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Has Robotic Surgery an Effective Role in Peri-Partum Hysterectomy?

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Abstract

Background: the increase of caesarean section causes a higher incidence of placental invasion. The abnormal placentation (placenta accreta, placenta increta and placenta percreta) is related to several maternal and foetal mortality and morbidity. The treatment of placenta accreta in based on conservative procedures and surgical options. The aim of this work is to analyse the effectiveness and feasibility of peri-partum hysterectomy.

Methods: In order to realize the analysis of the impact of robotic surgery in peri-partum hysterectomy, the most important medical databases were consulted. We carefully examined a total of 3 papers. In two of these works, we've found the report of a robotic hysterectomy used in the treatment of placenta increta. The other paper is a case report of surgical procedure in case of placenta percreta. The benefit of minimally invasive surgery in the management of hysterectomy is well-known. The robotic peri-partum hysterectomy is a possible surgical approach for selected patients with no evidence of hemodynamic compromise. The peri-partum hysterectomy must be a planned surgery and it is important that expert surgeons practice the procedure.

Conclusion: An adequate counselling related to the procedure and the possible risk must be provided to the patient which is selected to be inducted to robotic assisted laparoscopy. The particular characteristics and the well-known advantages of robotic surgery eventually candidates this type of surgery as a new safe procedure for the peri-partum hysterectomy.

Keywords: Minimally invasive surgery; Obstetrics surgery; Placenta; Robotic surgery

Introduction

The increase of caesarean section causes the high incidence of placenta accreta disorders. The rate of abdominal delivery increases from 4.5% in 1965 to 26.1% in 2002, while the incidence of placenta accreta has a dramatically rise from less than 1: 30000 deliveries in 1930s, to 1: 2500 in 1980s and 1: 533 nowadays [1-4]. The term "accreta" described not only a specific abnormal placentation, but also a generic condition. The placenta accreta refers to the attachment of placental villi to the myometrium, without its invasion. The myometrium invasion is the condition of placenta increta. In case of placenta percreta the invasion arrives trough the serosa layer and beyond (for example reaching and invading the bladder tissue) [5]. The abnormal placentation is related to several maternal and foetal mortality and morbidity (premature birth). The maternal risk occurs after the delivery, when the placenta does not separate from the uterine tissue; this condition is associated to massive haemorrhages (and the need of blood transfusion), disseminated intra-vascular coagulation, multi-organ dysfunction and failure, abdominal infections, until mother's death (the mortality rate is high as 7%) [5,6]. The most common complication is related to massive blood loss (especially the post-caesarean hysterectomy increases the risk of mortality), requiring intensive unit cares, pelvic arterial embolization (using coils, gel, or particles) or balloon occlusion catheters, which can favourite the spontaneous placental resorption and limit the blood loss [5]. The median estimated blood loss of peri-partum hysterectomy for placenta accreta was 3000 ml with a consequent requirement of a mean of 5 units of packed red blood cells and fresh frozen plasma, platelets and recombinant activated factor VII for transfusion in order to maintain the haemodynamic stability of patient [5,7]. The procedures are often performed in emergency and sometimes without an adequate staff [7,8]. In case of placenta percreta, in addition to mentioned risk, there are also possible bladder and bowel injuries, ureteral damage, and fistula formation [5,9]. Conservative management of placenta accreta is allowed, especially for patients with future pregnancy desire: the placenta is left in situ after caesarean delivery. Nevertheless, this approach is related to several important complications, such as disseminated intra-vascular coagulation [5,8]. The conservative therapy is used in association with other strategies, such as vassal embolization, to permit hysterectomy in a haemodynamic stable patient in order to reduce blood loss [5,9]. The interval hysterectomy is performed (by laparotomy or by laparoscopy), in according to the limited literature data, 6-8 weeks after abdominal delivery; in this period there are the most significant volume decreases of placenta tissue consequent to arterial embolization. In relation to surgeon ability and patient conditions, total

hysterectomy or supra-cervical hysterectomy are both possible [5,8].

As it is explained in the results section, at the time being, there are limited data of literature about the use of robotic surgery in immediately post-partum hysterectomy and about surgical outcomes of this surgical procedure. The aim of this work is to consider the role of robotic surgery in case of peri-partum hysterectomy to analyse the effectiveness and feasibility of this surgical technique, in consideration of the well-known benefits of the laparoscopic approach compared to laparotomy in gynaecology.

