gynaecology in burdwan medical college and hospital for a period of 3years from 1 June 2019 to 31 May 2022. Total 32 cases required relaparotomy following caesarean section.
Results: In this study, there were 25,527 caesarean deliveries out of 56,145 total deliveries over 3years time period. Among caesarean deliveries 32 cases underwent relaparotomy (0.12%). In most of the cases relaparotomies were due to intraperitoneal haemorrhage, rectus sheath hematoma, postpartum haemorrhage. Indications of cesarean section were severe preeclampsia, non-progress of labour, abruption, post cesarean section with scar tenderness, meconium-stained liquor with fetal distress. Most of the women were in the age group of 20-30 years. Resuturing of the bleeding points were done in most of the cases.
Conclusions: As a lifesaving procedure, decision of relaparotomy should be taken as soon as possible. Proper hemostasis need to be ensured before closure of abdomen, as intraperitoneal haemorrhage is the most common indications for relaparotomy.

Keywords: Caesarean section, Intraperitoneal haemorrhage, Pre-eclampsia, Postpartum haemorrhage, Rectus sheath hematoma

INTRODUCTION

Caesarean section is the most common operation done in daily obstetric practice.[1] The worldwide increasing frequency of caesarean section is due to the factors which include improved surgical procedures, safe anaesthetic procedures, easy availability of blood transfusion facilities.[2] Other factors which are implicated in expanding rates of caesarean section are increasing age at first pregnancy, maternal request, maternal obesity, maternal medical diseases. Complications mostly occur following caesarean section compared to vaginal delivery.[3] Relaparotomy defines the operations done within 60days after the initial surgery.[4] The causes of relapatomy after caesarean section includes intraperitoneal haemorrhage, rectus sheath hematoma, postpartum haemorrhage, pelvic abscess, uterine necrosis.[5] Prompt decision of relaparotomy was taken by senior surgeon who performed relaparotomy. No definite

procedure was done in all cases. The procedures which were performed include resuturing of bleeding points, drainage of rectus sheath hematoma, bilateral uterine artery ligation with compression sutures (for postpartum haemorrhage), hysterectomy, drainage of pus (for pelvic abscess). That' why, aim of this study was to evaluate the risk factors, indications, procedures performed during relaparotomy after caesarean section.

METHODS

A retrospective observational study was conducted in the department of obstetrics and gynecology of Burdwan medical college and hospital, West Bengal over a period of 3years from June 2019 to May 2022. During this time period 32 cases underwent relaparotomy after caesarean section. Data were collected by reviewing of medical records, emergency operation register. Risk factors, indications and outcomes of each relaparotomy cases were reviewed.

Exclusion criteria

Exclusion criteria for current study were gynaecological cases that underwent relaparotomy, relaparotomy after 60days due to other causes and vaginal deliveries that underwent laparotomy.

Statistical analysis

Collected data was analyzed by using SPSS version 11. Frequency and percentage of study parameters were calculated. Study parameters includes age, parity, indications of caesarean section, indications of relaparotomy, timeinterval between caesarean section and relaparotomy, procedures performed, outcome of relaparotomy.

RESULTS

Within this 3-year study period, total 25,527 caesarean deliveries were done in our hospital, among them 32 cases required relaparotomy after caesarean section (22 cases delivered at our institution, rest 10 cases referred from nearbydistrict hospital).

Table 1: Age distribution of relaparotomy cases.

Age group (years)	N	%
<20	5	15
20-30	20	62.5
>30	7	21.8

Among them 20 cases were in the age group of 20-30 (62.5%), 5 cases were below 20 years (15%), 7 cases were above 30 years (21.8%). Out of 32 cases, 12 cases were primi (37.5%), 18 cases were between para 2-4 (56.25%), 2 cases were above parity 5 (6.25%). Among 32 cases, severe preeclampsia with fetal distress (56.25%), non-progress of labor (21.87%), abruptio placentae (15.63%), meconium-stained liquor with fetal distress (18.75%), post caesarean section with scar tenderness (12.5%), prelabor rupture of membranes (6.25%) were the main indications of caesarean section.

