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EMERGENCY PERIPARTUM HYSTERECTOMY

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ABSTRACT

Background: Emergency hysterectomy in obstetric practice is generally performed in the setting of life-threatening situations.

Objective: To review cases of peripartum hysterectomy in respect of indications, risk factors and complications.

Design: A retrospective study.

Setting: King Edward VIII Hospital, Durban.

Subjects: Seventy one cases of Caesarean and post-partum hysterectomy performed between January 1993 and June 1998.

Results: The rate of peripartum hysterectomy was 1:836 deliveries. Fifty eight per cent of the hysterectomies followed Caesarean section. The main indications for hysterectomy were ruptured uteri, uncontrollable haemorrhage from atonic uteri, sepsis and morbidly adherent placenta. Perinatal mortality was high and there were four maternal deaths.

Conclusion: Peripartum hysterectomy is a necessary life-saving operation. Prevention of complications that give rise to emergency hysterectomy should decrease maternal and fetal morbidity and mortality.

INTRODUCTION

Obstetric haemorrhage is one of the five major causes of maternal deaths in South Africa(1) and much of the morbidity and mortality from this condition is eminently preventable. The main cause of obstetric haemorrhage is ruptured uteri, particularly in developing countries. Although there has been a decline in the incidence of ruptured uteri in the last decade due to the promotion of antenatal care, provision of protocols of management of labour and early recourse to Caesarean section, the clinical impression at King Edward VIII Hospital (KEH), South Africa, is that emergency peripartum hysterectomy is still a commonly practised procedure.

Caesarean hysterectomy was first proposed by Cavanelli in 1786(2), but it was only in 1896 that Storer first performed a Caesarean hysterectomy in a term human pregnancy(3). It has been used as a life saving procedure since that time. Initially, Caesarean hysterectomy was associated with high rates of maternal mortality but the introduction of modern anaesthesiology, potent antibiotics and improved surgical techniques and suture materials has led to a decline in maternal mortality. Caesarean hysterectomy, however, is still associated with significant morbidity. The aim of our study therefore, was to review the hospital records of all patients who had peripartum hysterectomy in the last five and half years (1993 -1998) in order to establish the causes and to propose protocols for management.

MATERIALS AND METHODS

This was a retrospective study in which hospital records of all patients who had emergency peripartum hysterectomy during January 1993 to June 1998 were reviewed. Demographic data and indications for hysterectomy were analysed. Descriptive studies were utilised and results are presented as frequencies, mean, range and percentages.

RESULTS

Hospital records of seventy one women who had emergency peripartum hysterectomy during the study period were reviewed. During this period, there were 59,380 deliveries. The emergency peripartum hysterectomy rate was therefore 1:836 deliveries. The demographic data of all patients is shown in Table 1. The mean age of patients was 30 (17 - 45) years, the mean parity was 3 (0 - 9) and the mean gestational age was 36 weeks (27 - 42).

Table 1

Demographic data

Parameter	Mean	Range
Age (years)	30.1	17-45
Parity	3	0 - 9
Gestational age (weeks)	36.4	27/40 - 44
Birth weight (kgs)	3.1	0.6 - 4.3

The indications for emergency peripartum hysterectomy are shown in Table 2. The commonest indication was ruptured uteri (23/77: 32.4%). Of these, 19 were found at the time of Caesarean section, performed for a variety of indications as shown in Table 3. Details of six patients who had ruptured uteri following induction of labour are given as follows: (i) twenty four old para 2 had IOL for aprotinuric hypertension at 38 weeks gestation. Prandin gel® was inserted on three occasions, six hours apart. At the next assessment, six hours after the last insertion of prostaglandin, the patient was found to be in hypovolaemic shock, the fetal heart was not heard and the cervix was fully dilated. A laparotomy was performed for suspected uterine rupture, and she delivered 2.75kg fresh stillborn; (ii) twenty seven year old para 3 with a post term pregnancy was induced by syntocinon titration intravenously following rupture of membranes, since her cervix was almost fully effaced, and 3 cm dilated. She progressed to 8 cm dilatation at which time there were signs of cephalopelvic disproportion. A Caesarean section was therefore performed. An extensive tear of the uterus involving the vagina was found intra-operatively. She delivered a 4.3kg live infant; (iii) Twenty eight year old para 2 at term underwent IOL for hypertension. She had two dinoprostone tablet insertions on three occasions, four hours apart. She had a precipitate labour and delivered a 3.2kg fresh stillborn, within three hours after last insertion. Labour and foetal heart rate were not monitored and the patient was found to have a defect in the left uterine wall during exploration for postpartum haemorrhage. Hysterectomy was done; (iv) thirty two year old para 2 with an intrauterine death at 27 weeks gestation. She had prior cervical ripening with dinoprostone tablets in the ward. She subsequently had induction with misoprostol

