

## AN OBSTETRICS CATASTROPHE INTERNAL BLEEDING FOLLOWING CAESAREAN SECTION

Shahana Begum<sup>1</sup> Rowshan Akhtar<sup>2</sup> Sharmila Barua<sup>2</sup> Bijon Kumar Nath<sup>3</sup>

### Summary

*The objective of this study was to find out the incidence, indication of primary caesarean section, risk factor, place and expertization of the primary surgeon and outcome of the cases suffering from internal bleeding following caesarean section in Chittagong Medical College Hospital. This is a prospective observational study carried out in the department of Obstetrics and gynaecology in Chittagong Medical College Hospital from September 2011 to Feb 2012. Over a period of September 2011-Feb 2012 total 11 cases were reported as internal bleeding. Among them 3 patient underwent primary surgery in this institution and 8 patient were referred from outside as internal bleeding following caesarean section. Relaparotomy was done in 10 cases after resuscitation. One patient died before operation. Abdominal cavity was full with huge clotted and non clotted blood in all cases. Bilateral broad ligament hematoma in 45.45% cases. Loosening and disruption of uterine incision in 27.27% cases. Sprouting vessel from mesentery in 9.09% cases. Bleeding from mesenteric vessels in 9.09% cases. Main surgeries performed were subtotal hysterectomy in 36.27% cases. Total abdominal hysterectomy were done in 18.11% cases. Exploration of haematoma and coagulation of sprouting mesenteric vessels with peritoneal toileting in 18.11% cases. Resuturing of uterine incision in 18.11% cases. 63.63% patients were needed ICU support. 45.45% patients died following internal bleeding after caesarean section due to irreversible shock. Though caesarean section is a common obstetrics practice now a days and a life saving procedure for the mother and child but sometimes it complicates as life threatening situation. Repeat laparotomy required in 10 cases within last 6 consecutive month in gynae unit-III in this institution. Case fatality rate was high 45.45%. Near miss mortality was also common. Majority of these were preventable. Identification of risk factor, adequate knowledge about pelvic anatomy, proper attention during primary surgery, expert decision, early diagnosis, prompt intervention and proper case management during laparotomy may improve the outcome.*

1. Assistant Professor of Obstetrics and Gynaecology  
Chittagong Medical College, Chittagong
2. Associate Professor of Obstetrics and Gynaecology  
Chittagong Medical College, Chittagong
3. Resident Surgeon of General Surgery  
Chittagong Medical College Hospital, Chittagong

Correspondence : Dr Shahana Begum

### Key words

Obstetrics catastrophe; caesarean section; hysterectomy

### Introduction

Caesarean section is an operative procedure whereby the fetuses after the end of 28<sup>th</sup> week are delivered through an incision on the abdominal and uterine walls. The first operation performed on a patient is referred to as a primary caesarean section. When the operation is performed in subsequent pregnancies, it is called repeat caesarean section. caesarean section is the most common obstetric operation carried out in daily obstetric practice and the incidence was dramatically increases over the last few decades globally [1]. With the improvement of operative technologies, anaesthesia coverage and blood transfusion facilities, safety of the caesarean section has increased considerably. Still it is a major operation and is associated with certain risks and complications [2]. So many complication are there among them internal bleeding is the most dreadful and important catastrophe. Haemorrhage is the most commonest complication of any operation, there are three types of haemorrhage :

1. Primary haemorrhage occur at the time of operation,
2. Reactionary haemorrhage: may follow primary haemorrhage within 24 hours (usually 4-6 hours) and is due to rolling (slipping) of a ligature, dislodgement of a clot or cessation of reflex vasospasm.
3. Secondary haemorrhage: occur 7-14 days after operation and is due to infection and separation of sloughing of part of an artery and exposing of bleeding vessels.

Complication rate associated with caesarean section is known to be several fold than that of vaginal deliveries [2,3]. This may be due in part to the pathology underlying the indication for the operation or the quality of surgery.

In some cases, the complications mandates a repeat laparotomy-(Relaparotomy) requiring the patient to return to the operating theater. Most of the time, relaparotomy is performed when the conditions of the patient is too critical to withstand the risk of anesthesia and repeat surgery. Often it requires a good clinical judgement, and is a very difficult to take decision for relaparotomy. On one hand it is the last resort to save a mother's life; and on the other hand, the mother's reproductive capability is sacrificed in most of the cases [4,5].

So relaparotomy may be considered as a near miss maternal mortality situation. There are so many conditions like, postpartum haemorrhage (PPH) following Caesarean section both primary and secondary, intraperitoneal haemorrhage, septicaemia, burst abdomen, rectus sheath haematoma have been encountered as common indications of relaparotomy following caesarean delivery [6,7]. There are very few large scale studies on relaparotomy for internal bleeding following caesarean section, but the maternal mortality and morbidities associated with relaparotomy has not been studied in details.