Materials and Methods

In order to realize the analysis of the impact of robotic surgery in peri-partum hysterectomy, the most important medical databases (PubMed, Cochrane Database of Systematic Reviews, EMBASE, and Web of Science) were consulted. We found 5 records from the preliminary bibliographic search. After excluding 2 works that were manifestly irrelevant, (letters) we carefully examined a total of 3 papers. Two works describe the robotic hysterectomy in case of placenta increta, and one case report described the surgical procedure in case of placenta percreta. The characteristics of the studies considered in this work is reported in **Table 1**. For the specific purposes of the present work, the authors performed, in the section of "Results", a description of relevant data about the application of robotic assisted laparoscopy to perform peri-partum hysterectomy. The surgical procedure described in these works was performed with a minimally invasive approach, in order to permit an accurate dissection of anatomical space and an accurate haemostasis. This restricted group of articles has been the subject of a detailed review, which is exposed in the section "Discussion" and compared with literature data.

Table 1 Studies of peri-partum robotic-assisted hysterectomy. The table describes the most significant data derived from the analysed works, in order to emphasize the surgical outcomes of minimally invasive surgery in obstetrics setting.

Authors	Study Design	Patient (n)	Age (yrs)	BMI (kg/m^2)	Type of invasive placentation	Conservative procedure	Complications	Hysterectomy	Gestational age at time time of delivery	Total blood loss (ml)	Hospital stay (days) after surgery	Operative time (min)
Boes et al.	Case report: Vaginal delivery	1 gravida: 3 para: 2	40	35	Increta	-	-	Total hysterectomy (immediately after delivery)	20 weeks+4 days	200	2	70
Fay et al.	Case report: Caesarean section	1 gravida: 2 para: 1	30	-	Increta	Left placenta in situ embolization	Pelvic pain, haematometra urinary retention	Total hysterectomy and bilater salpingectomy (2 weeks after delivery)	35 weeks+0 days	500	2	-
Rpley et al.	Case report: Caesarean section	1 gravida: 9 para: 3	39	-	Percreta	Left placent in situ embolization	Blood transfusion with 2 units of packed red cells for anemia in post-operative day 1. Transfusion of 2 units of packed red cells post-operatively for anemia	Total hysterectomy and salpingectomy (10 weeks after delivery)	35 weeks+6 days	400	3	190

Results

Rupley et al. [8], reported a case of 39-years-old gravida 9, para 3 (2 previously caesarean section) with placenta accreta. At 35 weeks of gestation the patient underwent to caesarean section. The placenta was left in situ and the embolization of the uterine arteries was performed. 10 weeks after the caesarean section the patients underwent planed robotic-assisted hysterectomy and bilateral salpingectomy with a careful dissection of bladder from the uterus and of the pelvic side wall lateral and parallel to the infudibulopelvic ligament. The uterine arteries were carefully highlighted and sealed at their origin in order to assure the haemostasis. The total operative time was 3 hours and 10 minutes. The estimated blood loss was 400 cc. The Hospital stay was 3 days. Anaemia during the first day after surgery was reported as an adverse event: the patient received 2 units of packed red cells.

Fay et al. [9], describe the case of placenta increta in a 30-years-old gravida 2, para 1 (caesarean section). At 35 weeks of gestation the patient underwent to caesarean section. The

placenta was adherent to the uterus and it was decided to leave it in situ. 8 weeks after the delivery the patients developed an hematometra for cervical obstruction by the placenta, associated with urinary retention. She underwent to arterial embolization and planned robotic-assisted hysterectomy and bilateral salpingectomy. The estimated blood loss was 500 ml. The hospital stay was 2 days, without post-operative complications.

Boes et al. [10], reported a case of 40-years-old gravida 3, and para 2 (by vaginal deliveries). The woman had a vaginal delivery at 20 weeks for premature rupture of membranes. Since the placenta was not detached after 3 h from delivery and the high suspension of placenta was invaded, the patient was candidate to hysterectomy. The patient underwent to robotic-assisted hysterectomy. The total operative time was 70 min. The estimated blood loss was minimal. The hospital stay was 48 h, without post-operative adverse events. The histological analysis consisted in placenta increta.

Discussion

The abnormal placentation is the most common indication for peri-partum hysterectomy. The surgical procedure is associated with several operative complications compared with non-obstetrics hysterectomy; in fact, peri-partum hysterectomy is associated with a massive haemorrhage, and the risk of damage of pelvic organs in relation to the high volume of the gravid uterus and its massive vascularization. The risk of bladder injuries is 9.2% during peri-partum hysterectomy compared with a rate of 1.1% during non-obstetrics hysterectomy. Also the hospital stay is longer in the obstetrics hysterectomy (8.7 days) than in non-obstetrics surgery (2.9 days) [11].