Table 2

Indications for hysterectomy over different time periods

Indication	1993 - 1995	1996 - 1998	Total
Haemorrhage	13	9	22
Placental abnormalities	5	4	9
Rupture	10	13	23
Sepsis	3	14	17
Total	31	40	71

Table 3

Indications for emergency Caesarean section

Indication	No. of patients	%
Fetal distress	8	20
Antepartum haemorrhage	10	24
Failed trial of scar	2	5
Cephalopelvic disproportion	14	34
Rupture	7	17
Total	41	100

tablet 200 µg. Thirteen hours later the patient was found to have vaginal bleeding with signs of hypovolaemic shock. Laparotomy and hysterectomy were done, and a 600g macerated stillborn was delivered; (v) twenty four year old para 1 had IOL for prolonged pregnancy. Contractions started immediately after insertion of 1 mg Prandin gel® and five hours later, she delivered a 3.6kg live baby vaginally. She subsequently had postpartum haemorrhage, and on examination, a diagnosis of ruptured uterus was established; (vi) thirty two year para 3 underwent IOL for pre-eclampsia. She had two insertions of Prepidil gel®, six hours apart. She had precipitate labour and advanced from 1cm to full dilatation within five hours. She had shoulder impaction and a 3.4 kg live baby was delivered. Following examination of the genital tract for postpartum haemorrhage, a defect in the left lateral wall was discovered. She had a hysterectomy and; (vii) other indications for peripartum hysterectomy were haemorrhage from atonic uterus (n = 22); sepsis (n = 17) and morbidly adherent placenta (n = 9).

Table 4

Perinatal outcome per indication for hysterectomy

Outcome	Indication				
	1	2	3	4	
Alive	20	9	4	14	
Stillbirth	1	0	16	2	
Neonatal death	1	0	3	1	
Total	22	19	23	17	71

Indication: 1 = Haemorrhage; 2 = Morbidly adherent placenta; 3 = Ruptured uterus; 4 = Sepsis

The perinatal mortality was 24/77 (33.8%), with 19 stillbirths and five early neonatal deaths. Most of the stillbirths occurred in women diagnosed to have ruptured uteri (Table 4). The overall maternal mortality rate was 4/71 (5.6%), the clinical details of these patients are as follows: (a) forty-year old para 4 who had a Caesarean section for foetal distress, had a hysterectomy for uncontrollable haemorrhage secondary to uterine atony. She developed consumptive coagulopathy and renal failure. She spent eleven days in intensive care unit, during which time she had repeated packed cells and platelet transfusions. She died of multiorgan failure; (b) the second and third patients both had hysterectomy because of fulminant sepsis. One of a 26 year old para 2 who delivered at home, and subsequently presented to hospital with puerperal sepsis. Hysterectomy was done on third day after delivery for progressive deterioration in condition. She tested positive to HIV antibodies. The other was a 22-year old para 2 who had a Caesarean section for cephalopelvic disproportion at an outlying hospital. She was referred to KEH on day five for sepsis and deterioration in haematological investigations. Her HIV antibody status was unknown. Both patients needed intensive care unit

(ICU) management post-operatively, and despite repeated attempts to correct anaemia and coagulopathy, as well as re-laparotomy for abdominal washout, both subsequently died of sepsis. They spent fifteen and twelve days in ICU respectively; (c) thirty year old para 3 with one previous Caesarean section and laboured at home in the index pregnancy. She presented to hospital with antepartum haemorrhage and emergency Caesarean section was done where extensive uterine rupture was found. After hysterectomy and recovery in ICU, she died eight days later of consumptive coagulopathy, renal failure as well as sepsis. She was HIV antibody positive.

