



A STUDY OF POST OPERATIVE COMPLICATIONS OF CAESAREAN SECTION

Gynaecology

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ABSTRACT

AIMS & OBJECTIVES: To know the incidence and indications of caesarean section. To identify the types of postoperative complications after the caesarean section. To study the risks and precipitating factors which could be evaluated for respective morbidity and mortality. To study the maternal and foetal outcome. To critically evaluate the complication and to find out the solution to reduce them.

MATERIAL AND METHODS: Retrospective study of postoperative complication of caesarean section of 200 cases of caesarean section performed at civil hospital, Ahmedabad during august 2014 to November 2016 is presented. They were observed from the date of admission to date of discharge. This study includes emergency as well as booked cases. They were properly evaluated clinically and the relevant data were collected. The association of the following factors with postoperative complications were evaluated. Epidemiological factors: age, parity, socio-economic status. Antenatal factors: history of antenatal care, anaemia, any obstetric or medical complication, hypertensive disorder, primi or repeat CS, preoperative antibiotics received or not, trial of labour or not. Intranatal factors: gestational period, nature of CS, history of premature rupture of membrane, repeated vaginal examination, prolonged labour, use of antibiotics. Postoperative period: morbidity conditions like pyrexia, wound infection, septicaemia, ileus etc., haemorrhage, urinary tract infection, and postoperative hospital stay.

RESULTS: The incidence of caesarean section in present series was 32.6 % from august 2014 to November 2016. The common age group in this study was 21-25 years (40%). Maximum number of caesarean sections were done in multipara (63.5%). Commonest indication for caesarean section was previous caesarean section (24 %). Most of the cases were done in emergency (86%). Spinal anaesthesia was used in most of the cases (78%). Blood transfusion was given in 61.5% cases. Surgical site infection was the most common post caesarean section morbidity (51%). In emergency caesarean section postoperative complications were more common compared to elective caesarean section. Intraoperative complications were 32.2%. Most common was primary PPH (19%). Minor post-operative complications were more (69%) than the major postoperative complications (31%). Most common long term complication of caesarean section was rupture uterus (16.5%). Anaemia and previous caesarean section were more common precipitating factor for postoperative morbidity. In 65% cases, babies were with mother. Neonatal death occurred in 4.5 % cases. In 15% cases obstetric hysterectomy was done and resuturing was required in 49.5% cases. Antibiotics were given to all patients pre-operatively. In present series, Maternal Mortality Rate was 3%.

CONCLUSION: A significant rise in C-section delivery is found in most of the states in India. In my study the incidence of CS is 32% .The following are the reasons for increase in incidence of CS. The complications like ruptured uterus, low lying placenta, morbidly adherent placenta, bladder injury are more with previous CS so we should try to avoid primary caesarean section as far as possible. Utilisation of ANC, better doctor patient communication, doctor's commitment to reduce the rate of CS, government's intention to develop better health care infrastructure and strict vigilance on the private health institutions may help to reduce the high and increasing rate of caesarean delivery. Antenatal nutrition should be good and iron supplementation should be there so as to reduce the incidence of anaemia postoperative morbidity and mortality. From this study we conclude that caesarean section is lifesaving measure. Liberal use of antibiotics, prophylactic antibiotics, rigid adherence to aseptic principles and use of newer less reactive suture materials would help us to reduce complications in the high risk patients. The availability of blood and blood components is very important during caesarean section. The experienced surgeon should operate complicated cases like adherent placenta and patients requiring obstetric hysterectomy. Good surgical techniques should be followed so that blood loss and trauma to the tissue are minimized. Chief emphasis on prevention of the morbidity would never end.

KEYWORDS

Antenatal patients, caesarean section, post operative morbidity, mortality, prevention of caesarean section .

1. INTRODUCTION

Caesarean delivery is defined as the birth of a foetus through incisions in the abdominal wall (laparotomy) and the uterine wall (hysterectomy). This definition does not include removal of the foetus from the abdominal cavity in the case of rupture of the uterus or in the case of an abdominal pregnancy. In some cases, and most often because of emergent complications such as intractable haemorrhage, abdominal hysterectomy is indicated following delivery. When performed at the time of caesarean delivery, the operation is termed caesarean hysterectomy. If done within a short time after vaginal delivery, it is termed postpartum hysterectomy. Caesarean Section is a common operative procedure in obstetric practice throughout the world to ensure a healthy outcome of the mother & newborn. With the advent of modern anaesthesia, antibiotics and availability of blood transfusions the indications of CS are being continually extended. Also with the implementation of modern technology in labour and neonatology unit the incidence of abdominal delivery has further raised to prevent injury to foetal and maternal morbidities. The rate of Caesarean delivery in the United States has quadrupled from 5% of obstetric delivery in 1964 to more than 23% in 1991. At the present moment there is no comprehensive and extensive study in our country on the incidence of LSCS, though it is being increasingly employed in all hospitals and private clinics.

mother, but the aim is rather directed towards the perinatal survival and prevention of trauma to the child during birth who is going to be one of the few members of a planned family. The indication for caesarean section have been greatly broadened in recent years due to more sophisticated foetal monitoring and laboratory tests indicating placental insufficiency and also due to the revolutionary improvement in overall surgical technique as well as better understanding of the antenatal and intranatal foetal wellbeing but the operation is not without risk in terms of maternal morbidity and the cost for prolonged hospital stay.

