

13 years' experience of emerging postpartum hysterectomy in a Portuguese tertiary-care hospital

Histerectomia pós-parto emergente – revisão de 13 anos

Joana Ferreira Carvalho*, Juliana Rocha*, Odete Figueiredo**, Sílvia Torres**, Olímpia Carmo***
Centro Hospitalar do Tâmega e Sousa

Abstract

Overview and Aims: Postpartum hysterectomy is a life-saving procedure in cases of severe postpartum hemorrhage which may be otherwise unmanageable. This study was conducted to determine the incidence, indications, outcomes and complications of postpartum hysterectomy performed in a Portuguese tertiary-care hospital.

Study Design, Population and Methods: Medical records of the patients who underwent postpartum hysterectomy, between January 2000 and December 2013, were reviewed retrospectively. Characteristics of the current pregnancy and delivery, indications for hysterectomy, operative complications, postoperative conditions and maternal and neonatal outcomes were also evaluated.

Results: 15 cases of postpartum hysterectomy were identified out of 40.490 deliveries (0.37/1.000 deliveries), namely 9 after cesarean and 6 after vaginal delivery. Indications for postpartum hysterectomy were uterine atony (11/15), placenta previa (3/15) and uterine rupture (1/15). In addition, 1 case of intraoperative bladder injury was reported, as well as 1 case of relaparotomy due to persistent intra-abdominal bleeding and 4 cases of disseminated intravascular coagulopathy. All patients received blood transfusions and 1 maternal death occurred after septic shock.

Conclusions: The incidence of postpartum hysterectomy was lower than similar data found in the majority of studies. The most frequent indication was uterine atony. Maternal morbidity and mortality were also lower than that reported in the literature.

Keywords: Obstetric emergency; Life-saving procedure; Postpartum hysterectomy; Postpartum hemorrhage; Uterine atony.

INTRODUCTION

Postpartum hysterectomy is a rare obstetric procedure, usually performed as a life-saving measure in cases of uncontrollable obstetric hemorrhage¹⁻⁵. Nowadays, the overall incidence of postpartum hysterectomy is 0.05%, although there are considerable differences all over the world, depending on modern obstetric practices, standards and the awareness towards antenatal care⁶. Literature suggests a postpartum hysterectomy incidence rate of 0.24, 0.77, 2.3 and 5.09 per 1.000 deliveries, as stated by Sakse⁷ (Denmark), Whiteman⁸ (United States), Bai⁹ (South Korea) and

Zeteroglu¹⁰ (Turkey), respectively. There is a lack of Portuguese data on this topic and to our knowledge there is no information available on the national incidence of postpartum hysterectomy in Portugal.

This retrospective study aimed to examine the incidence, indications, outcomes and complications of postpartum hysterectomy carried out in a Portuguese tertiary-care teaching hospital, between January 2000 and December 2013.

METHODS

Medical and pathological records of the patients who had undergone emergency postpartum hysterectomy due to postpartum hemorrhage, between January 2000 and December 2013, in a Portuguese tertiary-care teaching hospital, following vaginal or cesarean delivery, were reviewed retrospectively.

Cases were ascertained via a review of the hospital

*Interna Complementar de Ginecologia/Obstetrícia, Serviço de Ginecologia/Obstetrícia

**Assistente Hospitalar de Ginecologia/Obstetrícia, Serviço de Ginecologia/Obstetrícia

***Chefe de Serviço de Ginecologia/Obstetrícia, Directora do Serviço de Ginecologia/Obstetrícia

obstetric database. Likewise, operating theatre and pathology records were also checked so as to ensure that no cases were skipped. Emergency postpartum hysterectomy was defined as a hysterectomy performed in a life-threatening condition following postpartum hemorrhage. All deliveries were performed after 24 weeks of gestation and the hysterectomy was carried out shortly (within hours) after delivery.

According to a protocol implemented 15 years ago in our department, designed to manage postpartum hemorrhage, several conservative medical and surgical modalities were attempted so as to control hemorrhage before hysterectomy. Postpartum hysterectomy was only performed as a life-saving procedure in cases of uncontrollable bleeding following conservative measures.

Information obtained from medical records included demographic details, previous obstetric history, details of the current pregnancy and delivery, indications for postpartum hysterectomy, outcomes of hysterectomy such as intraoperative and postoperative complications, length of hospital stay, amount of blood transfused and neonatal outcomes. Maternal complications such as maternal death and serious hemorrhagic, neurological, urological, infectious, respiratory, renal and thromboembolic complications were also checked.

Statistical analysis was done using the software package SPSS 11.5 for Windows. Further frequencies and percentages were given as descriptive statistics.

RESULTS

During the 13-year study period, a total of 40.490 deliveries were registered. Fifteen postpartum hysterectomies were performed following intractable obstetric hemorrhage which were unresponsive to conservative treatment, thus representing an incidence of 0.37 per 1.000 deliveries (0.037%); nine postpartum hysterectomies were performed after cesarean and six after vaginal delivery.

