

Peripartum hysterectomy in RIPAS Hospital: Experience over an 11-year period

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ABSTRACT

Introduction: Peripartum hysterectomy refers to hysterectomy that is performed for complications of vaginal delivery or during caesarean section. A common reason for peripartum hysterectomy is post partum haemorrhage (PPH). The aim of this study is to assess the incidence, indications and risk factors for emergency peripartum hysterectomy carried out at RIPAS hospital over an 11-year period. **Materials and Methods:** Patients who had undergone emergency peripartum hysterectomy over this 11-year (1999-2009) period were identified from the operation registry and the medical records were retrospectively reviewed. Data on maternal age, parity, gestational age, indication for peripartum hysterectomy, the type of operation performed and estimated blood loss were collected. **Results:** During the study period, there were a total of 59,974 deliveries (83.8% vaginal deliveries and 16.2% caesarean section deliveries) and 6,530 emergency obstetric surgeries. There were a total of 33 emergency peripartum hysterectomies performed accounting for 0.5% of all emergency obstetric surgeries performed. This translated to an overall incidence rate of 5.5 peripartum hysterectomies per 10,000 deliveries: 1.2 per 10,000 vaginal deliveries (n=6) and 27.9 per 10,000 caesarean sections deliveries (n=27). All peripartum hysterectomies were performed for massive PPH. The most common underlying pathology was placenta praevia (57.57%) followed by uterine atony. The risk for peripartum hysterectomy was high if placenta praevia was associated with previous scarred uterus as there is more chance of accreta. **Conclusion:** Our peripartum hysterectomy rate is comparable to what has been reported in the literature. The rate was higher for caesarean section deliveries. All peripartum hysterectomies were performed for PPH.

Keywords: Emergency hysterectomy, placenta praevia, postpartum haemorrhage, peripartum complications, uterine atony

INTRODUCTION

Hysterectomy is termed 'peripartum' when it

is performed following life threatening complications of vaginal or caesarean section deliveries. Emergency peripartum hysterectomy, defined as hysterectomy carried out within 24 hours of delivery is considered a marker of 'near-miss' mortality.^{1, 2} The reported inci-

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dence of peripartum hysterectomy varies between countries. In developing countries, reported incidence ranges from 2 to 6 per 1,000 deliveries compared to 0.2 to 2.7 per 1,000 in developed countries.³ Most are performed to arrest haemorrhage as a result of intractable uterine atony or lower segment bleeding in association with placental implantation or uterine incision.⁴ Obstetric haemorrhage or post partum haemorrhage (PPH) remains an important cause of maternal mortality and morbidity especially in underdeveloped and developing nations. Therefore, measures to arrest the bleeding should be fast, prompt and preferably in experienced hands to avoid complications.

To date, there are no published data on the incidence of peripartum hysterectomy in Brunei. The objectives of this retrospective study were to assess the incidence, indications and risk factors for emergency peripartum hysterectomy performed over an 11-year period (1999 to 2009) in the Raja Isteri Pengiran Anak Saleha (RIPAS) hospital, the only government tertiary referral centre in Brunei Darussalam.

MATERIALS AND METHODS

Setting: RIPAS Hospital is the largest tertiary referral hospital located in the capital city, Bandar Seri Begawan and has a 550 beds capacity. RIPAS hospital with all available subspecialties has a population catchment of approximately 270,000. All complicated pregnancies are usually delivered in RIPAS Hospital.

Patients: All patients who had undergone emergency peripartum hysterectomy in RIPAS Hospital over an 11-year (1999 to 2009)

period were retrospectively identified from the Department of Obstetrics and Gynaecology operation registers. Their medical records were retrieved and reviewed in detail. Data on maternal age, parity, gestational age, types of delivery, history of caesarean sections, indications for peripartum hysterectomy, estimated blood loss and replacement, and the outcomes were collected. We also collected the data on the total and types of emergency obstetric operations carried out over the same period.

RESULTS

There were a total of 59,974 deliveries over the 11-year period. Of these, 50,287 vaginal and 9,687 (16.2%) were caesarean section deliveries. Over the same period, a total of 6,530 emergency obstetric operations were carried out and the most common was emergency caesarean section delivery (Table 1). Peripartum hysterectomy accounted for 0.5%.

The overall incidence of peripartum hysterectomies was one in 8,361 ($n=6$) or 1.2 per 10,000 vaginal deliveries and one in 358 ($n=27$) or 27.9 per 10,000 caesarean sections deliveries.

The mean age of the patients was 32.9 years old (range 21 to 43) with a majority ($n=21$) less than 35 years old. The mean

Table 1: Types of emergency operation carried out over the study period.