There is an often a tendency to take the operation very easily and it must be admitted that the operations are being performed in all institutions for some minor or doubtful indications. This increase the number of post caesarean pregnancy, the risks associated with which are higher than the ordinary pregnancies. A primary caesarean often leads to repeat caesarean section. In India where maternal mortality is high and where we have not been able to put an upper hand over sepsis, all obstetrician should be cautioned against liberal use of CS for flimsy reasons. Abdominal delivery is considered more expensive than vaginal delivery. Hospital charges are also greater because of the length of hospital stay and anaesthesia.

2. MATERIAL AND METHODS

Retrospective study of postoperative complication of caesarean

Recent thinking of the CS being safer for the life of the expectant

section of 200 cases of caesarean section performed at civil hospital, Ahmedabad during august 2014 to November 2016 is presented. They were observed from the date of admission to date of discharge.

This study includes emergency as well as booked cases. They were properly evaluated clinically and the relevant data were collected. The association of the following factors with postoperative complications were evaluated.

- Epidemiological factors: age, parity, socio-economic status.
- Antenatal factors: history of antenatal care, anaemia, any obstetric or medical complication, hypertensive disorder, primi or repeat CS, preoperative antibiotics received or not, trial of labour or not.
- Intranatal factors: gestational period, nature of CS, history of premature rupture of membrane, repeated vaginal examination, prolonged labour, use of antibiotics.
- Postoperative period: morbidity conditions like pyrexia, wound infection, septicaemia, ileus etc., haemorrhage, urinary tract infection, and postoperative hospital stay.

3. OBSERVATION AND DISCUSSION

This is a Retrospective study of 200 cases of postoperative complications of caesarean section performed during the period of August 2014 to November 2016 at civil hospital, Ahmedabad.

The results were variable in various studies and depends upon the type of admission, type of antenatal care taken, the time when patients were referred from sub Centre to well-equipped hospital. Our hospital is draining wide area of small hospitals and many villages, therefore some of figures are bound to be variable than other series. During the above period in this institution there were 18,314 deliveries, of which 5974 were of caesarean section delivery.

Table no 1: Incidence of CS

Total no of Deliveries	Total no of CS N=200	Percentage %
18,314	5974	32.6

In my study incidence of CS was 32.6 % at civil hospital, Ahmedabad. The primary reason for this increase rate has been the increased safety of the operation due to better anaesthesia, antibiotics and blood transfusion plus the attendants' strong desire to deliver a child without any harm and increasing awareness for foetal wellbeing and perinatal mortality.

Incidence of CS rate at civil hospital, Ahmedabad

Years	1992	2013	2014	2015
Caesarean section rate	10.9 %	28.6 %	28.0 %	34.2 %

In an ICMR study in India, the caesarean delivery rate varied from place to place (11.4% in Mumbai to 25.4% in Trivandrum) and from hospital to hospital 10.8% in KEM hospital, Mumbai to 54% in Eden hospital, Kolkata⁹. In 2001 an estimated 21.4% of all deliveries in England and Wales were by CS, a fivefold increase rate since 1971.¹⁰ In 2002, more than one-fourth of all births (26.1%)¹¹, in 2009- (34%) in United States were CS deliveries, a highest ever reported rate 12. The rising trend in CS is definitely not limited to USA and UK. In Brazil, there are hospitals with 100% CS rate, health districts with 85% CS rate, and an entire state with a CS rate of 47.7%¹³. In Delhi, CS rate in teaching hospitals currently ranges between 19-35%. In Sweden, Denmark and Netherlands, the CS rate is still close to 10% with some of the world's lowest maternal and perinatal mortality rates 14. In India cae-sarean section rate was 8.5% (2008), in china, it was 25.9% and in others like in Brazil- 45.9%, UK- 22%, and USA -30.3%⁷.

Table no 2: Booked or Emergency patients

	No of cases N=200	Percentage %
Booked	112	56
Emergency	88	44

This table shows the booked and emergency cases. This shows that most of the patients were booked (56%) cases who had taken antenatal visit in our institute. Rest (44%) were emergency patients who were referred from outside or who did not taken antenatal visit in any hospital.