Chittagong Medical College Hospital is the most well known tertiary referral and government teaching hospital located in the centre of the south east part of Bangladesh dealing with all types of obstetric emergencies referred from urban, peri-urban and rural hospitals, general hospital of Chittagong and different private clinics of this town. The objective of this study was to diagnose earlier and to find out the incidence, risk factors and outcome of the cases requiring relaparotomy for internal bleeding following caesarean delivery either in this institute or referred from outside the hospital. In this study we critically evaluated the cases of relaparotomy following caesarean delivery to identify the risk situations and the factor and precautions to be taken to improve the quality of care for preventing this dreadful complication of caesarean section.

#### Materials and methods

This is a prospective observational study carried out in gynae unit-III under Department of Obstetric and Gynaecology in Chittagong Medical College Hospital (CMCH) from September 2011-february 2012. Over his period 1603 obstetrics patient was admitted in this unit. Among them 8 were with internal bleeding coming from rural area and nearby districts and the rate was 0.49%. Total cesarean deliveries were performed in this unit 931 out of 1412 deliveries. Cesarean section rate was 65.93%. Among the primary caesarean section done in this institution 3 patient were complicates as internal bleeding and the rate was 0.32%. Among the 11 internal bleeding cases relaparotomy was done in total 10 cases and the rate was 0.62% of the section. Nine cases requires relaparotomy wiyhin 24 hours excepting one that was on 3<sup>rd</sup> postpperative day of the primary caesarean section. One patient died before relaparotomy. Chittagong Medical Hospital has a wide catchment area and the referrals are received from other hospital and clinics in this city and from nearby outside peri-urban and rural hospitals.

This hospitals, being a teaching and training institute. Registrar, Assistant registrar, indoor Medical Officers and the Post graduate trainees usually perform the caesarean delivery under the direct assistance and guidance of the seniors like consultants, and assistant professors. Those cases came from outside these were performed by EOC training holder, private gynaecologist and consultant of Chittagong General Hospital. Cases where relaparotomy needed, were done by consultants, assistant professors of gynae and resident surgeon of surgery of Chittagong Medical College Hospital. These are analyzed according to the data of the patients were obtained from interaction of patients party, operation theatre records, post operative follow up and ICU records. The following data were collected- age, parity, indications of primary Caesarean section, place of surgery and quality of the surgeon, time interval from primary Caesarean section to relaparotomy, procedure undertaken on repeat operation, total units of blood transfusion, duration of hospital stay, ICU support, and the outcome following relaparotomy. Data analysis was carried out by mean, median, percentage and relative risk for relaparotomy with 95% confidence intervals. The SPSS was used for analysis. Statistical significance was  $p < 0.05$ .

#### Results

There were a total 931 cesarean deliveries out of total of 1412 deliveries in this institute. During this study period the caesarean section rate was quite high (65.93%) Ten patients (0.62%) required relaparotomy. The ages of the patients ranged from 22 to 34 with a mean of 26 years. The parity ranged from 1 to 3 with a median of 2. All the patients were house wife and none of them were working lady. two patients were very poor and the rest nine came from average socio economic condition. Only 4 patients had regular antenatal cheek up, 5 had irregular follow up, and 2 patients did not have any checkup. Eight patients had caesarean section at term, 2 with gestational age less than 37 weeks and 1 patients were post dated. five patients had one caesarean section delivery before while 2 patients had 2 previous Caesarean delivery in the past and 1 due to breech presentation and 1 due to transverse lie and another two due to primigravida with prolonged labour. Five of the cases had primary elective cesarean section and six were done on emergency basis.

Table I describes the indication of primary Caesarean section and with their percentage in case of internal bleeding in this study population. Of these 11 cases of internal bleeding the commonest indication of primary Caesarean section was repeat Caesarean for 7 cases among them 5 (45.45%) patient had previous history of one caesarean section, 2 (18.11%) patient had previous history of two caesarean section. 1 case (9.09%) for breech presentation, another 1 (9.09%) for transverse lie and another 2 (18.11%) for primigravida with prolonged labour with foetal distress. Carefully observe that the primary indication itself a risk factor for repeat laparotomy were clearly seen from this study.

Table II summarizes the presentation of the patient, 8 (71.18%) presents with primary PPH with hypovoluemic shock. 3 patient (27.26%) presents with severe anaemia with abdominal distention.

