

ORIGINAL ARTICLE

Analysis of Different Factors Associated with Re-Laparotomy After Cesarean Section Deliveries at a Tertiary Care Hospital: A Retrospective Study

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ABSTRACT

Aim: To evaluate factors that are associated with re-laparotomy after cesarean section.**Study design:** Retrospective study**Place and Duration:** This study was conducted at Sheikh Zaid Hospital Quetta, Bolan Medical Complex Hospital Quetta, Jinnah Medical and Dental College Karachi, Sandeman Provincial Hospital Quetta, Mekran Medical College Teaching Hospital Turbat Kech, Pakistan from the year 2019 to 2021**Methodology:** For this research interview sessions with patients were conducted. Clinical examinations were done and Bed Head ticket (BHT) was used for examining the medical history of patients. All the information related to age, parity, indications of caesarian section, and gestational age were observed including time interval of re-laparotomy from caesarian section. Furthermore, information related to clinical features of re-laparotomy, duration of re-laparotomy, and outcomes were also kept for statistical analysis.**Results:** Over two years, we observed 22192 cases of caesarian deliveries. Out of these 37 emergency caesarian required re-laparotomy procedure. We observed non-progress of labor as a major indication of LUCS in the primary caesarian section comprised of 21.62% of cases. Another dominion indication of the caesarian section was reported as CPD (5.40%), meconium stained liquor (MSL) with Bradycardia (10.81%), and PROM in 10.81% of cases. Rectus sheath hematoma was a major indication of re-laparotomy in 29.7% of cases while 27.02% of cases in our study reported peritoneal hemorrhage.**Conclusion:** Findings of our study revealed that unnecessary usage of caesarian surgery on patient leads to severe complications resulting in re-laparotomy. Factors like rectus sheath hematoma, Intra-peritoneal hemorrhage and abscess are the dominant reasons for re-laparotomy.**Keywords:** Caesarian section, Gynecology, Re-laparotomy

INTRODUCTION

Around the world, the caesarian section is a widely used method of delivery.¹ Changes in maternal characteristics like age and obesity increase the practice ratio of primary caesarian day by day. However, factors like epidural anesthesia and labor induction also play important role in enhancing the rate.² Due to high patient requests, this method is now performed worldwide with or without legitimacy.³ Over the last decade, the ratio of caesarian sections increased from 20.7% to 31.1% in the United States. However, the global index reported that almost 25% (1.3 million) of deliveries are performed via caesarian on patient's choice in the United States.^{4,5} Similar results had been observed in the United Kingdom in which the ratio of Caesarians increased from 9% in 1981 to 21% in 2001.^{6,7} Furthermore, the Israel region reported 19.7% caesarian deliveries.⁸ Regardless of the surgical techniques improved, and improvements in anesthesia, aseptic techniques, and facilities for blood transfusion still the safety of caesarian raised many questions. However, this procedure is appreciated due to the improved fetal monitoring technique. Caesarian complications are greater than vaginal complications due to the underlying pathologies and surgical quality.^{9,10} A recent etiological study by the World health organization highlights the issue of permanent complications, disabilities, and maternal deaths in low-income countries which have inadequate medical facilities to manage postoperative complications and conduct safe surgery.¹¹ In India, 45% of maternal deaths were reported due to caesarian complications.¹² Various complications of the caesarian section lead to the re-laparotomy based on the indications. Many indications like rectus sheath hematoma, uterine necrosis, intraperitoneal hemorrhage, intraperitoneal abscess, and bowel ischemia were reported in previous studies.¹³ To manage these cases there is no standard method of re-laparotomy. Various methods like hysterectomy and ligations are used in re-laparotomy.^{14,15} Decreasing the ratio of caesarian can be the only

solution to reduce the morbidity ratio in India because many rural areas do not have a proper health care system.¹⁶ Early diagnosis and immediate treatment of postoperative complications are mandatory to achieve successful outcomes.¹⁷ However, in the past, very limited literature is published relating to re-laparotomy following the caesarian section.¹⁸ Insufficient literature was produced to make a comparison of the risk factors and outcomes of this serious issue.^{19,20} So, for this purpose, we designed our study to evaluate factors associated with re-laparotomy after cesarean section.