Table No 3: Age Distribution of Patients

Ages (Years)	No of cases N=200	Percentage %	MMC HOSPITAL %
15-20	16	8	7
21-25	80	40	54
26-30	70	35	23
31-35	21	10.5	13
36-40	12	6	3
41-45	1	0.5	

This table shows the distribution of cases in the various age groups. Youngest patient in this series was 19 years old and oldest was 45 years old. Maximum CS morbidity was in age group between 21-30 years (75%). This is because the childbearing age in our country is 21-30 years.

In other study in mymensingh medical college hospital, Bangladesh showed that 77% of cases were in the age group of maximum fertility i.e., between 20 -30 years. A study in IPGMR showed 89 % amongst this age group¹⁵. The study of Latin American hospital showed maximum incidence > 30 years in primi patients, which might reflect delayed marriage in western countries. 16

Table no 4: Incidence of CS complication In relation to parity

Parity	No of cases N=200	Percentage %
Primipara	61	30.5
Multipara	127	63.5
Grand multipara	12	6

Maximum number (64%) of the CS complications in the present study were in multipara followed by 30% cases with primigravida and 6% cases with multigravida. In my study 8 cases were fifth gravida, one case was sixth gravida and 3 cases were seventh gravida.

Other study in MMCH shows higher incidence of CS complications in multipara (45%). Study in IPGMR 1987, Sir Sallimullah Medical College (SSMC) & Mitford Hospital 1992 also showed higher incidence in mul-tipara (17,18). Civil hospital is also a referral hospital but we have a tendency not to adhere to decision of an early CS.

Table no 5: Risk factor associated to postoperative complication

Risk factors	No of cases n=200	Percentage %
Anaemia	69	34.5
Antepartum haemorrhage	42	21
PIH	55	27.5
Trail of labour	27	13.5
PROM	24	12
Pre term	40	20
MSL	23	11.5
Previous CS	107	53.5
Morbidly adherent placenta	19	9.5
Abnormal presentation	23	11.5
Oligo	11	5.5
Medical causes	12	6
Uterine anomaly	2	1

This table shows the risk factors that leads to the postoperative complication of CS. Major Factor was previous CS (53.5%). This is because of increase in CS rate now a days. This lead to increase in CS in present pregnancy, produce late complications like scar rupture, adhesion, placenta previa, morbidly adherent placenta. Second factor was anaemia 69(34.5%). This also lead to increase in rate of infection, others maternal and foetal complications. Others were PIH 55(27.5%), APH (placenta previa & abruptio placenta) 42(21%), trail of labour 27(13.5%), PROM 24(12%), preterm 40(20%), MSL 23(11.5%), malpresentation 23(11.5%), Oligo 11(5.5%), medical causes 15(7.5%), uterine anomaly 3(1.5%). These risk factors lead to increase in the rate of post CS complications.

In my study medical causes like diabetes mellitus, cardiac diseases, jaundice and pulmonary causes were included.

The surgeon's experience affects the risk of CS-related complications^{18,19}. In a Canadian study, complications related to CS were compared between women operated by general practitioners and women operated by specialists (n= 5792). Major surgical morbidity occurred in 2.5% vs. 1.6%, transfusions need in 5.9% vs. 7.0% and severe morbidity in 3.1% vs. 1.9% of the women¹⁹. An operating time ≥ 38 min increased the risk for surgical site infection 2.5-fold²⁰. In a study from Israel, surgeon experience decreased the risk for infections related to CS²¹.

Table no 6: Indications for CS

Indication	No of cases N=200	Percentage %	MMCH study %	St. Joseph Medical Hospital Moshi, Tanzania %
Previous CS	48	24	16	15
Induction failure	33	16.5	10	-
Foetal distress	21	10.5	15	11
Primi breech	13	6.5	6	-
Placenta previa	32	16	4	3
Pre-Eclampsia/Eclampsia	18	9	12	7
Obstructed labour	4	2	14	30
CPD	5	2.5	6	7
Mal presentation	3	1.5	6	20
Post VVF repair	-	-	1	-
Cord prolapse	0	-	1	-
Multiple pregnancy	3	1.5	-	3
BOH	5	2.5	9	-

Indication for CS in primigravida patients were: induction failure 33(18%), foetal distress 21(11%) & primi breech 13(7%). Previous LSCS 48(24%) was main indication in multigravida. Other indications for LSCS were placenta previa 32(16%), pre-Eclampsia/Eclampsia 18(9%), obstructed labour 4(2%), CPD 5(2.5%), malpresentation other than breech (transverse and oblique lie) 3(1.5%), multiple pregnancy (2 cases twins, one case triplet) 3(1.5%). 14% cases for ruptured uterus.

