COMPLICATIONS OF CAESAREAN SECTION- A REVIEW

Dr. Manu Goyal1, Dr. Jai Bhagwan Sharma2

Abstract

Caesarean section (CS) rate is increasing very rapidly in the modern era posing great risk to the future obstetric career of a female. Several studies have found that the high rate of caesarean section delivery does not necessarily contribute to an improved maternal health and pregnancy outcome. It carries risk of both short-term and long-term complications in mothers and infants. Major complications are almost double in emergency CS compared to those in elective CS. There can be intraoperative, early postoperative and delayed postoperative complications. The main complications include vascular injury, visceral injury, haemorrhage, sepsis, thromboembolism, anaesthesia complications and rupture uterus in successive pregnancies. The overall mortality rate from caesarean delivery alone is 6 per 100,000 procedures. Data indicate that the maternal mortality rate associated with caesarean delivery is 3-7 times greater than that associated with vaginal delivery.

Keywords: Caesarean section, Complication, Maternal mortality, Postoperative complications

Introduction

Caesarean section is one of the most commonly performed procedures on women, with almost a third of women in many developed countries undergoing caesarean section. The surgical procedure poses short and long-term health risks to mothers and infants, and a scarred uterus poses risks to all future pregnancies and deliveries. In India the rate of caesarean section delivery has increased from 3 percent to 10 percent between 1992-93 and 2005-06 [International Institute of Population Sciences (IIPS), 2007]. The caesarean delivery rate in the U.S. increased from 4.5% in 1965 to 32.3% in 2008. Maternal mortality attributed to caesarean delivery is difficult to calculate, because the incidence of maternal death sometimes is due to underlying disease rather than the surgical procedure. Major complications are almost double in emergency CS compared to those in elective CS. Data indicate that the maternal mortality rate associated with caesarean delivery is 3-7 times greater than that associated with vaginal delivery. The overall mortality rate from caesarean delivery alone is 6 per 100,000 procedures.

The complications of caesarean section are intraoperative, early and delayed postoperative, anaesthetic, neonatal complications and those that present risks during future pregnancy.

Intraoperative complications

Intraoperative injuries are uncommon, but they can still occur despite careful attention to technique. The operative team is responsible for identifying and repairing injuries, or seeking appropriate assistance.

Haemorrhage

The most common cause of haemorrhage during caesarean delivery is uterine atony followed by extension of the incision, uterine rupture, the presence of leiomyomata, placenta praevia or accrete. It is shown in studies that about 1 to 6 women per 100 women undergoing caesarean section require blood transfusion.

Lacerations

Lacerations of the uterus are more common with malpresentations, macrosomia, or if the lower uterine segment is attenuated. Other common extensions are into the broad ligament and vagina. To achieve a satisfactory repair, the full extent of the laceration must be exposed and visualized. The first suture should be placed just beyond the apex of laceration. The remaining sutures can be placed in a locked or interrupted fashion and ureteral peristalsis should be assured.

Urinary tract injury

Bladder injury is more common with a Pfannenstiel incision, repeat caesarean delivery, uterine rupture, and caesarean hysterectomy. It is less common with sharp dissection between the lower uterine segment and bladder than with blunt dissection. Bladder injury is reported to occur in 0.28% (incidence in primary and repeat caesareans: 0.14 and 0.56%, respectively) of caesarean deliveries. In the same study, ureteral injury occurred in 0.007% of caesarean deliveries, compared to a rate of 3% in caesarean hysterectomies. The ureter is most often injured during efforts to control bleeding from lateral uterine lacerations. The dome of the bladder can be repaired with two-layers of 2’0’ absorbable suture. If the base or trigone is involved, then urology consultation is suggested. The ureters should be cannulated to facilitate their identification during the repair. A urethral catheter should remain in place for 5-7 days after cystotomy. Ureteral injury may go unrecognized, but if suspected, it is necessary to dissect the length of the ureter to assure that ureteral peristalsis is present.