Average maternal age was 32. Eight women (53.3%) were ≥ 35 years old, while the others (46.7%) were ranked in the age group of 18-35. No cases were found in the maternal age <18 years. Ten women (66.7%) were multiparous, of which only one case was reported as being a grandmultiparous woman (parity>3). There were five primiparous women (33.3%). The average gestational age was 39 weeks (range 37-41). The average birth weight of the fifteen newborn babies was 3.491 gr (range 2.550-4.390 gr).

Nine postpartum hysterectomies (60.0%) were performed after cesarean birth. Six were elective, while three were intrapartum cesareans. Indications for elective cesareans were placenta previa (three cases), abnormal presentation (one case), history of two previous cesarean sections, the latter occurring 20 months ago (one case) and maternal ophthalmic pathology with formal indication for cesarean delivery (one case). Intrapartum cesareans were carried out because of dystocia (two cases) and nonreassuring fetal status (one case).

Six postpartum hysterectomies (40.0%) were performed after vaginal delivery. Among these, four cases were reported of vaginal delivery with vacuum device (26.7%), whose indications were nonreassuring fetal status, in three cases, and absence of descent of the presentation, in one case.

According to our protocol, pharmacological agents and surgical procedures were used in an attempt to control hemorrhage and, therefore, avoid hysterectomy. All patients received oxytocin and prostaglandins. B-Lynch suture was performed in three cases, while uterine packing was made in three other cases. Pelvic vessel ligation was made in one case, while multiple square sutures were used in another case. Postpartum hysterectomy was performed in eleven cases (73.3%) due to uterine atony, followed by placenta previa and/or accreta in three cases (20.0%), and uterine rupture in one case (6.7%).

Further data on the operative complications, postoperative conditions and maternal and neonatal outcomes is shown in Table I. One case of intraoperative

TABLE I. OPERATIVE COMPLICATIONS, POSTOPERATIVE CONDITIONS AND MATERNAL AND NEONATAL OUTCOMES

Maternal and neonatal complications	Number of cases (%)
Maternal morbidity	
Intraoperative bladder injury	1/15 (6.7%)
Relaparotomy for haemoperitoneum	1/15 (6.7%)
Disseminated intravascular coagulopathy	4/15 (26.7%)
Blood transfusions	15/15 (100%)
Admissions to the Intensive Care Unit	15/15 (100%)
Postoperative infection	1/15 (6.7%)
Maternal mortality	
Maternal death after postoperative septic shock	1/15 (6.7%)
Neonatal complications	
Neonatal morbidity and mortality	0/15 (0%)

bladder injury was reported in a patient with a previous cesarean section and one case of relaparotomy due to persistent intra-abdominal bleeding, both with good resolution. Four cases of disseminated intravascular coagulopathy that reversed with prompt treatment were identified. All patients received blood transfusions, with the average number of units of blood transfused being nine (range 4–35). Immediately after surgery, all patients were sent to the Intensive Care Unit. The average postoperative hospital stay was six days (range 5–25). There was one maternal death because of infectious postoperative complications following the development of septic shock. No cases were reported of neonatal morbidity and mortality.

DISCUSSION

The reported incidence of postpartum hysterectomy in the literature varies from 0.24 to 5.09 per 1.000 deliveries. Therefore, our incidence of 0.37 per 1.000 deliveries seems to be consistent with these studies^{7–10}.

There has been a significant change in the indication of postpartum hysterectomy over time. Traditionally, uterine atony was the most common indication, although recent studies seem to indicate that abnormal placentation is replacing uterine atony^{4,11}. In 1984, Stanco reported that 43.4% of their postpartum hysterectomies were done because of uterine atony, while 33.9% were due to placenta previa. A study conducted in 1993 from the same institution stated that their primary indication was placenta accreta (45%), followed by uterine atony (20%)¹². Also, a more recent study reported that the main indications for hysterectomy were abnormal placentation (50%) and atonic postpartum hemorrhage (32.8%)¹³. Our study shows that in our center the most frequent indication still remains uterine atony, followed by placenta previa, a feature that can be explained because of our low rate of cesarean delivery over time – average rate of 26%. During the period of our survey, there has been a steady decrease in the number of cesarean sections, which seems to explain the low incidence of placenta previa. Despite the above-mentioned reports, similar results have been described in the literature which were also explained by the low rate of cesarean delivery¹⁴. The high prevalence of uterine atony as the main cause can also be explained by the characteristics of our women – the most of them were multiparous with more than 35 years old and had an induced labor, factors that in-

crease the risk of uterine atony^{15–17}. In all the reported cases, we have tried conservative measures aimed at controlling the hemorrhage. Data analysis leads us to the conclusion that there is a considerable variability in the indications of postpartum hysterectomy worldwide which seems to vary according to the obstetric practice in each center.