In my study, induction with cerviprim gel was done in 27 cases and other patients were induced with tablet misoprostol. In 23 cases liquor was meconium stained. In the developed countries the indications of LSCS were breech presentation, foetal distress, previous section & dystocia in the past decade. (15) In the Study of 100 cases in Mymensingh Medical College Hospital, common indications were previous section 16%, foetal distress 15%, obstructed labour 14%, pre-Eclampsia and Eclampsia 12%. The commonest indications in my series for CS were previous CS, induction failure, placenta previa, foetal distress. This correlate with MMCH study.

In the study "Indications for caesarean section in St. Joseph medical hospital Moshi, Tanzania", the prevalence of CS at St. Joseph medical hospital was 18%. The most common indication overall for CS was prolonged or obstructed labour, it counted for 30 %. The indications were different for nulliparous and multiparous women, the most common indication among nulliparous was prolonged or obstructed labour, and the most common indication for multiparous women was previous CS. Malpresentation of the baby (20%), and foetal distress (11%), were also common indications. Repeat sections constitute the commonest indication for LSCS in most other countries.

Table no 7: Number of Repeat LSCS

	No of cases N=200	Percentage %
Previous 1cs	76	38
Previous 2cs	23	11.5
More than 2cs	8	4

This table shows the number of repeat CS. In my study most common indication for CS was previous CS. Of them 76(38%) cases were previous 1 CS. 23(11.5%) cases were with previous 2CS. 8(4%) cases were with more than 2CS of them one case was with previous 4CS.

Table no 8: Type of CS

Type of CS	Cases	%	MMCH study %
Elective	6	3	37
Emergency	172	86	63
Outside	22	11	-

This table shows that postoperative complications were more common in emergency CS compared to elective CS. As CHA is a tertiary health care centre where complicated patients are being referred. Twenty-two (11%) patients were operated for LSCS outside. The majority of the cases of morbidity were associated with emergency cases 172(86%) as compared to elective CS 6(3%).

In MMCH study incidence of elective CS rate was 37% and emergency CS were done in 63% cases. Different studies from India showed incidence of emergency section was 82.7% and 85.92%. (16)

In a study in IPGMR elective LSCS was 52% and emergency LSCS was 48 %.(16) the high incidence of elective LSCS in western countries may be due to electronic foetal monitoring system. (14)

Table no 9: Type of anaesthesia

Type	No of cases N=178	Percentage %
General	38	21
Spinal	140	78.6

In my study most of the CS were done under SA 140(78.6%) as they were mostly emergency CS. Also patient had full stomach and delayed gastric emptying time during labour so chances of regurgitation are more if GA is used. In my study 22 cases were outside delivered so that we didn't know about the use of anaesthesia during surgery.

While caesarean deliveries were historically performed using GA, there is a recent significant move towards regional anaesthesia. Regional block provides more effective anaesthesia with significant maternal and foetal advantages over GA.

Table no 10: Anaesthetic complications

Spinal anaesthesia	No of cases N=200	General anaesthesia	No of cases N=200
Headache	12(6%)	Aspiration pneumonia	-
Hypotension	10(5%)	RTI	15(7.5%)
Meningitis	-	Death	-
Death	-		

In my study spinal headache was most common anaesthetic complications occurred in spinal anaesthesia in 12(6%) cases, hypotension developed in 10(5%) cases. No major complication occurred during CS in my cases.

12(7.5%) patients developed respiratory infection due to GA. As in GA we had intubated the patient and mostly all patients were shifted to ICU for monitoring. No death occurred due to complication of anaesthesia in my study.

Post-operative complications

• Short Term

Table no.11: Intraoperative complication

	No. of cases N=200	Percentage %
Primary PPH	38	19
Injury to bladder	15	7.5
Injury to uterus	10	5
Injury to ureter	1	0.5
Injury to bowel	1	0.5

In present study most common intraoperative complication was primary PPH (19%). Most common cause for primary PPH was morbidly adherent placenta, second was ruptured uterus. Second most common complication was bladder rupture (7.5%). Other were injury to uterus 10 (5%), injury to bowel 1 (0.5%), injury to ureter 1(0.5%). Incidence of intraoperative complication was 32.2% in my study.

Bladder rupture occurred during LSCS in 10 cases, all patients were previous CS, 5 occurred during obstetric hysterectomy.

The incidence of intraoperative complications was 14.8% in a study on (2647) CS in a university hospital in Netherlands 1983-1992. The complications included blood loss ≥ 1000 ml, accidental incision of the foetal skin (1.3%), lacerations of the uterine corpus (10.1%), bladder lesions (0.8%), laceration of uterine arteries or laceration to the bowels (0.5). Complications were more common in emergency operations than elective operations and more common in women with a prior CS than among women without a prior CS.

In a prospective study from Norway (2751) CS in 1998-1999 were analysed. The combined occurrence of intraoperative complications (tissue damage that required extra suturing, bowel/bladder lesion, technical difficulties because of adhesions and other events that were judged as a complication by the surgeon) amounted to 8.1% of the operations. The risk increased with increasing cervical dilation (19.1% at 9-10cm of cervical dilation and 4.0% at 0cm).