The benefits of minimally invasive surgery in the management of hysterectomy are well-known (laparoscopy and robotic-assisted laparoscopy): in fact, this surgical approach determinates the reduction of total blood loss, total operative time, hospital stay, and post-operative pain; with this type of surgery there is a better surgical view of anatomical pelvic structures compared to laparotomy [12]. Furthermore, robotic surgery allows 3D vision of surgical field and better mobility of instrumentation than in laparoscopy. These advantages are related to better opportunities to perform careful anatomical dissection of pelvic structures and to ensure an adequate haemostasis. Ruplety et al. [10], in fact, underlined that this surgical approach is able to decrease the blood loss and the rate of possible bladder injuries, according to a better view and surgical precision of robotic instruments. Also they demonstrated the possibility to seal the uterine arteries with robotic instruments. However, ultrasound examinations and pelvic magnetic resonance to investigate the uterus and bladder invasion, especially in case of placenta percreta, must be executed before deciding to do a robotic approach [8].

According to the works analysed in this paper, the robotic-assisted peri-partum hysterectomy appears to be feasible and effective: the robotic approach is a safe and practicable, without significant peri-operative and post-operative complications. The robotic approach is a possible surgical alternative to laparoscopic hysterectomy or laparotomy technique in particularly selected patients with no evidence of any haemodynamic compromises, as all authors underline in their works [8-10,12].

The peri-partum hysterectomy must be a planned procedure. The selection of the patient to undergo robotic-assisted hysterectomy must be discussed case to case, in a multidisciplinary team in order to have expert figures, such as general surgeon or urologist, to dispose for any eventually adverse events.

Also it is important to provide an adequate counselling related to the procedure and the possible risk, especially related to possible massive haemorrhage and the injury of bladder and ureters to the patient candidate to robotic-assisted laparoscopy.

Several limitations might be found in this analysis. First of all, the authors compared results from different case reports in relation to the features of clinical events reported. Moreover, the data involved patients with dissimilar obstetric history, gestational age, placentation and surgical approach. It is clear that different features can cause a significant influence on surgical approach, total operative time, total operative bleeding, and also intra-operative or post-operative complication, and follow-up of the whole surgical procedure.

Nevertheless, limited set of articles, which have been carefully analysed, and the minimally robotic surgery, allow an adequate treatment after caesarean section and vaginal delivery. The robotic surgery also permits to perform the ligation of hypogastric artery in case of massive blood loss to assure haemostasis.

Conclusion

In conclusion the robotic assisted procedures appear to be an interesting alternative to the traditional surgery in selected patients with clinical signs of haemodynamic stability. The particular characteristics and the well-known advantages of robotic surgery candidates it as a new safe procedure for the peri-partum hysterectomy. The robotic surgical technique may allow new interesting approach in obstetrics surgery, but further works need to confirm its real role.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

1. Flegal KM, Carroll MD, Ogden CL, Curtin LR (2010) Prevalence and trends in obesity among US adults, 1999-2008. JAMA 303: 235-241.
2. Martin JA, Hamilton BE, Osterman MJ, Curtin SC, Matthews TJ (2015) Births: Final data for 2013. Natl Vital Stat Rep 64: 1-65.

3. Eltabbakh GH, Piver MS, Hempling RE, Recio FO (1999) Laparoscopic surgery in obese women. Obstet Gyneco 94: 704-708.

4. Wu S, Kocherginsky M, Hibbard JU (2005) Abnormal placentation: Twenty-year analysis. Am J Obstet Gynecol 92: 1458-1461.

5. Silver RM, Barbour KD (2015) Placenta accreta spectrum: accreta, increta, and percreta. Obstet Gynecol Clin North Am 42: 381-402.

6. Sentilhes L, Ambroselli C, Kayem G, Provansal M, Fernandez H, et al. (2015) Maternal outcome after conservative treatment of placenta accreta. Obstet Gynecol 115: 526-534.

7. Wright JD, Pri-Paz S, Herzog TJ, Shah M, Bonanno C, et al. (2011) Predictors of massive blood loss in women with placenta accrete. Am J Obstet Gynecol 205: e1-E6.

8. Rupley DM, Tergas AI, Palmerola KL, Burke WM (2016) Robotically assisted delayed total laparoscopic hysterectomy for placenta percreta. Gynecol Oncol 17: 53-55.

9. Fay EE, Norquist B, Jolley J, Hardesty M (2016) Conservative management of invasive placentation: Two cases with different surgical approaches. AJP Rep 6: e212-215.

10. Boes S, Mahdi H, Khoury F, Kebria MM (2013) Peripartum robotic-assisted laparoscopic hysterectomy after second-trimester pregnancy loss with placenta increta. Obstet Gynecol 122: 440-444.

11. Wright JD, Devine P, Shah M, Gaddipati S, Lewin SN, et al. (2010) Morbidity and mortality of peripartum hysterectomy. Obstet Gynecol 115: 1187-1193.

12. Garibaldi S, Perutelli A, Baldacci C, Gargini A, Basile S, et al. (2013) Laparoscopic approach for peripartum hysterectomy. J Minim Invasive Gynecol 20: 112-144.