Caesarean hysterectomy evolved as a life-saving procedure following caesarean delivery. The concept underlying caesarean hysterectomy dates back to the mid 1700s and with a description of the procedure performed on laboratory animals. Eduardo Porro of Milan performed the first planned caesarean hysterectomy in which both the infant and the mother survived. He documented his operation in a paper published in 1876. Porro advocated hysterectomy combined with caesarean section to control post partum haemorrhage and to prevent infection. The maternal death rate following the operation remained high, but was substantially below the rate prior to the introduction of the procedure. The Porro procedure contributed to more favourable outcome for both the mother and the infant, having sterility and premature menopause as its side effects. Fortunately, the need for the procedure was soon minimised following the proposal to close the uterine incision with sutures. Although elective caesarean hysterectomy is still a controversial issue, there is no doubt that emergency post partum hysterectomy in case of massive obstetric haemorrhage is potentially life-saving. Over the past decades, the availability of potent uterotonics and broad-spectrum antibiotics, the development of embolisation techniques, and new methods of vessel ligation, have markedly reduced the need for caesarean hysterectomy, which, however, remains an important procedure in modern obstetric practice.

Key words: caesarean hysterectomy, history, Eduardo Porro, caesarean section

INTRODUCTION

Caesarean section is the most common operation performed on women, with a rising tendency. It has been practiced since ancient times, usually as a post-mortem procedure or for cultural or religious reasons.
Caesarean hysterectomy evolved as a life-saving procedure following caesarean delivery. The concept underlying caesarean hysterectomy dates back to the mid 1700s and the description of procedure performed on laboratory animals. Primarily known as the Porro operation, the procedure was a unique surgical intervention originally suggested by the Florentine surgeon Joseph Cavallini in 1768, who experimented with hysterectomy in animal models. Cavallini operated on dogs and sheep, and proved that the uterus was not necessary for life and that its surgical removal was technically possible. In 1823 James Blundell published his study of caesarean hysterectomy in the rabbit model.

In 1868, Horatio Storer performed the first caesarean hysterectomy in Boston. Abdominal delivery was necessary in this case because the birth canal was obstructed by a large pelvic tumour. The operation was undertaken as an emergency procedure after labour had commenced, and the child was still-born. The mother died on the third postoperative day due to extensive blood loss. Storer removed the uterine corpus and adnexa during the procedure. He did not report the case himself, but left this to his assistant G.H. Bixby, who presented it to the Boston Gynaecological Society in 1869. Although the case was reported, it remained largely unrecognised.

The mortality associated with caesarean section in the latter part of the 19th century was very high because the majority of caesarean sections were done in cases of prolonged labour with the inevitable accompanying haemorrhage and sepsis.

THE PORRO HYSTERECTOMY

Eduardo Porro of Milan performed the first planned caesarean hysterectomy in which both the infant and the mother survived in 1871. Unlike Storer’s case, Porro’s operation was carefully planned and executed under more favourable conditions. He documented the procedure in a 63-page paper, published in 1876, describing the case in great detail.

The mother was a 25-year-old primigravid dwarf, Julia Cavillini, who was referred to his clinic in Pavia because of rachitic pelvis. She had suffered from the rickets between the ages of three and ten, and was 148 centimetres tall, with the characteristic bony features of rickets. Porro noted the pelvis was narrowed in all planes, with a diagonal conjugate of 7 centimetres and true conjugate of 4 cm or less. In addition, spondylolisthesis of the lumbar spine resulted in a form of roof over the pelvic inlet. He came to the conclusion that the vaginal delivery was impossible even with embryootomy, and that caesarean section was mandatory.

Following careful consideration and preparations, Porro decided to amputate the uterus through an abdominal incision in case of serious haemorrhage. After preliminary handwashing with carbolic acid, Porro performed a classic caesarean delivery by means of a midline abdominal incision, with the patient under chloroform anesthesia. After delivery of the 3,300-gram female live infant and placenta, the uterus bled profusely from its cut edges and could not be controlled by a suture. He proceeded with a supracervical hysterectomy after placing a wire around the lower uterine segment, tubes and ovaries, at the level of the internal os. All these structures were then amputated. He performed peritoneal toilet using Lister’s carbolic sponges and removed blood clots. The remaining cervical stump was brought out of the abdomen through the lower end of the midline incision. Drainage tubes were inserted and the abdominal wall was then closed around the residual stump with silver wire sutures. The wire and the sutures were removed on the fourth and the seventh day respectively. The externalised cervical stump and lower portion of the abdominal wound were then permitted to heal by secondary intention. After a stormy 40-day postoperative period marked by vulvovaginitis, sacral decubital ulcers, suppuration of the abdominal wound and urinary infection, Julia Cavillini survived. Six weeks after the delivery, she left the hospital with her infant. Remarkably, she was the first to survive a caesarean delivery performed at that clinic.

TRENDS AFTER PORRO

Prior to 1876, a series of 22 caesarean deliveries performed in Paris demonstrated a 100% maternal mortality rate, most due to haemorrhage and infection. Porro advocated hysterectomy during a caesarean section to control uterine haemorrhage and prevent infection.