In a prospective study on 929 CS in Denmark in 1995-1996, 12.1% of the patients had one or more intraoperative complications, more in association with emergency CS than in elective CS (14.5% and 6.8%, respectively). Uterocervical lacerations (5.1%) and haemorrhage >1000 ml (9.2%) were the most common complications. Bladder laceration occurred in 0.5%, and hysterectomy was needed in 0.2% of the operations.

A prospective study on intraoperative complications in CS was undertaken in Sweden in 1978-1980, including (1319) CS. The overall complication rate was 11.6%. 9.5% were minor complications (blood transfusions, minor lacerations, minor injuries to the infant) and 2.1% were major complications (injury to the bladder, tear in the cervix or vagina, bilateral bleeding of the uterine arteries, lacerations involving most of the corpus uteri, intestinal injury, and injury to the infant with sequel. The complication rate was higher in emergency CS than elective CS).

Table no 12: Minor complications

	No of cases N=200	Percentage %
Fever	50	25
Superficial wound gape	102	51
Paralytic ileus	10	5
UTI	4	2
Postpartum psychosis	8	4
Thrombophlebitis (superficial vein of forearm)	35	17.5
Breastfeeding difficulty	40	20
Pneumonia	4	2

In present study febrile illness 50(25%) and wound infection 102 (51%) topped the list, which means that CS increases the risk of infection. Incidence of minor post op complications were 69% in my study.

In this study 35(17.5%) patients developed thrombophlebitis of superficial veins of forearm. 40(20%) patients developed breast feeding difficulty due to pain over stitch line most commonly. 8 (4 %) patients developed postpartum psychosis, 10(5%) patients developed paralytic ileus, 4(2 %) patients developed UTI, 4(2%) patients developed pneumonia.

3 Swedish studies showing a total post-operative infection rate of 11-20%. The febrile illness which was most common morbidity could be due to pints, thrombophlebitis locally, injection site abscess, breast engorgement, catheter fever which were started on second or third postoperative day and subsided on fifth or sixth day and responded to analgesics and antipyretics. Complications were more common in emergency operations than elective operations and more common in women with a prior CS than among women without a prior CS.

Table no 13: Major complications

	No of cases N=200	Percentage %
DIC	14	7
Deep wound gape	3	1.5
Secondary PPH	7	3.5

Septicaemia	9	4.5
ARF	14	7
Pleural effusion	5	2.5
Hematoma	5	2.5
DVT	1	0.5
Pulmonary emboli	2	1
Pulmonary oedema	2	1

In my study most common major post operative complications were acute renal failure 14(7%) and disseminated intravascular coagulation 14(7%). The incidence of major post op complications in my study was 31%. Others were 2nd PPH 7(3.5%), septicaemia 9(4.5%), deep wound gape 3(1.5%), pleural effusion 5(2.5%), hematoma 5(2.5%), pulmonary emboli and pulmonary oedema 2(0.5%) and DVT 1(0.5) %.

In a Dutch study the intraoperative and postoperative complications in CS over a 10year period (1983-1992) were reviewed and it turned out that 35.7% of the women had postoperative complications. Minor postoperative complications (fever, blood loss 1000-1500ml, hematoma and urinary tract infection) occurred in 31.2%, and major postoperative complications (blood loss exceeding 1500ml, relaparotomy, pelvic infection, thrombosis/embolism) in 4.5% of the operations. The incidence of severe sepsis was 0.4/1000 in a British study and 0.23/1000 in a Dutch study both of which defined sepsis as defining signs of organ dysfunction, hypo perfusion or hypotension.

The risk for endometritis is significantly higher in CS than VD, and higher in emergency operations than in elective ones. Endometritis has decreased dramatically after introduction of prophylactic antibiotics as a common policy, but is still ten times higher in CS than in women delivering vaginally. The total incidence of endometritis related to CS in a US study was 6.9% CS (2.7% and 9.4% in elective and emergency CS, respectively), 15 times higher than for VD. In many studies, endometritis is included in the category "major puerperal infection".

In a Norwegian study on surgical site infections, the total rate of wound infections related to CS was 8.9% during a 30 days follow-up time, but at hospital discharge only 1.8% .The risk of wound infections increased significantly in obese women and when the operating time exceeded 38 minutes. There was no difference in wound infection rate between elective CS and emergency CS.