Table III describes the peroperative findings - all of the patient (90.90%) were full with profuse intra abdominal bleeding with clotted and non clotted blood, 5(45.50%) patient had bilateral broad ligament haematoma, loosening of uterine incision in 3(27.27%) cases, sprouting vessels from mesentery in 2 (17.27%) cases, and uterus was atony in 6 patient (54.54%).

Table IV summarizes the procedures undertaken at relaparotomy, main surgeries performed at relaparotomy were subtotal hysterectomy in 4 cases (36.27%), 2 (18.11%) patient had total abdominal hysterectomy, exploration of broad ligaments haematoma and coagulation of the bleeding vessels in 2(18.11%) cases and resuturing of the uterine wound in 2(18.11%).

Table V summarizes the time interval between primary caesarean section and relaparotomy. Total 9(81.80%) cases had relaparotomy within 24 hours. Only 1(9.09%) patient had relaparotomy on 3<sup>rd</sup> postoperative day.

Table VI describes the case fatality in details. A total of 5 patient were died, among them 1 died before relaparotomy and 4 patients died following relaparotomy with a case fatality rate about 45.45%.

Table VII shows that after relaparotomy 7 patient (63.63%) were send to ICU among them 3(42.85%) patients were recovered and 4(57.14%) patients were died.

**Table I :** Indications of primary surgery

Indications	Number of cases (n=11)	Percentage (%)
Previous history of 1 caesarean section:	5	45.45
Previous history of 2 caesarean section:	2	18.11
Breech presentation:	1	9.09
Transverse lie:	1	9.09
Prolonged labour with foetal distress:	2	18.11

**Table II :** Presentation of the patient

Symptom and sign of the patient	No of cases (n=11)	Percentage (%)
Primary PPH with hypovolumic shock	8	71.81
Abdominal distention with severe anaemia	3	27.27

**Table III :** Per- operative findings

Per-operative Findings	Number of cases	Percentage (%)
Abdominal cavity full with clotted and non-clotted blood	10	90.90
Bilateral broad ligament haematoma	5	45.50
Loosening of uterine incision	2	18.11
Atonic uterus	6	54.54
Sprouting vessels	2	17.27

**Table IV :** Procedure undertaken during relaparotomy

Procedure undertaken relaparotomy	Number of cases n (=10)	Percentage (%)
Subtotal hysterectomy	4	40
Total abdominal hysterectomy	2	20
Exploration of haematoma and coagulation of sprouting vessels with peritoneal toileting .	2	20
Resuturing of uterine incision.	2	20

**Table V :** Time interval from primary surgery to relaparotomy

Time interval from primary surgery to relaparotomy	No of the ) cases (10	Percentage (%)
Within 24 hours	9	90
3rd postoperative day	1	10



**Table VI :** Case fatality following internal bleeding of caesarean section

Cause of death	Number of death (n=5)	Time interval between relaparotomy to death
Before operation	1	
After operation:		
Haemorrhagic shock	2	4 hours
Septicaemia with haemorrhage	2	8 days

**Table VII :** ICU stays after relaparotomy

ICU stay (n=7)	Number of patient	Percentage (%)
Recovered	3	42.85
Died	4	57.14

### Discussion

In this descriptive study the incidence, indications, risk factors of cases requiring relaparotomy for internal bleeding following cesarean deliveries and case fatalities associated with reopening of the abdomen were analyzed. There were very few published case series in the world literature regarding this relaparotomy after caesarean section and one in Bangladesh. Along with the rising trends of cesarean deliveries, especially at tertiary level, obstetricians are now dealing with this complicated procedure associated with high risk of morbidities and mortalities.

One study from a teaching hospital in Ghana with a caesarean section rate of 17% showed a relaparotomy rate of 0.7% out of a total of 36012 deliveries [7]. Another study from India showed a relaparotomy rate of 0.33% out of 12967 caesarean deliveries (Caesarean rate 34.8%) [5]. In Bangladesh at Dhaka Medical College Hospital study caesarean rate was 48.43% during their study period and repeat laparotomy was noted in 0.63% of caesarean section. In our hospital caesarean section rate is 45.16% and relaparotomy was noted in 0.62%. So the incidence was found more or less similar in these three studies where relaparotomy done for internal bleeding, although the caesarean rate was quite high in our which is hospital similar to the Indian study. In Ghana study commonest indication of caesarean section where relaparotomy were needed were cephalopelvic disproportion and obstructed labour. In Bangladesh study and Australian study where relaparotomy were needed for so many reasons like postpartum haemorrhage: primary and secondary