Postpartum hysterectomy is associated with high complication rates^{2,18,19}. Bladder injury was found in one patient, a woman who had undergone a previous cesarean delivery. Thus, urological injuries appear to be related to scarring and secondary adhesion of the vesicouterine space following previous cesarean section. In comparison with Smith's²⁰ 6%, Yucel's²¹ 8.8%, Zelop's²² 9%, Zeteroglu's¹⁰ 12.5% and Kwee's² 15%, the urinary tract injury rate in our study is 6.7%. Reoperation for persistent postoperative bleeding was performed in one case (6.7%), compared with Özden's²³ 6.8%, Smith's²⁰ 11%, Zeteroglu's¹⁰ 12.5% and Kwee's² 25%. Four women (26.7%) developed disseminated intravascular coagulopathy in our series, which is lower than the 33% rate, previously reported by Smith and Mousa and Lau^{20,24}. The febrile morbidity rate of 6.7% is also lower as compared with the literature, which is as high as 50% in some series^{20,25–28}. There was one maternal death (6.7%) in our study. Lower rates of 4% and 4.5% were cited by Kwee² (Netherlands) and Zorlu²⁹ (Scandinavia), whereas much higher rates of 20% and 23.8% were found by Hamsho and Alsakka³⁰ (Qatar) and Umezurike³¹ (Nigeria). After such analysis comparing our results with those described in the literature, it is our belief that our lower maternal morbidity and mortality rates may be related to a high rate of antenatal follow-up with an effort to identify the patients at risk of developing such postpartum complication, as has happened in the cases of placenta previa. In the other cases, however, in which the bleeding appeared unexpectedly, the success of its resolution resulted from an optimal obstetric intervention. In fact, particular emphasis should be laid on the fact that such management is usually run according to a clinical action protocol that provides a standardized procedure to evaluating and monitoring the patient, with a multidisciplinary team (obstetrics, nursing, anesthesiology, blood bank and laboratory) based on a very well-established stepwise approach towards these patients. Also worth stressing is the importance of having an adequate number of properly-trained obstetric teams (comprised of doctors and nurses) so as to deal with such situations.

The conclusions arising from our research indicate that during the period under study the incidence of postpartum hysterectomy in our center was lower than that described in the majority of the literature, and that the most frequent indication for such surgery was uterine atony followed by placenta previa and uterine rupture. Most of the cases occurred after cesarean delivery, which is a well-known risk factor for the occurrence of postpartum hemorrhage. Postpartum hysterectomy is usually associated with high maternal morbidity, something which was also confirmed in this study by the occurrence of urological and infectious complications and the need for blood transfusions.

Appropriate management of cases of postpartum hemorrhage is an important issue. Ideally speaking, each labor and delivery unit should have a postpartum hemorrhage protocol designed for patients with estimated blood loss exceeding a predefined threshold, often 1000 mL. These protocols actually provide a standardized approach towards these cases within a multidisciplinary team, in order to reduce the high maternal morbidity and mortality rates associated with postpartum hysterectomy.