Correspondence address

1 Dr. Manu Goyal, Senior Research Associate, Department of Obstetrics and Gynaecology, AIIMS, New Delhi. E-mail: drmanu_8@yahoo.co.in
2 Additional Professor, Department of Obstetrics and Gynaecology, AIIMS, New Delhi
Gastrointestinal Injury

Gastrointestinal injuries occur in 0.04 to 0.08% caesarean deliveries and are more common when patients have adhesions from prior surgical procedures. The risk of bowel injury can be minimized by limiting sharp dissection to peritoneum, and lysis of adhesions using sharp dissection. Full thickness defects of <1cm are repaired in a double-layered transverse closure of a longitudinal laceration. Larger or complex lacerations may require consultation and assistance from a general or colorectal surgeon.

Anaesthetic complications

Despite the advances in anaesthesia and increased use of regional anaesthesia, the number of deaths due to general anaesthesia has not decreased. These deaths are frequently attributed to the inability to intubate or ventilate the patient, and are more common when the patient is obese. Other complications are aspiration, inadequate ventilation, respiratory failure, cardiac arrest, local anaesthetic toxicity, high spinal/epidural-related hypotension, over dosage, and spinal headache.

Side effects such as systemic, local anaesthetic toxicity or spinal headache are caused by technical factors, such as inadvertent intravenous injection or unrecognized dural puncture. Spinal hematoma is a rare complication, and is more likely in patients receiving anticoagulants. Meticulous attention to proper technique reduces the risk of these complications. Other common side effects are hypotension, pruritus, nausea, vomiting and respiratory depression. Hypotension may be treated by administering a vasopressor.

Other side effects have also been attributed to regional anaesthetic techniques, such as long-term backache, effects on the progress and outcome of labour and effects on breastfeeding success.

Early postoperative complications

The most common early complications after caesarean delivery are infections. The rate of infection without prophylactic antibiotic approaches 85%, while the infection rate with prophylactic antibiotics is only about five percent. Hence, routine antibiotic therapy is more than “prophylactic.” A single dose of a first generation cephalosporin or ampicillin is as effective as other regimens, including multiple doses or lavage techniques. Atelectasis is a common source of fever and can lead to pneumonitis. Septic shock, pelvic abscess, peritonitis and septic thrombophlebitis occur in less than two percent of cases.

Endomyometritis

The observed incidence of endomyometritis varies greatly, with estimates ranging from 10% to 50%, compared with 1-3% of vaginal deliveries. In addition, the presence of chorioamnionitis and the duration of the surgical procedure may influence the rate of endomyometritis. Maternal factors of obesity and diabetes mellitus also may increase the risk of infection. Ninety percent of cases will resolve within 72 hours with broad-spectrum intravenous antibiotics.

Wound separation/infection

Wound separation or opening is a common surgical complication after caesarean delivery, occurring in approximately 5% of cases. Of those wounds that open, nearly half are infected. Treatment includes broad-spectrum antibiotics and vigorous wound care. Fascial dehiscence occurs in approximately 6% of open wounds. Fascial dehiscence presents with copious discharge followed by protrusion of bowel through the surgical wound. The wound should be explored, cleansed, debrided, and closed with retention sutures or a mass closure (e.g., Smead-Jones closure), using long-term absorbable suture.

Urinary tract infection

Urinary tract infections are often associated with use of an indwelling urethral catheter. Treatment should be initiated with broad-spectrum antibiotics, and subsequent antibiotic therapy based on urine culture and sensitivity results.

Gastrointestinal complications

An ileus presents with abdominal distension, nausea, vomiting, and failure to pass flatus. Physical examination may reveal the absence of bowel sounds. Radiographic studies show distended loops of small and large bowel, with gas usually present in the colon. Treatment involves withholding oral intake, awaiting the return of bowel function, and providing adequate fluids and electrolytes.

Thromboembolic complications

Deep venous thrombosis (DVT) is three to five times more common after caesarean delivery than vaginal delivery. DVT can progress to pulmonary embolism if untreated. The leading causes of maternal mortality associated with caesarean delivery are deep vein thrombosis and pulmonary embolism.

Septic thrombophlebitis

Septic thrombophlebitis is a diagnosis of exclusion. Persistent and unexplained fever is often the only symptom of septic thrombophlebitis, though some patients complain of pelvic pain. Defervescence on heparin therapy provides effective treatment and confirms the diagnosis.