PPH, rectus sheath haematoma, uterine sepsis with septicaemia, internal haemorrhage and burst abdomen but in my study relaparotomy done only for internal bleeding after caesarean section. This findings demands special attention along with the rising trend of caesarean section. The management and findings were also similar with Dhaka Medical study and Indian study where relaparotomy were needed for internal bleeding but in my study it is differ from other three studies where conservative surgery by vessel ligation were attempted but failed who required a third laparotomy and eventually needed hysterectomy but in my study third laparotomy was not needed. In an Australian study PPH was found the commonest reason for laparotomy [8]. When conservative measure failed, laparotomy followed by step wise ligation of vessels- B- Lynch sutures, bilateral uterine ligation, ligation of uterine ovarian anastomosis near the uterine cornue and uterine iliac artery ligation has been recommended but effective only in 50% of the cases [9,10,11].

Although post caesarean pregnancy was the commonest indication of primary operation in this study and most of the cases were referred from outside. Detailed history revealed that the cases which were associated with prolonged labour and malpresentation and caesarean section was done in second stage of labour with an impacted presenting part could be technically difficult and is associated with increase trauma to the lower segment and lateral extension of tear to involve uterine vessels, cervix, vagina and bladder which increases haemorrhage and infection [12]. In our study bladder injury were accidentally happened in two cases along with the total abdominal hysterectomy. Laceration of the lower segment of the uterus can be avoided during delivery of the malpresentation by gentle, slow and steady traction of the foetus during breech extraction. All extension and laceration should be looked for careful repairing in every cases to avoid subsequent traumatic PPH [13].

Along with the rising trend of caesarean section rate the incidence of secondary PPH following caesarean section is also increasing. In the study of Ghana and Indian showed that both of them were initially tried conservative management in the form of uterine massage, oxytocic such as injection oxytocin, ergometrine and misoprostol, fluid replacement and blood transfusion. In case of uterine atony we also explored the uterus for injuries and did intrauterine packing with ballon catheter. When the conservative management failed to stop the bleeding the surgical interventions were undertaken.



Table I it was evident that in 10 cases were needed relaparotomy, among them 3 had primary surgery in this institution by trainees doctors and 8 were referred from outside so we see most of the patient come from outside. Indication of majority of primary operation was repeat caesarean section. This study shows that With liberalisation of rising incidence of repeat caesarean section associated more complication during operation and this type of complication also associated with prolonged and obstructed labour. Malpresentation demands some special attention during operation because it can causes drastic complication both mother and baby. so whatever the indication is arises for caesarean section surgeon must give full attention during primary surgery.

From table II it was observe that most of the patients (8 out of 11 patient) present with primary PPH and hypovolumic shock so, once the operation is done and if the patient is present with such type of complication that can be a prediction towards internal bleeding should be considered. Another presentation of this study was abdominal distention with severe anaemia after caesarean section and all patient of this study were received 3-4 unit of blood before relapatotomy, so we can suspect about this type of disasters if anaemia is not corrected in spite of getting sufficient amount of blood transfusion.

From Table III shows that frightful peroperative findings like broad ligaments haematoma, sprouting vessels, loosening of uterine incision, atonic uterus associated with huge amount of intra abdominal bleeding.

From table IV shows that conservative surgery was possible to done in 4 cases Exploration of broad ligament haematoma and coagulation of sprouting vessels with peritoneal toileting in two cases, resuturing of uterine incision was done in 2 cases. In this study most of the patient (6 patient) need hysterectomy ,among them total hysterectomy (2) and subtotal hysterectomy(4) were done respectively. Repair of bladder injury in 2cases along with the hysterectomy with previous history of caesarean section who were present with internal bleeding. All the patient were transfused 5-6 unit of fresh blood during relaparotomy and average operation time was about 2-3 hours under general anaesthesia.

From table V, VI and VII it was evident that 9 patient require relaparotomy within 24hours of primary operation excepting one which was performed on 3<sup>rd</sup> postoperative day and after operation 7 patient was sent to ICU. In spite of intensive support 3 patient were recovered and 4 were died. Among them 2 patient died within 4hours after relaparotomy due to

irreversible shock following profound haemorrhage and 2 patient were died from septicaemic shock with haemorrhage within 8days of operation.

Maternal mortality was quite high in patient who suffered from internal bleeding following caesarean section . In this study it was 45.45%(5 out of 11) whereas mortality rate was 25% In Dhaka study ,9.1% in African study and 12.1% in Indian study [1,6,7]. Among the maternal death in my study all cases referred from outside.

Those who survive (6 patient out of 11) also developed postoperative complication like wound infection in 2 cases and required secondary suture and hospital stay was more, one patient developed renal failure who was improved by dialysis . All of the patients were suffering from febrile morbidities. Hospital stay of all the patient was about 15-30 days.