REFERENCES

- Rossi AC, Lee RH, Chmait RH. Emergency post-partum hysterectomy for uncontrolled postpartum bleeding: a systematic review. *Obstet Gynecol.* 2010;115:637-644.
- Kwee A, Bots ML, Visser GH, Bruinse HW. Emergency peripartum hysterectomy: a prospective study in the Netherlands. *Eur J Obstet Gynecol Reprod Biol.* 2006;124:187-192.
- Akar ME, Yilmaz ES, Yuksel B, Yilmaz Z. Emergency peripartum hysterectomy. *Eur J Obstet Gynecol Reprod Biol.* 2004;113:178-181.
- Daskalakis G, Anastasakis E, Papantoniou N, Mesogitis S, Theodora M, Antsaklis A. Emergency obstetric hysterectomy. *Acta Obstet Gynecol Scand.* 2007;86:223-227.
- Sturdee DW, Rushton DI. Cesarean and post-partum hysterectomy 1968-1983. *Br J Obstet Gynaecol.* 1990;93:270-274.
- Park EH, Sachs BP. High Risk Pregnancy – Management Options. 2nd ed. Philadelphia: W B Saunders; 1999.
- Sakse A, Weber T, Nickelsen C, Secher NJ. Peripartum hysterectomy in Denmark 1995-2004. *Acta Obstet Gynecol Scand.* 2007;86:1472-1475.
- Whiteman MK, Kuklina E, Hillis SD, Jamieson DJ, Meikle SF, Posner SF, et al. Incidence and determinants of peripartum hysterectomy. *Obstet Gynecol.* 2006;108:1486-1492.
- Bai SW, Lee HJ, Cho JS, Park YW, Kim SK, Park KH. Peripartum hysterectomy and associated factors. *J Reprod Med.* 2003;48:148-152.
- Zeteroglu S, Ustun Y, Engin-Ustun Y, Sahin G, Kamaci M. Peripartum hysterectomy in a teaching hospital in the eastern region of Turkey. *Eur J Obstet Gynecol Reprod Biol.* 2005;120:57-62.
- Bakshi S, Meyer BA. Indications for and outcomes of emergency peripartum hysterectomy: a five-year review. *J Reprod Med.* 2000;45:733-737.
- Stanco LM, Schrimmer DB, Paul RH, Mishell DR. Emergency peripartum hysterectomy and associated risk factors. *Am J Obstet Gynecol.* 1993;168:879-883.
- Baskett TF. Emergency obstetric hysterectomy. *J Obstet Gynaecol.* 2003;23:353-355.
- Özden S, Yildirim G, Basaran T, Gurbuz B, Davicioglu V. Analysis of 59 cases of emergent peripartum hysterectomies during a 13-year period. *Arch Gynecol Obstet.* 2005;271:363-367.
- Ahmad SN, Mir IH. Emergency peripartum hysterectomy: experience at Apex Hospital of Kashmir Valley. *Int J Gynecol Obstet.* 2007. Available from: <http://www.ispub.com>.
- Barclay DL, Hawks BL, Frueh DM, Power JD, Struble RH. Elective cesarean hysterectomy: a 5 year comparison with cesarean section. *Am J Obstet Gynecol.* 1976;124:900-911.
- Lau WC, Fung HY, Rogers MS. Ten years' experience of cesarean and postpartum Chestnut DH, Eden Rd, Gall SA, Parker RT. Peripartum hysterectomy: a review of cesarean and postpartum hysterectomy. *Obstet Gynecol.* 1985;65:365-370.
- Chestnut DH, Eden Rd, Gall SA, Parker RT. Peripartum hysterectomy: a review of cesarean and postpartum hysterectomy. *Obstet Gynecol.* 1985;65:365-370.
- Zelop CM, Harlow BL, Frigoletto JR FD, Safon LE, Saltzman DH. Emergency peripartum hysterectomy. *Am J Obstet Gynecol.* 1993;168:1443-1448.
- Smith J, Mousa HA. Peripartum hysterectomy for primary postpartum haemorrhage: incidence and maternal morbidity. *J Obstet Gynaecol.* 2007;27:44-47.
- Yucel O, Ozdemir I, Yucel N, Somunkiran A. Emergency peripartum hysterectomy: a 9-year review. *Arch Gynecol Obstet.* 2006;274:84-87.
- Zelop CM, Harlow BL, Frigoletto JR FD, Safon LE, Saltzman DH. Emergency peripartum hysterectomy. *Am J Obstet Gynecol.* 1993;168:1443-1448.
- Özden S, Yildirim G, Basaran T, Gurbuz B, Davicioglu V. Analysis of 59 cases of emergent peripartum hysterectomies during a 13-year period. *Arch Gynecol Obstet.* 2005;271:363-367.
- Lau WC, Fung HY, Rogers MS. Ten years' experience of cesarean and postpartum hysterectomy in a teaching hospital in Hong Kong. *Eur J Obstet Gynecol Reprod Biol.* 1997;74:133-137.
- Selo-Ojeme DO, Bhattacharjee P, Izuwa-Njoku NF, Kadir RA. Emergency peripartum hysterectomy in a tertiary London hospital. *Arch Gynecol Obstet.* 2005;271:154-159.
- Chestnut DH, Eden Rd, Gall SA, Parker RT. Peripartum hysterectomy: a review of cesarean and postpartum hysterectomy. *Obstet Gynecol.* 1985;65:365-370.
- Zelop CM, Harlow BL, Frigoletto JR FD, Safon LE, Saltzman DH. Emergency peripartum hysterectomy. *Am J Obstet Gynecol.* 1993;168:1443-1448.
- Engelsen IB, Albrechtsen S, Iversen OE. Peripartum hysterectomy – incidence and maternal morbidity. *Acta Obstet Gynecol Scand.* 2001;80:409-412.
- Zorlu CG, Turan C, Isik AZ, Danisman N, Mungan T, Gokmen O. Emergency hysterectomy in modern obstetric practice. Changing clinical perspective in time. *Acta Obstet Gynecol Scand.* 1998;77:186-190.
- Hamsho MA, Alsakka M. Emergency obstetric hysterectomy in Qatar – a 20-year review. *Int J Fertil Womens Med.* 1999;44:209-211.
- Umezurike CC, Feyi-Waboso PA, Adisa CA. Peripartum hysterectomy in Aba southeastern Nigeria. *Aust N Z J Obstet Gynaecol.* 2008;48:580-582.