

PERIPARTUM HYSTERECTOMY: 10-YEAR EXPERIENCE IN TWO MANITOBA TERTIARY CENTERS

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Background: The aim of the study was to review the incidence, associated risk factors, indications and complications of peripartum hysterectomy in the two teaching hospitals of the University of Manitoba, Canada.

Patients and Methods: We conducted a retrospective study of all cases of peripartum hysterectomy that occurred over a 10-year period at the Health Sciences Centre (HSC), and over a five-year period at St. Boniface General Hospital (SBGH), the two tertiary centers in Winnipeg, Manitoba.

Results: Twenty-five peripartum hysterectomies were identified among 59,839 deliveries at both HSC and SBGH, for an overall incidence of 0.4/1000 births. Twenty-three hysterectomies (92%) were performed as emergency procedures, 19 (76%) followed a cesarean section (relative risk = 15), and 15 patients had single or multiple prior cesarean section scars (relative risk = 14.2). The indications for hysterectomy were: hemorrhage due to placenta/accreta (n=9); uterine atony (n=6); uterine rupture (n=5); retroperitoneal hematoma (n=2); and cervical laceration (n=1). Two cases were performed electively for cervical and ovarian cancer, respectively. Twenty-three women (92%) required blood transfusion, five (20%) had coagulopathy, four (16%) had bladder injuries, and three (12%) required salpingo-oophorectomy for uncontrolled adnexal bleeding.

Conclusion: Our reported incidence for peripartum hysterectomy is lower than that reported elsewhere in the recent literature, while the risk factors for hysterectomy were similar to those reported. Although the maternal mortality was nil in this study, morbidity was high.

Ann Saudi Med 1998;18(5):398-400.

Key words: Peripartum hysterectomy, risk factors, maternal morbidity.

Peripartum hysterectomy, although rare in modern obstetrics, remains a life-saving procedure when severe obstetrical hemorrhage fails to respond to conservative treatment. Literature documenting experience is scant, and most residents in training are rarely exposed to this procedure. The purpose of this study is: 1) to review the incidence, risk factors, indications and the outcome of peripartum hysterectomy in two tertiary centers; 2) to suggest a plan of management for patients at risk for peripartum hysterectomy; and 3) to provide a guideline for residents who may not have been exposed to this procedure.

Materials and Methods

We conducted a retrospective review in two tertiary centers in Winnipeg, Manitoba—the Health Sciences Centre (HSC) and St. Boniface General Hospital (SBGH)—for the periods 1983 to 1993 (HSC), and 1988 to 1993

(SBGH). We retrieved the charts of all cases of peripartum hysterectomies over this study period. The total number of deliveries was also identified. The charts were analyzed for peripartum hysterectomy, indications of maternal risk factors, the types of hysterectomy, the anesthetic method used, the incidence of blood transfusion, and the intraoperative and postoperative complications. Relative risks (RR) for the maternal risk factors and their 95% confidence intervals were calculated.

Results

Over the 10-year period at the Health Sciences Centre and the five-year period at St. Boniface General Hospital, there was a total of 59,839 deliveries, of which 17.5% were abdominal deliveries. There were 25 cases of peripartum

TABLE 1. Comparative incidence of peripartum hysterectomy in the two tertiary centers.

Hospital	Deliveries (n)	Peripartum hysterectomy	Rate/1000
HSC (1983-1987)	18,393	6	0.3
HSC (1988-1993)	20,035	8	0.4
SBGH (1988-1993)	21,411	11	0.5
Total	59,839	25	0.4

HSC=Health Sciences Centre; SBGH=St. Boniface General Hospital.

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Accepted for publication 14 June 1998. Received 28 October 1997.

hysterectomies identified, for an overall incidence of 0.4/1000 deliveries (Table 1). The average maternal age was 29 years (20 to 41), parity was 3 (0 to 6) and gestational age was 35 (24 to 40) weeks.

A summary of identified risk factors for peripartum hysterectomy is listed in Table 2. Peripartum hysterectomy occurred in 1.8/1000 of cesarean deliveries and 0.1/1000 of vaginal deliveries, for a relative risk of 15. Compared to women with no previous cesarean section, women with previous cesarean delivery were at an increased risk for peripartum hysterectomy (RR=14.2). Nine patients of this cohort of peripartum hysterectomies had placenta previa with or without accreta. Placenta previa was a significant risk factor for peripartum hysterectomies (RR=299).

The primary indications for peripartum hysterectomies are listed in Table 3. Peripartum hysterectomy was performed as an emergency procedure in 23 patients (92%). The most common indication was abnormal placentation in nine patients (36%). Uterine atony not responding to various uterotonic agents was the indication in six patients (24%). Uterine rupture was the indication in five patients (20%), two of which occurred in patients with previous lower segment cesarean sections, one in a patient with a previous classical cesarean section, while the remaining two occurred in patients with previously intact uteri. In two patients (8%) the indication for hysterectomy was extension of the uterine incision into the broad ligament, resulting in uncontrolled retroperitoneal space hematoma. Two peripartum hysterectomies were performed electively, one for stage IB cervical cancer, and one for stage IIC ovarian cancer.

General anesthesia was used in 23 cases (92%) and regional anesthesia in two cases. The operative time ranged from 1-3 to 5 hours. The estimated blood loss recorded ranged from 1 to 6 litres. In 19 patients (76%), total abdominal hysterectomies were performed, while in the remaining six patients subtotal hysterectomies were performed. In the patient with stage IB cervical cancer, Rutledge modified radical hysterectomy with ovarian transposition was carried out.