Length of hospital stay and readmission to hospital

Length of hospital stay is likely to be longer after a CS (an average of 3-4 days) than after a vaginal birth (average 1-2 days). Twice as many women require rehospitalisation as women having normal vaginal birth.
Delayed Postoperative Complications and Future Risks

Uterine Dehiscence and/or Rupture

Dehiscence and rupture of a uterine scar are complications that are diagnosed during a subsequent pregnancy. Even in women planning repeat caesarean, uterine rupture occurs at a rate of 1 in 500 versus 1 in 10,000 in women with no uterine scar.17

Placenta Previa/Accreta

There is a significant increased risk of placenta previa, placenta accreta, placenta previa with accreta, and the need for gravid hysterectomy after caesarean delivery.18 The incidence of placenta praevia ranges from 0.2% to 0.5% for women with a previous vaginal birth and 0.4% to 0.8% for women with a previous CS.19,20 These studies report a 30% to 60% increase in risk of placenta praevia in subsequent pregnancies for women who have a previous CS. One in four patients who undergo repeat caesarean delivery because of placenta previa will require caesarean hysterectomy for haemorrhage caused by placenta accreta. This complication increases with the number of prior uterine incisions.21

Repeat Caesarean Delivery

A major complication of caesarean delivery is that nearly two thirds of patients will undergo caesarean delivery with subsequent pregnancies. Repeated surgeries may also involve adhesions and subfertility, chronic pain syndromes and keloid formation.22

Caesarean Hysterectomy

Indications for caesarean hysterectomy are uterine haemorrhage unresponsive to treatment, uterine laceration that would result in an unstable repair, placenta accreta, laceration of major pelvic vessels, large myomas, and advanced cervical dysplasia or carcinoma. Complications of caesarean hysterectomy are more common during emergent procedures and include increased blood loss and anaesthesia time, infection, blood transfusion, and unanticipated sterility.23

Caesarean scar ectopic pregnancy (implantation within the scar), scar endometriosis, incisional hernia, infertility are other future complications.24,25

Neonatal Risks

The mortality rate of infants delivered by caesarean birth in 1997 was 10.1 per 1,000 deliveries.26 This rate may be partly accounted for by risk factors that led to the caesarean birth, as well as inappropriate timing of delivery in some cases. Iatrogenic prematurity may be prevented by adhering to accurate pregnancy dating parameters. In addition to respiratory distress syndrome, elective surgical delivery without labour may contribute to transient tachypnea of the newborn, a condition that often requires intensive care treatment.27 Lastly, approximately 0.4% of infants delivered by caesarean birth experience accidental lacerations.28 There is increased incidence of readmission to the hospital of the neonates born by caesarean section.29

CORONIS collaborative trial: This was a pragmatic international, fractional, factorial, unmasked, randomised controlled trial that examined different caesarean section techniques in intervention pairs. Each site was assigned to three of the five intervention pairs: blunt versus sharp abdominal entry; exteriorisation of the uterus for repair versus intra-abdominal repair; single-layer versus double-layer closure of the uterus; closure versus non-closure of the peritoneum (pelvic and parietal); and chromic catgut versus polyglactin-910 for uterine repair. The primary outcome was the composite of death, maternal infectious morbidity, further operative procedures or blood transfusion (>1 unit) up to the 6-week follow-up visit. 15, 935 women were recruited in three and half years. There were no statistically significant differences within any of the intervention pairs for the primary outcome. This suggest that all the techniques of caesarean section are acceptable if properly performed, however, longer term follow-up is needed to assess whether the absence of evidence of short-term effects will translate into an absence of long-term effects.27

Conclusion

The rising trend of caesarean section is a reason for immediate concern and deserves serious international attention. The procedure is not benign, associated with serious complications and needs to be performed only when circumstances distinctly require it. One should be very careful and vigilant doing caesarean section, a procedure so commonly performed day and night, but associated with life-threatening complications. Difficult caesarean sections should be performed by a senior obstetric consultant in the presence of senior anaesthetist taking all important precautions, so as to minimize the risk to patient’s health and life. High risk patients should be referred timely to higher centre for proper management of any complication, should it arise.

References