Emergency surgeries	N (%)
Emergency caesareans	5,996 (91.8)
Manual removal of placenta	359 (5.5)
Haematoma evacuation, cervical, vaginal tear suturing	142 (2.2)
Peripartum hysterectomy	33 (0.5)
Total	6,530 (100)

Table 2: Types of delivery among patients who had peripartum hysterectomy.

Types of deliveries	n (%)
Vaginal	5 (15.2)
Vacuum	1 (3.0)
Caesarean section	27 (81.2)
Elective	7 (21.2)
Emergency	20 (60.6)

parity was 4.1 (range 1 to 9) with nine cases being grand-multiparas. The mean gestational age at peripartum hysterectomy was 35.3 (range 25 to 40) weeks.

The types of deliveries among these 33 patients are shown in Table 2.

All peripartum hysterectomies were carried out for massive PPH. The mean estimated blood loss was 4,281 ml (range 1,300 to 10,000) and the mean units of blood transfused were 12 units (range 2 to 46).

The mean operating time was 3.15 hours and the mean hospital stay was 8.9 days. Overall, 57.6% (n=19) of the patients were admitted to the intensive care unit.

Among the types of delivery, caesarean section poses the highest risk for massive PPH and hysterectomy. Twenty-two hysterectomies were carried out immediately after

caesarean section. Five cases (15%) required re-laparotomy for PPH post-caesarean sections and all proceeded to hysterectomy.

The most common underlying pathology was placenta praevia and the risk for PPH was high if placenta praevia was associated with previous scarred uterus as there is more chance of accreta. Sixteen cases had subtotal hysterectomies and 17 had total hysterectomies. There was overall no difference in the morbidity. The aetiologies of PPH are shown in Table 3.

The complications encountered with PPH included disseminated intravascular coagulopathy (DIC), bladder injury, acute kidney injury, pulmonary embolism, and one maternal death (Table 4).

DISCUSSION

Peripartum hysterectomy is usually considered the last resort in the management of complications of deliveries. The incidence of peripartum hysterectomy has been increasing over time from 0.25 in 1987 to 0.82 per 1,000 deliveries in 2006.⁵ In our experience, there were a total of 33 emergency peripartum hysterectomies over an 11-year period, giving an incidence of 0.55 per 1,000 deliveries. This is comparable with what has been

Table 3: Aetiologies of postpartum haemorrhage (PPH).

Aetiology of haemorrhage	n (%)
Placenta praevia	19 (57.6)
Alone	6
With previous scarred uterus	13
With accreta	12
Uterine Atony	10 (30.3)
Traumatic haemorrhage (uterine, cervical tear)	4 (12.1)
Atony+ traumatic haemorrhage	1 (3.0)

Table 4: Complications encountered among patients who had peripartum hysterectomies.

Complications	n (%)
Bladder injury	3 (9)
Disseminated intravascular coagulopathy	4 (12)
Acute kidney injury	2 (6)
Pulmonary embolism	1 (3)
Wound dehiscence	1 (3)
Maternal death	1 (3)

reported in the West. A study from the United Kingdom looking over a 16-year period reported an overall incidence of 0.36 per 1,000 deliveries (a total of 18 cases with 14 post caesarean section deliveries and four after normal vaginal deliveries).⁶ A study from the United States reported an incidence of 0.56 per 1,000 deliveries.⁷ Our rate is also comparable to the rates reported from the South-east Asian region, but the reported rates vary between countries. A study from Malaysia over a three-year period reported an incidence of 1.07 per 1,000 deliveries whereas in Singapore, the reported rate was 0.17% (1.7 per 1,000) for caesarean sections and 0.02% (0.2 per 1,000) following a vaginal delivery.⁸ The rates are probably likely to vary even within a country and this depends on the size of the hospital. Based on improvement in healthcare, the latest rates are likely to be lower.

Similar to what has been reported in the literature, all peripartum hysterectomies in our institution were secondary to massive PPH.^{10, 11} The most common underlying pathology was placenta praevia (57.57%) followed by uterine atony. Smith and Mousa reported that placenta accreta was the leading cause of PPH.⁶ Bedalon *et al.* also showed PPH was the leading cause of hysterectomy. The factors associated with increased risk for PPH included placenta praevia (adjusted OR [aOR] 7.9, 95% CI 4.1-15.0), abruptio placenta (aOR 3.2, 95% CI 1.8-5.8), retained placenta (aOR 43.0, 95% CI 19.0-97.7), uterine atony, uterine rupture, and thrombocytopenia.⁷ In most reported studies, the underlying reported aetiologies for massive PPH requiring peripartum hysterectomies were similar.^{10, 11}