The intraoperative and postoperative complications are listed in Table 4. Hemorrhage and damage to the urinary

tract were the most common complications. Twenty-three patients (92%) received blood transfusions, five patients (20%) developed mild to severe coagulopathy requiring platelets or fresh frozen plasma transfusions, and four patients (16%) sustained inadvertent cystotomies, which were identified and repaired intraoperatively, with no sequelae. There was no reported damage to the ureters or bowel in our series. Unilateral salpingo-oophorectomy was performed in one patient for persistent adnexal bleeding. Two patients underwent re-exploration laparotomy, one for persistent hemorrhage and shock, and the other for retroperitoneal abscess formation. No maternal mortality occurred.

Discussion

The report reviews our 10 years' experience in peripartum hysterectomies. The overall incidence of peripartum hysterectomy was 0.4/1000 of all deliveries, 1.8/1000 of all cesarean deliveries, and 0.1/1000 of all vaginal deliveries. There was no significant difference in the incidence of peripartum hysterectomy between the two hospitals, possibly reflecting the identical level of care delivered in both centers. Our reported incidence for peripartum hysterectomy, however, is lower than that reported elsewhere,^{1,2} where the reported incidence was 1.3-1.5/1000 deliveries. This could hypothetically be due to differences in population profiles, including lower parity (41% of our obstetrical patients were nulliparous), lower incidence of placenta previa (incidence of 0.5% in Manitoba), and perhaps a higher incidence of vaginal births after cesarean section (75%) in our institutions compared to other centers.

As in other studies, however, risk factors for peripartum hysterectomy were the same, including current cesarean birth, previous cesarean birth, and abnormal placentation. Patients who deliver by cesarean section are at an increased risk for future abdominal deliveries, uterine rupture and abnormal placental implantation. Clark et al.³ reported that the incidence of placenta previa increased from 0.5% in the general population to 3.9% after one cesarean section, and up to 10% after four cesarean sections. The same study documented the incidence of

TABLE 2. Risk factors for peripartum hysterectomy.

Risk factor	Peripartum hysterectomy	Total population	Relative risk	95% CI
Cesarean delivery	19	10,451	-	-
Vaginal delivery	6	49,388	15	5.99-37.5
Previous cesarean delivery	15	5729	-	-
Intact uterus	10	54,110	14.2	6.37-31.5
Placenta previa/accreta	9	299	-	-
Normal placentation	6	59,540	299	107-834.6

CI=confidence interval.

TABLE 3. Primary indications for peripartum hysterectomy.

Indication	n (%)
Placenta previa/accreta	9 (36)
Uterine atony	6 (24)
Ruptured uterus	5 (20)
Extended uterine incision	2 (8)
Cervical laceration	1 (4)
Cervical cancer stage IB	1 (4)
Ovarian cancer stage IIC	1 (4)
Total	25 (100)

CI=confidence interval.

placenta accreta at 5% in patients with placenta previa with no previous cesarean scar, but up to 67% in patients who had four previous cesarean scars. They also reported an 82% risk of peripartum hysterectomy in patients with placenta previa/accreta who previously underwent abdominal delivery.

Because of the impact of cesarean delivery on a woman's reproductive future, health care providers should reduce the cesarean section rate and recommend a trial of labor to their patients. This recommendation is now validated by most obstetric societies in view of a low incidence of uterine dehiscence (less than 0.7%) and uterine rupture (less than 0.8%) in trials of labor.⁵

As demonstrated in Table 2, 76% of patients at risk of peripartum hysterectomy can be identified during the antenatal period. Patients with those risk factors should be counselled antenatally regarding the possibility of a peripartum hysterectomy. These patients should be delivered in a hospital that can provide blood transfusion and is equipped with a surgical intensive care unit. Back-up obstetricians with some experience in performing peripartum hysterectomy, or even a gynecologic oncologist who performs radical hysterectomies, should be readily available in these rare circumstances of peripartum hysterectomies, if the need arises.

Because the majority of observed complications involve hemorrhage and damage to the urinary tract, the obstetrician should: 1) be assertive in making an early decision about performing this procedure before the patient exsanguinates; 2) reduce operative time by clamping and cutting the uterine pedicles off first, until the uterine arteries are secured, then proceed with suturing and tying these pedicles (clamp, cut, drop technique); 3) be familiar with pelvic anatomy; 4) remove the cervix only in cases where bleeding cannot be stopped due to implantation of the placenta on the lower uterine segment; and 5) call for help immediately.

In our experience, 24% of cases of peripartum hysterectomy were performed on patients who were thought to be at low risk for this procedure. Hence, it is essential that residents in training be made aware of the risk factors and be technically exposed to this procedure before obtaining qualification. Because of the rarity and

TABLE 4. *Intraoperative and postoperative complications of peripartum hysterectomy.*

	Number
Intraoperative complications	
Urinary bladder injury	4 (16%)
Adnexal bleeding	3 (12%)
Retroperitoneal hematoma	2 (8%)
Postoperative complications	
Blood transfusion	23 (92%)
Coagulopathy	5 (20%)
ICU admission	5 (20%)
Pneumonia	3 (12%)
Re-exploration laparotomy	2 (8%)
Vaginal cuff cellulitis	2 (8%)
Pulmonary edema	1 (4%)
Urinary bladder dysfunction	1 (4%)
Transient hematoma	1 (4%)

complexity of this procedure, residents should be encouraged to assist in difficult hysterectomies, such as those performed for large uterine fibroids or radical hysterectomies. The teaching departments in obstetrics may complement this exposure by making use of live videotapes or interactive software. Peripartum hysterectomy is a complex and important procedure, which is thankfully rather rare.

Dedication

This paper is written in memory of the first author's mother, who succumbed to hemorrhagic shock during a cesarean section many years ago.

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