METHODOLOGY

Before initiating the research ethical approval was obtained from the research committee of the institutions. In a 2-year duration total of 22192 cesarean deliveries were performed however only 37 cases required re-laparotomy. We excluded all the cases of cutaneous bleeding, and secondary suturing. Cases of rectus sheath hematoma with no complications of intraperitoneal and which do not require the opening of the peritoneum were also excluded. For this research interview sessions with patients were conducted. Clinical examinations were noted. We further used a Bed Head ticket (BHT) for examining the medical history of patients.²¹ Operative procedure and findings were keenly observed. All the information related to age, parity, indications of caesarian section, and gestational age were observed. The Time interval of re-laparotomy from caesarian was also reported. Furthermore, information related to clinical features of re-laparotomy, duration of re-laparotomy, and outcomes were also kept for statistical analysis. Statistical analysis was performed by using the proportion of each case that underwent re-laparotomy with their indication. Meantime of re-laparotomy was also reported. Data related to intra-operative procedures and postoperative outcomes were categorized in a frequency distribution. SPSS version 23 was used for data analysis.

RESULTS

Over two years, we observed 22,192 cases of caesarian deliveries. Out of these 37 emergency caesarian required re-laparotomy procedure. In 56.75% of cases, the mean duration of caesarian was greater than one hour while 43.24% of cases underwent surgical procedures of less than one hour duration. We observed non-progress of labor as a major indication of LUCS in the primary caesarian section comprised of 21.62% of cases. Another dominion indication of the caesarian section was reported as CPD (5.40%), MSL with Bradycardia (10.81%), and PROM (10.81%) (As shown in Table 1). Rectus sheathe hematoma was a major indication of re-laparotomy in 29.7% of cases while 27.02% of cases reported peritoneal hemorrhage. In our study, we observed 10.81% cases of PPH which required re-laparotomy. Intra-peritoneal abscess was the third major indicator of re-laparotomy whereas we also reported 5.40% cases of uterine necrosis and bowel ischemia (As shown in Table 2).

Table 1: Surgical characteristics, duration and indications

Variables	Total number of cases (%)
Caesarian surgery type	
Elective	0
Emergency	37 (100)
Duration of Surgery	
> 1 hour	21 (56.75)
< 1 hour	16 (43.24)
LUCS indications	
Non-progress of labour	8 (21.62)
Cephalopelvic Disproportion (CPD)	2 (5.40)
Meconium stained liquor with Bradycardia	4 (10.81)
PROM	4 (10.81)

Table 2: Re-laparotomy information

Variables	Total number of cases (%)
Indications of re-laparotomy	
Uterine necrosis	2 (5.40)
Bowel ischemia and/or necrosis	2 (5.40)
Rectus sheathe hematoma	11 (29.72)
Intra-peritoneal abscess	6 (16.21)
Intra-peritoneal hemorrhage	10 (27.02)
Abdominal distention + tachycardia + positive USG findings i.e., free fluid in abdomen	4 (10.81)
PPH	4 (10.81)
Secondary	2 (5.4)
Primary	2 (5.4)
Intraoperative findings	
Rectus sheathe hematoma	11 (29.72)
Negative re-laparotomy	8 (21.62)
PPH	
Secondary	2 (5.41)
Primary	2 (5.41)
Bladder based hematoma	1 (2.7)
Intra-peritoneal abscess	
uterine and abdominal cavity abscess	2 (5.41)
Abscess in pelvic	2 (5.41)
Gut loop abscess	1 (2.7)
Abscess in Para colic	1 (2.7)
Uterine necrosis and/or scar dehiscence	2 (5.41)
Bowel ischemia and/or necrosis	2 (5.41)
Intra-peritoneal hemorrhage	
Ruptured bladder	1 (2.7)
ligation stump bleeding	1 (2.7)
bladder based plexus bleeding	1 (2.7)
Rectus sheathe hematoma	4 (10.81)
uterine angle bleeding	4 (10.81)
inferior epigastric artery bleeding	1 (2.7)