In a study from Israel on timing and risk factors related to CS, the wound infection rate was 1.8%; it was higher after emergency CS and after CS performed by a resident compared to CS performed by a senior surgeon. Other infections Urinary tract infection (UTI) was diagnosed in 2.5-3.4% of women after elective and non-elective CS. The incidence was lowest in elective CS. In a Danish study on infections related to CS, UTI occurred 2.6% after elective CS and 3.0% after emergency CS. Other complications were related to deliveries and more often to CS than to VD, are reoperations, re-laparotomy, wound hematoma, bowel obstruction, urinary retention and pain. In a prospective Norwegian study on 2752 CS re-operation was needed in 1.7% after a CS performed after ≥ 30 weeks of pregnancy, and in 5.2% performed before 30 weeks of pregnancy. Ileus was reported after 1.5% of CS in a Dutch study and in 0.64% in a Scottish study. Wound hematoma was recorded in 1.2% of women after CS in a study from Israel and in 3.7% of women after CS in a study from Norway. Postsurgical fatigue and postoperative pain may restrict the woman from caring for the newborn.

The deeper the foetal head has descended in the pelvis and the more the cervix had dilated, the more technical difficulties are met and the higher is the risk for intraoperative complications.

In a British study 4%, 6% and 8% of women had new symptoms of anal incontinence after elective CS, emergency CS and spontaneous VD, respectively (Lal et al. 2003). In that study, the total CS rate was 13%, instrumental VD rate 8% and the rate of third degree tears 0.6%.

Long Term Complication
Table no 14:

	No of cases N=200	Percentage %
Morbidly adherent placenta	19	9.5
Uterine scar rupture	33	16.5

Adhesion	22	11
Scar pregnancy	1	0.5
Hernia	1	0.5

In my study long term complications were 36%. Most common complication was uterine scar rupture 33(16.5%) and others were morbidly adherent placenta 19 (9.5%) cases, adhesions 22(11%) cases, scar pregnancy and incisional hernia in 1 (0.5 %) case. In my study 30(15%) cases required obstetric hysterectomy. The most important risk factor for severe haemorrhage is a prior CS, which raises the risk for abnormal placentation and uterine rupture. The reported incidence of peripartum hysterectomy varies from 0.3 to 5.0 per 1000 deliveries in different studies. The incidence is higher for CS than VD and higher in populations where the rate of CS is high. It is also higher for women with prior CS compared to women without a prior CS. In a Dutch study, the incidence was 0.1/1000 for VD, 1.4/1000 for elective CS and 1.2/1000 for emergency CS. Uterine atony has previously been the leading cause for emergency obstetric hysterectomy, but with increasing CS rates world-wide, an abnormally adherent placenta has become more common, and in some studies it has become the most common cause for peripartum hysterectomy. It has been estimated that peripartum hysterectomies due to abnormal placentation are still increasing because of increasing rates of CS. The risk for complications related to peripartum hysterectomy is high. In a study from the UK where national data (the United Kingdom Obstetric Surveillance System, UKOSS data) was used, bladder damage was reported in 12.2%, ureter damage in 4.5%, ovary removal in 9.0% and further surgery in 19.6% of the women who underwent peripartum hysterectomy.

In another large study from the US covering time from 1990 to 2002, 54.6% of the women had an infectious complication afterwards. No significant differences in the frequency of complications between women who undergo total or subtotal hysterectomy have been reported. Also, the risks increase progressively with increasing number of prior CS. Morbidly adherent placenta (or increta/percreta) is the most severe consequence of CS. Although it is rare, it has become more common during the recent years, which is probably due to an increased rate of CS. Maternal morbidity associated with multiple repeat CS (CS without labour) was investigated in a US study. The study showed that severe morbidity increased by every CS, and the incidence of morbidly adherent placenta was 28-fold (6.7%), and that of hysterectomy 14-fold (9.0%) after 6 or more CS compared to the situation at the first CS. In the UK, the UKOSS has provided important data on rare events related to pregnancy and birth. A 12 month cohort including all women giving birth in UK was studied to estimate the incidence and risk factors for abnormally adherent placenta. The incidence was 1.7 per 10 000 maternities, and a previous CS was an important risk factor, together with other previous uterine surgery, IVF pregnancy, increasing maternal age in women without a previous CS and placenta previa. For a woman with at least one prior CS and placenta previa diagnosed prior to delivery, the incidence of an abnormally adherent placenta was as high as 5.8%.

Uterine rupture is a serious complication in pregnancy and delivery. It causes severe morbidity for the mother and the neonate and leads occasionally to maternal or neonatal death. The risk is higher if a woman has had two or more prior CS, if she has had a CS less than 12 months earlier or if the labour has been induced. Uterine rupture is, in most cases, associated with a prior CS.

In a study by Dawn and Chakrabarti at Eden Hospital, Kolkata, the incidence of morbidity was 37.5% and abdominal wound infection was major morbidity (9).