Table 2: Parity distribution of relaparotomy cases.

Parity	N	%
1	12	37.5
2-4	18	56.25
>5	2	6.25

Relaparotomies were performed within 24 hours in 18cases. 11 cases underwent relaparotomy between 24 to 72 hours, 3 cases underwent resurgery after 72 hours.

Table 3: Indications of caesarean section.

Indications	N	%
Severe preeclampsia with fetaldistress	18	56.25
Non progress of labour	7	21.87
Abruptio placentae	5	15.62
Meconium-stained liquor with fetal distress	6	18.75
Post caesarean section with scar tenderness	4	12.5
Prelabor rupture of membranes	2	6.25

Indications of relaparotomy were mostly due to intraperitoneal haemorrhage in 15 cases (46.87%), rectus sheath hematoma in 9 cases (28.12%), postpartum haemorrhage in 5 cases (15.62%), pelvic abscess in 2 cases, uterine necrosis in 1 case.

Table 4: The time interval between caesarean section and relaparotomy.

Time intervals (hours)	N	%
<24	18	56.25
24 to 72	11	34.37
>72	13	9.37

Table 5: Indications of relaparotomy.

Indications	N	%
Intraperitoneal haemorrhage	15	46.87
Rectus sheath hematoma	09	28.12
Postpartum haemorrhage	05	15.62
Pelvic abscess	02	6.25
Uterine necrosis	01	3.12

The intraoperative findings at relaparotomy were rectus sheath hematoma in 9 cases (28.12%), atonic postpartum haemorrhage in 5 cases (15.62%), broad ligament hematoma in 6 cases (18.75%), bleeding from uterine angle in 4 cases (12.5%), bleeding from tubal ligation stump in 2 cases, bleeding from bladder base in 3 cases, pelvic abscess in 2 cases, uterine necrosis in 1 case.

Evacuation of blood clots and ligation of bleeding vessels done in 11 cases (34.37%), resuturing of uterine angle done in 4 cases (12.5%), drainage of rectus sheath hematoma and ligation of bleeding vessels done in 9 cases (28.12%), compression sutures with stepwise devascularisation done in 4cases (12.5%), drainage of pus done in 2 cases (6.25%), hysterectomy done in 2 cases (3.12%). Regrading post relaparotomy outcome, out of 32 cases, death occurs in 7 cases. In 4 cases death were due to septicemic shock with multiorgan failure, in 3 cases death were due to disseminated intravascular coagulation.

Table 6: Intraoperative findings of relaparotomy.

Intraoperative findings	N	%
Intraperitoneal haemorrhage		
Bleeding from uterine angle	04	12.5
Broad ligament hematoma	06	18.75
Bleeding from tubal ligation stump	02	6.25
Bleeding from bladder base	03	9.37
Rectus sheath hematoma	09	28.12
Postpartum haemorrhage (atonic)	05	15.62
Pelvic abscess	02	6.25
Uterine necrosis (gangrenous uterus)	01	3.12

Table 7: Procedures performed during relaparotomy.

Indications	Procedures	N	%
Intraperitoneal haemorrhage	Removal of blood clotsfollowed by ligation of bleeding vessels.	11	34.37
	Resuturing of uterineincision	4	12.5
Rectus sheath hematoma	Hematoma explored andbleeding vessels ligated	9	28.12
Postpartum haemorrhage (atonic)	Compression sutureswith stepwise devascularisation	4	12.5
	Hysterectomy	1	3.12
Pelvic abscess	Drainage of pus	2	6.25
Uterine necrosis	Subtotal hysterectomy	1	3.12

Table 8: Outcomes of relaparotomies.