Porro’s paper attracted widespread interest throughout the obstetric community worldwide. The Porro operation rapidly gained acceptance in Europe because it radically solved the problems of both haemorrhage and infection. Maternal losses with the Porro operation remained high, but were substantially below those occurred before the procedure was introduced. Some years later, Inziana and Previtali from Italy and Hegar from Germany presented case reports of caesarean hysterectomy. Although two of the three infants survived, all three mothers died in the immediate postoperative period. Numerous modifications of the technique were proposed but it quickly became known as the Porro operation. By 1880, Robert Harris had collected 50 cases of caesarean hysterectomy worldwide. The maternal and foetal mortality rates were 58% and 86% respectively. By 1884, approximately 140 of these operations had been reported in Europe, with a maternal mortality rate of 56%. The Porro procedure contributed to more favourable outcome for both the mother and the infant, complicated by sterility and premature menopause as associated side effects.

Fortunately, the need for these procedures was soon minimised by the proposal to close uterine incision with sutures. The Porro hysterectomy experienced only limited popularity since Max Sanger from Leipzig drew attention to the importance of accurate uterine closure by deep and superficial sutures. He published a monograph in 1882, largely based on experience of surgeons in the United States who had used internal closing sutures, explaining the principles and technique of caesarean delivery, including aseptic preparation, with special emphasis on a two-step uterine closure using silver wire and silk, and careful
attention to hemostasis. The use of silver wire stitches was developed by the 19th century gynaecologist J. Marion Sims, who invented his sutures to repair vaginal tears that had resulted from traumatic childbirth. Sanger thought that this approach would obviate the growing tendency for caesarean hysterectomy caused by fear of haemorrhage and infection. It was only after Sanger’s paper that closure of the uterus was finally recognised as both a feasible and necessary part of caesarean technique. The Sanger operation was just as effective as the Porro method. As a consequence, the majority of physicians adapted the suturing technique.

After 1882, the classic caesarean operation without hysterectomy as popularised by Max Sanger began to replace the Porro operation as the surgical technique of choice because the rates of maternal morbidity and mortality were lower. By the onset of the 20th century, the Porro operation had been entirely superseded.

The new discoveries in bacteriology and the development of the germ theory of infection, the combination of improved anesthesia and new surgical methods finally blunted the horrific rates of maternal morbidity and mortality associated with caesarean operations. Other innovations in surgical technique lessened the risks of surgery. Maternal complications from caesarean deliveries were reduced by the development of the lower-segment caesarean operation. From the early 20th century, blood transfusion and the use of blood products and medications to control uncontrolled haemorrhage and infection have greatly reduced the need for postpartum hysterectomy. Although elective caesarean hysterectomy is still a controversial issue, there is no doubt that emergency hysterectomy in the event of intractable obstetric haemorrhage is life-saving. At present, this procedure is generally restricted to the management of uncontrolled haemorrhage and infection, the rare cases of severe uterine trauma, or uterine and cervical pathologies. In recent years, the availability of potent uterotonics and broad-spectrum antibiotics, the development of embolisation techniques, and new methods of vessel ligation, have markedly reduced the need for caesarean hysterectomy, which, however, remains an important procedure in modern obstetric practice.

**SUMMARY**

**ISTORIJA HISTEREKTOMIJE POSLE CARSKOG REZA**

Histeretkomija posle carskog reza razvila se kao procedura koja spasava život posle porodjaja carskim rezom. Koncept histeretkomije posle carskog reza datira iz sredine osamnaestog veka, kao i opis ove operacije radijene na laboratorijskim životinjama. Eduardo Porro (Eduardo Porro) iz Milana je uradio prvu planiranu histeretkomiju posle carskog reza, koju su i majka i novorodjene preživeli. Svoju operaciju je dokumentovao u radu objavljenom 1876. godine. Porro je zagovarao histeretkomiju posle carskog reza u cilju kontrolisanja postpartalnog krvarenja i sprečavanja infekcija. Stopa smrtnosti porodilja posle operacije je i dalje ostala visoka, ali je bila značajno niža od stope pre uvodenja ove procedure. Porro-ov zahvat je doprinio povoljnijem ishodu i za majku i za dete, ali su neželjeni efekti sterilitet i preранa menopauza. Srećom, potreba za ovim zahvatom ubrzo je minimizovana predlogom da se inicija na uterusu zatvore šavovima. Iako je efektivna histeretkomija posle carskog reza još uvek kontroverzna tema, nema sumnje da hitna postpartalna histeretkomija u slučajevima masivnog krvarenja u akušerstvu potencijalno spasava život. Poslednjih decenija, dostupnost potentnih uterotonika i antibiotika širokog spektra, razvoj tehnike embolizacije i novih metoda podvezivanja krvnih sudova, značajno su smanjili potrebu za histeretkomijom nakon carskog reza, koja, ipak, i dalje predstavlja bitnu proceduru u modernoj akušerskoj praksi.

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