Morbidity following CS is variable due to great variability of indication and associated factors. Danforth (1982) observed that even in the most favourable cases there are variable factors which influence the morbidity. In this study, age group between 21-30 years and multiparous patients were found to be associated with highest incidence of morbidity. The technical skill of the surgeon performing the operation is also a major contributing factor to the morbidity. Danforth mentioned that longer the operative procedure, the greater the likelihood of post-operative complication.

Table no 15: skin Incision

Type of skin incision	No of cases N=200	Percentage %
Vertical	11	5.5
Transverse	189	94.5

In my study this table shows that the maximum number of LSCS performed by transverse skin incision 189 (94.5%). Only 11(5.5%) cases were performed by vertical skin incision.

Table no 16

Surgical site infection	Present study
Treated by dressing & antibiotics	6 3%
Treated by dressing & antibiotics & resuturing	99 49.5%

In my study most common complication was surgical site infection 52.5%. Superficial incisional SSI occurred in 51%, deep incisional SSI occurred in 1.5%.

There were different causes for surgical site infection in my study. Most patients were emergency patients. The causes for increased SSI were multiple more time duration in surgery, more blood loss during surgery, obese patient, anaemia, patient from low socio economic class, infection, surgery performed by junior residents, no use of proper aseptic precaution, long trail of labour, rupture of membrane, meconium stain liquor etc. which lead to increase in chance of infection.

In my study total no of SSI occurred in 105 patients. Of them 3 patients were outside delivered.

In my study one case was outside delivered referred to civil, in civil hospital obstetric hysterectomy done in view of septicemia. Patients wound sutured with tension sutured. On post of day 3 dressing soaked with discharge, dressing done twice, there after suture removed, full length deep site infection present. Swab from the wound gape show klebsiella pneumonia organism which was resistant to all drug except polymyxin B and tegacycline. Then resuturing was done.

In other study "Post caesarean section wound sepsis at Mnazi Mmoja hospital (Zanzibar) research thesis university of Nairobi, 2010" of 200 patients, 30 patients (15%) developed wound sepsis. In this study, the incidence of wound sepsis was found to be high (15%). This compares unfavourably with other institutions with higher rates of caesarean section. Despite Kenyatta National Hospital being a National referral centre and thus having patients with more complications being managed there. The wound sepsis rates are much lower (6.5%-13.3%) 44,45. This is attributed to better management of labour, intra-operative and post-operative care. During the study period 31.0% of caesarean section done were elective. It was shown that emergency caesarean section were associated with higher wound sepsis rate than elective caesarean. Other studies have shown that duration of operation of more than 1 hour and excessive blood loss associated with significantly high rate of wound infection 46,47,48.

In my study Majority of cases 79(39.5%) were stayed in hospital for 11-20 days 79(39.5%). Because of more surgical site infection is present in my study. The patient who stayed for 11-20 days in whom there was wound gape and required resuturing. So again 5-6 days stay extra in addition to 7 days. Bladder injury also required catheterisation for longer duration and extra stay.

Second group of patients who remained for 7/10 days (66%). In our institute we generally removed the stitches on 7/8 day so that patients had to stay for 7/8 days. This is normal stay as we are catering to low socio economic group in institution, patients are coming from great distance, may not have adequate health care at home and so they are not being discharged early. The maximum stay after CS in present study was 60 days. Those who stayed for 7-10 days had minor post-operative complication.

The third group of patients who remained for 20 -30 days included those patients of wound gape who were treated conservatively with dressing for healing for secondary intention and then resutured. It also included the group of patients whose babies required constant neonatal supervision and so they were not discharged because of their babies

who still required treatment.

4th group of patients who remained for 30 days were included deep wound gape, bladder injury or ICU admission.

The frequency of complication varies from one institution to another and it depends on variable indication and other associated factors.

Table no 18: Foetal outcome

FOETUS	No of cases N=200	Percentage %
STILLBIRTH	39	19.5
NICU ADMISSION	31	15.5
WITH MOTHER	130	65
NEONATAL DEATH	9	4.5

In my study 130 (65 %) babies were with mother and 31 (15.5%) babies required nicu admission, out of them 9(4.5%) babies were expired. Intra uterine foetal death were occurred in 39(19.5%) cases. In my study 41 cases were preterm pregnancy, 156 cases were full-term pregnancy. 2 cases were twins pregnancy, one case was triplet pregnancy. Most common cause for IUD was rupture uterus in my study. Driscoll & Foley found equally dramatic decrease in perinatal mortality (PNM) with active management of labour without any increase in the caesarean rate in Dublin. So we can reduce perinatal mortality without rising LSCS rate by risk screening in pregnancy, careful monitoring during labour and by immediate availability of specialized neonatal care (49)

Table no. 19: Blood component

Components	No Of cases N=200
PCV	123
FFP	64
PC	32
CRYOPRECIPITATE	9
WHOLE BLOOD	6

In my study 123(61.5%) patients required blood components. Among them, 123(61.5%) required PCV, 64(32%) patients required FFP, 32(16%) patients required PC, 9(4.5%) patients required cryoprecipitate, 1(0.5 %) patient required whole blood. Civil hospital Ahmedabad is a tertiary health care centre so several patients are referred from periphery. High risk patients were referred to CHA who required more blood components.