Outcomes	N	%
Recovery after relaparotomies	25	78.12
Maternal death after relaparotomies	7	21.87

DISCUSSION

Caesarean section may be associated with various complications like haemorrhage, infection, injury to the other organs leading to raised maternal morbidity and mortality.[1] In this study, we analyzed the risk factors, indications and outcomes of relaparotomy following caesarean section. During our 3 years of study period, out of 25,527caesarean deliveries, 32 cases underwent relaparotomy after caesarean section (0.12%). The incidence of relaparotomy was 0.12%. In the study by Levin et al incidence of relaparotomy was 0.2%.[1] According to the study of Khan 0.13% cases underwent relaparotomy following caesarean section.[2] The incidence of relaparotomy was 1.04% in the study by Raagab.[3,4] Relaparotomy after caesarean section was 0.12% in the study of Gedibaski.[5]

Table 9: Causes of death after relaparotomies.

Causes of death	N	%
Septicemic shock with multiorganfailure	4	57.14
Disseminated intravascularcoagulation	3	42.85

In our study, 20 cases (62.5%) were in the age group of 20-30 years and 7 cases (21.8%) were above 30 years. In the study of Khan 92.6% cases were in the age group of 20-35 years and only 1 case was above 35 years. In another study by Rout, 60% cases were in between the age group of 20-35 years. In this study, 37.5% cases were primipara, 56.25% cases were between para 2-4, 6.25% cases were above para. In the study by Khan 59% cases were between para 2-4 and 33.3% cases were primipara which indicates that incidence of relaparotomies were more with high parity. In our study, main indications of caesarean section were severe preeclampsia with fetal distress (56.25%), non progress of labour (21.87%), abruptio placentae (15.62%), meconium-stained liquor with fetal distress (18.75%). Other indications were post caesarean section with scar tenderness (12.5%), prelabor rupture of membranes (6.25%). Non progress of labour was the main indications of caesarean section in the study by Biswas SP (40%cases) and 29.6% cases in the study by Khan.[6] Regarding the interval between caesarean section and relaparotomy, 18 cases (56.25%) underwent relaparotomy within 24 hours, 11cases (34.37%) had relaparotomy between 24 to 72 hours and only in 3 cases relaparotomy we'reperformed after 72 hours. In the study by Kessous, 51.2% cases had relaparotomy within 24 hours of caesarean section while 85.18%cases underwent relaparotomy within 24 hours in the study by Khan.[7] The most common indications of relaparotomy were intraperitoneal haemorrhage (46.87%), rectus sheath hematoma (28.12%) and postpartum haemorrhage in 15.62% cases. The study by Levin et al revealed that intraperitoneal haemorrhage and postpartum haemorrhage were major indications of relaparotomy. In the study by Khan intraperitoneal haemorrhage was the indication of relaparotomy in 44.44% cases. Postpartum haemorrhage was most common indications of relaparotomy in the study of Biswas SP. These findings indicate that emphasis should be given on active management of third stage of labour and ensuring proper hemostasis before closure of abdomen. Intraoperative findings of relaparotomy were rectus sheath hematoma in 9 cases, atonic postpartum

haemorrhage in 5 cases, bleeding from uterine angle in 4 cases, broad ligament hematoma in 6 cases, bleeding from tubal ligation stump in 2 cases, bleeding from bladder base in 3cases, uterine necrosis in 1 case. In the study of Levin et al intraperitoneal haemorrhage seen in 50% cases. In the study by Seal et al atonic pph seen in 42.4% cases and rectus sheath hematoma in 27.3% cases.[8] Study by Shymal et al showed 48.93% cases of intraperitoneal haemorrhage and 21.28% cases of rectus sheath hematoma.[9] To reduce these complications, proper suturing of lower uterine segment incision and suturing of lateral extension of rectus sheath is necessary. Regarding the procedure done at relaparotomy, ligation of bleeding vessels were done in 11 cases, resuturing of uterine incision done in 4 cases, compression sutures with stepwise devascularisation done in 4 cases, hysterectomy done in 2 cases. In the study of Biswas, hysterectomy was done in 38.18% cases and conservative surgery was done in 61.82% cases. In the study by Khan hysterectomy required in 77.78% cases whereas in the study by Roy hysterectomy was done in 31.3% cases. In our study period, out of 32 cases undergoing relaparotomy 7 maternal death occurred. In 6 cases intraoperative findings were intraperitoneal haemorrhage and in 1 case, it was uterine necrosis. Maternal death following relaparotomy was 18.52% in study by Khan 15.38% in study of Raagab, 12.7% in the study by Biswas et al 12.12% in the study by Seal et al.[10-12]