DISCUSSIO

In this study, we analyzed the indications and risk factors of the caesarian section which required re-laparotomy. During the study duration total of 22,192 cesarean deliveries were reported. Out of these only 37 cases required re-laparotomy with an overall 0.16%

ratio. These results echo the previous study of Levin et al, .²² Comparing our results with international literature we noticed that study of Ahmed Khan and Kolasser¹³ had 0.13% cases of re-laparotomy following caesarian while Raagab AE²³ had 1.04% and Gedikbasi¹⁹ had 0.12% cases of re-laparotomy in their studies. The emergency caesarian section had a high probability of re-laparotomy. In our study, all the 37 cases had emergency caesarian sections. These results are comparable with the previous study of Seal SL²⁴ in which he observed that 95.5% of cases of re-laparotomy had emergency caesarian while 4.55% had elective caesarian. Our results also coincide with the study of Raagab AE²³ and Ahmed Khan¹³ in which they observed 95.5% and 85.18% cases respectively. We observed non-progress of labor as a major indication of LUCS in the primary caesarian section comprised a 21.62% of cases. These results are parallel to the previous research of Ahmed Khan¹³ in which he reported 29.6% of cases of failure to labor progress which leads to emergency caesarian. Other dominion indication of the caesarian section was reported as CPD (5.40%), MSL with Bradycardia (10.81%), and PROM (10.81%). Rectus sheathe hematoma was a major indication of re-laparotomy in 29.7% of cases while 27.02% of cases of our study reported peritoneal hemorrhage echoes with the previous study of Raagab AE²³ in which he reported hemorrhage in 92.3% of cases. Meanwhile study by Ahmed et al, .¹³ major indication was intra-peritoneal hemorrhage in 44.44% of cases. On the other hand study by Levin et al, ²¹ highlights the peritoneal hemorrhage and PPH as the major indication of re-laparotomy after caesarian section. In our study, we observed 10.81% cases of PPH which required re-laparotomy. Intra-peritoneal abscess was the third major indicator of re-laparotomy in our study whereas we also reported 5.40% cases of uterine necrosis and bowel ischemia. However, rectus sheathe hematoma and intra-peritoneal hemorrhage were the major reasons for re-laparotomy but the parietal peritoneum was not opposed properly during LUCS. A study on Shymal¹⁸ reported 48.93% cases of intra-peritoneal hemorrhage as the leading cause of re-laparotomy. However, subcutaneous hematoma and hemodynamic shock were the major indications in the study of Shinar S.²⁵ We also observed 2.70% cases of bladder-based hematoma, and 21.62% showed negative re-laparotomy. Many studies claim that hemorrhage is the primary reason for re-laparotomy in caesarian cases. Postpartum complications can be reduced by care during transverse cutting and by using the safe procedure of suturing in lower uterine segment incision.

Our results reported 18.91% cases of hysterectomy. Comparing these results with international literature we observed that the study of Ahmed¹³ reported a high percentage of hysterectomies (77.78%) while very few (5.55%) cases had been observed in Lurie's²⁰ study. In our study twenty-four cases required alone ligation of bleeding point whereas in Ahmed's¹³ study only 2 cases need alone ligation out of 27 cases. Comparing our results with the study of Biswas SP²⁶ he reported 38.18% cases of hysterectomy and 61.82% cases required conservative surgery including removal of subject us hematoma and ligation of ovarian and uterine vessels. However, the study of Kessous²⁷ performed a hysterectomy on 31.3% of cases. In our study two (5.40%) unfortunate deaths were reported due to rectus sheathe hematoma underwent drainage of hematoma and hemostasis in bladder based hematoma during re-laparotomy. Comparatively ratio of maternal deaths was low in our study than in Ahmed¹³, Raagab AE²³, and Shymal¹⁸ who reported 18.52%, 11.5%, and 15.38% deaths respectively. Researchers claim that emergency caesarian is one of the leading causes of maternal deaths than elective surgery.²¹ However, the ratio of maternal death is comparatively low.

CONCLUSION

Findings of our study revealed that unnecessary usage of caesarian surgery on patient leads to severe complications resulting in re-laparotomy. Factors like rectus sheathe hematoma,

Intra-peritoneal hemorrhage and abscess are the dominant reasons for re-laparotomy which can be resolved by using the ligations method of re-laparotomy.

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Conflict of interest: No

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