Table no 20: Surgical Management

	No of cases N=200	Percentage %
Resuturing	99	49.5
Obstetric hysterectomy	30	15
Repair of uterus	18	9
Uterine artery ligation	7	3.5
Internal artery ligation	2	1
Relaprotomy	11	5.5

In my study 98(49%) patients required resuturing for wound gape, 30(15%) patients required obstetric hysterectomy.

We had performed repair of uterus for rupture in 18(9%) cases.

In my study others cases were managed conservatively. Postpartum psychosis, paralytic ileus, pneumonia, acute renal failure, pulmonary oedema were managed conservatively. 14 cases developed acute renal failure of them 9(4.5%) cases required haemodialysis and rest were managed by higher antibiotics & maintaining of input-output charting. In my study total 11(5.5%) cases required relaparotomy, out of them 5 laparotomy were performed for hematoma formation, 2 laparotomy were performed for septicaemia and others for pph.

In my study 7 cases developed primary PPH in which cases we had managed bleeding with uterine packing, bilateral ligation of uterine artery and by use of uterotonic drugs.

In my study internal iliac artery ligation was done in 2 cases.

30(15%) cases were required obstetric hysterectomy of them 11(5.5%) cases were due to rupture uterus, 16(8.5%) cases were for morbidly adherent placenta. 2(1%) cases were for hematoma developed after

LSCS, 1(0.5%) case was due to septicaemia –outside LSCS.

Most of the obstetric hysterectomies were subtotal hysterectomy.

Maternal mortality rate

Total No of cases	No of cases	Percentage %
200	6	3

Table no 20: Causes of MMR in CS

Causes	No of cases
Shock/haemorrhage	4
Renal failure	2
Pulmonary oedema	1
Pulmonary embolism	1
DIC	3
Eclampsia	2

In my study maternal mortality rate was 6(3%). Most common causes were PPH, DIC, ARF. Other causes were pulmonary oedema, pulmonary emboli, septicaemia, Eclampsia.

One patient was outside ISCS performed for previous 2CS with morbidly adherent placenta referred to civil –In CHA we performed laparotomy f/b obstetric hysterectomy in view of 2nd pph due to morbidly adherent placenta, with repair of bowel and bladder injury. Patient was expired due to DIC, PPH.

Second case was outside ISCS performed for (?) Rupture uterus or abruptio placenta. Patient was referred to civil for ARF. In civil one time HD done then patient was transfer to IKDRC for ARF. In IKD patient was expired due to DIC, ARF.

Third case was primi gravida, Eclampsia- patient had developed acute renal failure, HD was done in civil hospital then patient was transfer to IKDRC for ARF. Patient was expired due to PULMONARY OEDEMA, ECLAMPSIA, and ARF.

Fourth case was second gravida patient, LSCS was done for foetal distress- patient developed atonic PPH during operation. Patient was expired due to PPH, DIC.

Fifth case was previous 2CS, placenta previa, and morbidly adherent placenta –obstetric hysterectomy with repair of bladder rupture done. Patient was expired due to PPH.

Sixth case was LSCS performed due to Eclampsia, previous CS- patient was expired due to ECLAMPSIA, PULMONARY EMBOLI.

In MMCH study there was no MMR.

4. CONCLUSION

A significant rise in C-section delivery is found in most of the states in India. In my study the incidence of CS is 32%. The following are the reasons for increase in incidence of CS. The complications like ruptured uterus, low lying placenta, morbidly adherent placenta, bladder injury are more with previous CS so we should try to avoid primary caesarean section as far as possible. Utilisation of ANC, better doctor patient communication, doctor's commitment to reduce the rate of CS, government's intention to develop better health care infrastructure and strict vigilance on the private health institutions may help to reduce the high and increasing rate of caesarean delivery.

Antenatal nutrition should be good and iron supplementation should be there so as to reduce the incidence of anaemia postoperative morbidity and mortality.

From this study we conclude that caesarean section is lifesaving measure. Liberal use of antibiotics, prophylactic antibiotics, rigid adherence to aseptic principles and use of newer less reactive suture materials would help us to reduce complications in the high risk patients. The availability of blood and blood components is very important during caesarean section. The experienced surgeon should operate complicated cases like adherent placenta and patients requiring obstetric hysterectomy.

All patients undergoing CS should have best possible anaesthesia and best possible surgery. Good surgical techniques should be followed so

that blood loss and trauma to the tissue are minimized. Chief emphasis on prevention of the morbidity would never end.

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