Peripartum hysterectomy rate was higher after caesarean section. In our study, similarly to the one reported from Singapore, (1 in 358) this compared to post vaginal deliveries (1 in 8,361).⁸ Others have also found higher rates of peripartum hysterectomy after caesarean delivery both in primary and repeat caesareans.^{5, 9} Bedalon *et al.* reported the risk for hysterectomy compared to vaginal delivery was higher in repeat caesarean (aOR 7.9, 95% CI 5.8-10.7), primary caesarean delivery (adjusted OR 4.6, 95% CI 3.5-6.0) and vaginal delivery after caesarean (adjusted OR 1.9, 95% CI 1.2-3.0).⁷ This is not unexpected as prior caesarean delivery results in uterine scarring resulting in increased risk of abnormal placentation, including placenta praevia, and placenta accreta in subsequent pregnancies. For patients who had delayed hysterectomy, PPH and infection were strongly significant factors.⁷

The morbidity of peripartum hysterectomy (blood loss, blood transfusion requirement, surgical complications, length of hospital stay and intensive care unit admissions) are very high compared to other common obstetric surgeries. Almost all our patient experienced some form of complication that included a maternal death, pulmonary embolism, sepsis, acute renal failure and requirement for intensive care admission. This is again not unexpected considering that the underlying aetiologies themselves were unexpected and emergency surgeries are always associated with higher morbidity and mortality. Other reported complications include cardiac arrest, pulmonary oedema, bladder injury, disseminated intravascular coagulopathy.^{6, 8} Although hysterectomy is a lifesaving operation, the procedure itself is associated with

high morbidity.

Major PPH is not unexpected in placenta praevia. As the placenta is situated in the lower segment of the uterus, a segment of the uterus that does not contract and retract as much as the upper segment, this increases the risk for massive PPH. The risk is higher in the presence of uterine scarring from previous caesarean sections and placenta accreta. Although definitive diagnosis of placenta accreta can only be made during surgery, antenatal colour doppler study has a high sensitivity and positive predictive value in its diagnosis. Therefore, use of ultrasound scanning can help identify patients at risk for complications.

Due to the high morbidity associated with placenta accreta, the Royal College of Obstetricians and Gynaecologists recommends a care bundle when operating on such cases. This care bundle includes the involvement of a consultant obstetrician directly supervising delivery, consultant anaesthetist directly supervising anaesthetic at delivery, availability of blood and blood products, multidisciplinary involvement in pre-operative planning, discussion, a consent that includes the possibility of unplanned interventions (hysterectomy or leaving the placenta in place) and local availability of a level two critical care bed.¹² The Royal College also states that management of massive haemorrhage should occur in the normal way, including the use of uterotonic agents, which can be very helpful in reducing the blood loss associated with bleeding from the relatively atonic lower uterine segment. Advanced techniques may also be employed and the use of bimanual compression or even aortic compression can

buy time for extra help to arrive, or for the anaesthetist to 'catch up' haemodynamically in the unstable woman.

Atonicity of the uterus not responding to primary medical management with uterotonic agents such as oxytocin, ergometrine and prostaglandins usually will require hysterectomy as a last resort. In selective cases (stable cases) uterine artery embolisation can be used and may avoid a hysterectomy. In patients with high risk of atonicity (grand multi-parity, big baby, over distended uterus etc) active management of the third stage of labour should be undertaken to reduce the blood loss. Availability of blood and blood products and timely replacement of them are other measures which all labour wards should be familiar with.

Apart from anticipating risk factors for common complications, obstetricians should also be aware of the less common and non-obstetric related complications. Equally, for patients at risk of peripartum hysterectomy or already had peripartum hysterectomy, they should also be cognizant of complications such as those reported in our study and these should be anticipated. This will allow early diagnoses so that timely and appropriate managements can be delivered. Following the care bundle suggested, involvement of the other specialties should be sought early to avoid complications.

There are several limitations with our study. First, it was a retrospective study and this is inherently associated with limitations such as missing or incomplete data. Second the sample size may be considered small. However, our centre is the main referral

centre and handles a large proportion of the national deliveries and as such is representative for the country.

In conclusion, our peripartum hysterectomy rate is comparable to what has been reported in the literature. The main reason for peripartum hysterectomies was for massive PPH. This rate was higher following caesarean section compared to vaginal deliveries. More needs to be done to address these complications such as early anticipation of complications in those with risk factors and this also includes the reduction of the number of caesarean section deliveries.

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