CONCLUSION

Caesarean section is the main operation in obstetrics and relaparotomy is a lifesaving procedure. Every obstetrician should be very careful while performing caesarean section and should have the capability to tackle the complications related to caesarean section. Outcome of relaparotomy depends on several factors like general condition of mother, presence of comorbid conditions, blood transfusion facilities, expert obstetrician, intensive care management. In most of the cases, relaparotomies were performed due to intraperitoneal haemorrhage, rectus sheath hematoma and atonic postpartum haemorrhage. So, every obstetrician need to ensure proper hemostasis before closure of abdomen. Angle of uterine incision should be closed with cautious and prophylactic bilateral uterine artery ligation can be done in high-risk groups e.g., h/o preeclampsia, abruption. If the uterus found to be flabby before re-introducing it into the abdominal cavity, prophylactic compression sutures may be applied. Parietal peritoneum need to be closed for early detection of rectus sheath hematoma. Ligation of torn ends of perforating vessels underneath of rectus sheath and suturing of lateral extension of rectus sheath should be done meticulously. Patient's vitals should be monitored closely for first 24 hours especially in high-risk cases, so that early intervention can be performed. If experienced obstetrician and blood transfusion facilities are not available, patient should be referred to higher center as early as possible.

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REFERENCES

1. Levin I, Rapaport AS, Satzor L, Maslovitz S, Lessing JB, Along B. Risk factors for relaparotomy after caesarean delivery. Int J Gynaecol Obstet. 2012;119: 163-5.
2. Khan ANB. Relaparotomy after caesarean section:an analysis of the risk factors, indicationsand outcome Int J Reprod Contracept Obstet Gynecol. 2015;4(3):575-80.
3. Raagab AE, Misbah YH, Brabat RI, Zayed AA, Alsaammani MA. Relaparotomy after caesarean section: risks, indications and management options. Med Arch. 2014;68:44-5.
4. Unalp HR, Kamer E, Kar H. Urgent abdominal reexplorations. World J Emerg Surg. 2006;1:10.
5. Gedikbasi A, Akyol A, Asar E, Bingol B, Uncu R, Sargin A, et al. Re-laparotomy after caesarean section:operative complications in surgical delivery. Arch Gynecol Obstet. 2008;278(5):419-25.
6. Biswas SP, Halder S, Shirin FB. Indications and outcome of relaparotomy after caesarean section. Bang Med J.2012;45:19-23
7. Kessous R, Donor D,Weintraub A, Wiznitzer A, Sergienko R, Ohel I, et al. Risk factors for relaparotomy after caesarean section. J Maternal-Fetal Neonatal Med. 2012;25:2167-70.
8. Seal SL, Kamilya G, Bhattacharyya SK, Mukherji J, Bhattarcharyya AR. Relaparotomy after caesarean delivery:experience from an Indian teaching hospital. J Obstet Gynaecol Res. 2007;33(6):804-9.
9. Shyamal D, Pratim SP, Aradhana K, Partha M, Kirti M, Subhankar D. Early re-operations after gynecological and obstetrical surgery- a five years. J Obstet Gynecol India. 2010;60:507-10.
10. Khan ANB, Kolasseri SS. Re-laparotomy after caesarean section: an analysis of the risk factors, indications and outcome. Int J Reprod Contracept Obstet Gynecol. 2015;4:575-80.
11. Rouf S, Sharmin S, Dewan F. Re-laparotomy after caesarean section:experience from a tertiary referral and teaching hospital of Bangladesh. Bangladesh J Obstet Gynaecol. 2009;24(1):3-9.
12. Ahmed M, Pandya ST, Supraneni T. Return to the operation theatre: an analysis of repeat surgeries in operative obstetrics. J Obstet Gynaecol India. 2016;66(1):117-21.

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