Complications from peripartum hysterectomy are shown in Table 5; and these include febrile morbidity, renal impairment from shock, and sepsis. All except eight patients required transfusion of blood products. Six patients required more than ten units of packed cells. Forty eight per cent required intensive care monitoring immediately post operatively. The mean duration of stay in the intensive care unit was 3.8 days.

DISCUSSION

Peripartum hysterectomy is generally performed in life-threatening situations and its incidence varies geographically. The incidence quoted in the English literature varies between 1:303 -1:5000 deliveries(4-7). Most reports on peripartum hysterectomy however, are from the Middle East or Asia(6,7). The present study is one of the few from Africa to report on peripartum hysterectomy, and the incidence of 1:836 deliveries places it in the lower ranking of reports on this procedure(8-12). Shava *et al*(8), in a study at Ga-Ranguwa Hospital, Pretoria, a similar setting as ours, reported an incidence of 1:541 deliveries. Most reports on the causes of emergency hysterectomy in Africa have concentrated on ruptured uteri; in our study, the rate for ruptured uteri was 0.39/1000 deliveries. This demonstrates a reduction in the incidence of ruptured uteri at KEH, Durban, as the last report from this centre found an incidence of 1.06/1000 deliveries in 1985(9).

Although the incidence of ruptured uteri is 0.39 per 1000, this figure did not include women who had ruptured uteri which were repaired. Probably a fairly accurate figure as the policy at KEH in most instances is to perform total abdominal hysterectomy rather than a repair, as advocated by Mokgokong *et al*(13), except in patients of low parity without evidence of sepsis, and with easily repairable tears in the uterus. The most probable reasons for the reduction in the incidence of ruptured uteri are the provision of community-based obstetric services manned by a specially trained cadre of midwives (the Advanced Diploma Midwives), early detection of cephalo-pelvic disproportion and recourse to Caesarean section, as well as the provision of free maternity care from 1994.

Of the twenty eight cases of uterine rupture, eight (34.8%) had a previously scarred uterus, whereas in the study by Lachman *et al*(9) from the same institution in

Durban, this was fifty per cent. This figure is still worryingly high as it may reflect that not all patients with previous Caesarean section scars are referred to base hospitals and transport systems may not be adequate. It would appear that more emphasis needs to be placed on educating women with "scarred uteri" of the need for attending antenatal care early in gestation in subsequent pregnancies. In addition, attention needs to be given to community transport systems during the antenatal period. Further, even in this modern age, early admission at 38 weeks should be offered to women who live far from the base hospital, who do not have their own transport and those who are known to be poor antenatal attenders. It is only in this way that we will reduce further the incidence of ruptured uteri.

Of great concern are the six patients who had ruptured uteri following induction of labour. Their mean parity was 2, and they had no other risk factors predisposing to uterine rupture in labour (such as previous Caesarean section, myomectomy or previous evacuation). Similar cases have been reported in the literature(14-16). In the six cases reported here, prostaglandins were used for induction of labour. Use of such agents need careful monitoring of the foetal heart rate and uterine activity. If continuous electronic monitoring is not available, then "one to one" nursing is imperative as it is not only high risk patients who are likely to end up with hyperstimulation and ruptured uteri, but also low risk patients as demonstrated in our series.

Perinatal mortality from ruptured uteri remains high. In our study, it was 79%, a figure even higher than reported from our centre in the previous study(9). Early presentation of patients to a hospital, as well as high index of suspicion by health care professionals will lead to an increased perinatal salvage rate.

Uncontrollable haemorrhage due to uterine atony was the second commonest indication for peripartum hysterectomy (30.9%). Other reports have found it to be the leading indication(17, 18). Most of these occurred at the time of Caesarean section. As bleeding is usually from the placental bed, hot packs and ligation of identifiable bleeders were employed to control the bleeding, with concurrent use of uterotonic agents like syntocinon infusion and intramyometrial prostaglandin $F_2\alpha$ ($PGF_2\alpha$). Bimanual compression and packing of the uterus were also employed in a number of cases. More recently, stepwise devascularisation of the uterus has been recommended(19). Such surgical steps may be time consuming particularly in a patient who is shocked, and may lead to greater morbidity than if a hysterectomy is done immediately following the placing of haemostatic sutures and the application of pressure to stop haemorrhage. This being a retrospective analysis, poor documentation made it difficult to evaluate in detail, procedures performed at the time of operation.