### Conclusion and Recommendations

The present study provides a profile of internal bleedings cases and their risk association in a tertiary teaching hospital of Bangladesh. Although the caesarean delivery can be a life saving operation, serious complication could arise following the operation which mandates the patient to return to operation theatre. The maternal mortality and morbidity after relaparotomy are quite common. Obstetric patients who return to theatre all face near miss mortality and potential risk of death. These cases demands judicial decision and supervision by expert surgeon, good surgical technique to minimize organ damage. In the postoperative period these cases should be managed in the intensive care unit.

Finally the lower segment caesarean section rate will reduce the overall rate of complication including relaparotomy. At the time of taking to decision for caesarean section counseling the risky patients about the possibilities of these dangerous consequences must be remembered. With the above perspective we have some recommendations-

- 1) Once primary PPH is developed following operation, all surgeon should utmost trying to find out the exact cause and patient should be monitored every 30 minutes interval- if any abnormalities are detected in the vital sign like tachycardia or hypotension, and anaemia is not corrected in spite of receiving adequate amount of blood transfusion then the suspicion arises about internal bleeding.
- 2) Assistant must be expert enough and be very gentle during handling of the tissue.
- 3) Gossiping during surgery and hurries should be avoided.
- 4) All members of surgical team should give full attention during primary surgery.

- 5) After closing of the uterine wound and reposition of the uterus within the abdominal cavity if it was exteriorized and the wound should be checked for proper haemostasis . It should be observed for at least 5 minutes for any collection or not.
- 6) Ovarian pedicle should be checked.
- 7) Senior should be informed if any doubt, as a beginner surgeon must keep a drain in situ.
- 8) EOC trainees who performed caesarean section outside the hospital have some refresher training facilities.

#### Disclosure

All the authors declared no competing interest.

#### References

1. Rouf S., Siddique SF, Mian A H, Begum A, The Rising Trend for Caesarean Birth Rate in a Tertiary Referral and Teaching Hospital, Bangladesh Journal of Obstetrics and Gynaecology 2000; 15; 15-23.
2. Depp R. Caesarean Section and other Surgical Procedures. In Gabbe SG, Niebyl JR, Simpson JH, editors, Obstetrics: Normal and Problem Pregnancies, 2<sup>nd</sup> edition. New York: Churchill Livingstone; 1991; 657-672.
3. Rubin GL, Peterson HB, Robert RW, McCarthy BJ, Terry JS, Maternal death after Caesarean Section in Georgia. Am J Obstet Gynaecol, 1981; 15: 139(6): 681-685.
4. Kant Anita, Wadhvani Kavita, Emergency Obstetric Hysterectomy, J Obstet Gynaecol India 2005; 55(2): 132-134.
5. Rouf S, Nasreen N, Begum J, Begum R, Begum A, Shamsunnahar, Emergency Peripartum Hysterectomy in Developing Country. Journal of Bangladesh College of Physicians and Surgeons, 2002; 20(2); 68-75.
6. Seal SL, Kamilya G, Bhattacharyya SK, Mukherjee J and Bhattacharyya AR. Relaparotomy after Caesarean Delivery: Experience from an Indian Teaching Hospital, J Obstet Gynaecol Res. 2007;33(6): 804-809.
7. Seffah J.D , Relaparotomy after Caesarean Section International of. International Journal of Gynaecology and and Obstetrics 2005; 88: 253-257.
8. Ashton P, Beischer N, Cullen J, Ratten G, Return to Theatre-Experience at the Mercy Maternity Hospital, Melbourne 1971-82, Australia NZ J Obstet Gynaecol. 1985; 25, 159-169.
9. Allahabadia G. Hypogastric Artery Ligation: A New Perspective. J Gynaecol Surge. 1993;9;35-42
10. Clark SL, Phalen JP, Yeh S-Y. Hypogastric Artery Ligation for Obstetric Haemorrhage. Obstet Gynaecol. 1985; 66:353-363.
11. Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Gilstrap LC III, Wenstrom KD. (Eds) Williams Obstetrics, 2<sup>nd</sup> Edition, New York: McGraw-Hill, 2005; 828-854.
12. Fasubaa DB, Ezechi OC, Orji Eo etal. Delivery of the Impacted Head of the Fetus at Caesarean Section after Prolonged Obstructed Labour. A Randomized Comparative study of Two Methods, Obstet Gynaecol 2002; 22:375-378.
13. Ghosh TS, Kwawukume Ey. Delivery of the Impacted Fetal Head at Caesarean Section:- Surgical Technique. Ghana Med J 1992; 28:423-425