The third commonest cause of emergency hysterectomy in our study was sepsis (n = 17; 23.9%). Shava *et al*(8) reporting on a similar patient profile, had an even higher figure of 33.3%. Prophylactic antibiotics are

used in emergency Caesarean sections at our centre, and it is very likely that the progression of sepsis was due to compromised immunity. Ten of the patients with sepsis gave consent for antibody testing to the human immunodeficiency virus (HIV) and nine were antibody positive. The antibody status of the other patients was unknown. This high figure of emergency hysterectomy for puerperal sepsis is of extreme concern as the recent Interim Confidential Report on Maternal Mortality in South Africa has shown that puerperal sepsis is an important cause of maternal mortality and that HIV infection plays a major role (1). Consideration ought to be given to treatment of concomitant genital infections, and prophylactic antibiotic treatment, should probably be used in all pregnant HIV antibody positive mothers. Fifty per cent of the maternal mortality in our series was due to puerperal sepsis.

Most studies on emergency peripartum hysterectomy have found morbidly adherent placenta to be a frequent indication for this procedure (20-22). In our series, this accounted for 12.7% of cases. This might be due to the fact that sepsis and ruptured uteri are relatively common in our part of the world. Nonetheless steps should be taken to exclude morbidly adherent placenta in patients with placenta praevia and previously scarred uterus, ultrasonically.

The maternal mortality rate of 5.6% (4/71) in our study compares favourably with that of 0 - 7% found in other studies (20,23), as does our overall perinatal mortality of 33.8%, where other studies have a range of 24 - 38% (6,24). Complications from peripartum hysterectomy are high because of the increased blood supply to the pelvic organs during pregnancy, the distorted pelvic anatomy as a result of an enlarged uterus, and the fragile tissue (23). Forty eight per cent of our patients had morbidity and this compares well with other studies (4,17,18). The incidence is influenced by many factors including the type of surgery, indication for surgery, the population being studied and the use of peri-operative antibiotics. In our setting, it is routine practice to give prophylactic antibiotics to all emergency Caesarean sections as well as all elective procedures which deviate from normality of plan.

Most of our patients had total hysterectomy which is recommended by most authors (3,4,20,21). Murta *et al* (25) found that there were no statistically significant differences between subtotal and total hysterectomy regarding operative time, need for transfusion, number of intra and post-operative complications and maternal mortality. In a series by Zelop *et al* (20), all patients who required a second operation to control vaginal bleeding had subtotal hysterectomy. Other authors have noted long-term complaints of vaginal discharge, acyclic bleeding and the need for cervical cytology associated with subtotal hysterectomy (4,26). In developing countries like South Africa, therefore, where cervico-vaginal infection rates are high and carcinoma of the cervix is the commonest malignancy in the population, total hysterectomy is recommended in such circumstances.

CONCLUSION

Emergency peripartum hysterectomy is not a rare event. Whilst some of the factors that may precipitate this life-saving procedure may be anticipated, it is not uncommon to have uncontrollable haemorrhage that is not expected. For this reason, all practising obstetricians should be familiar with the technique of Caesarean hysterectomy. Patients at risk of postpartum haemorrhage should have active management of the third stage of labour. Labour should be properly monitored, especially in a patient with previously scarred uterus, who is not only at risk of rupture of the uterus, but also retained placenta which may be morbidly adherent. Patients known to have antibodies to HIV infection should be managed as aseptically as possible, with early use of antibiotics. Caesarean section places these patients at an even higher risk of widespread sepsis, and prophylactic antibiotics should be prescribed. The high incidence of complications in patients undergoing emergency peripartum hysterectomy places a burden on the health sector as a whole. Early involvement of experienced staff in high risk cases should minimise the morbidity from shock and haemorrhage, and the operative complications of an often technically demanding procedure. Finally, all health professionals involved in maternity must be made aware that even in this modern age, induction of labour at term with prostaglandins is not without complications such as ruptured uteri. Proper and intensive observations must be made available during any induction of labour.

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