
Posterior colpotomy versus laparoscopy for surgical management of ectopic pregnancy

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Abstract

Background and aim: to assess the the posterior colpotomy approach versus laparoscopic approach in the surgical management of ectopic pregnancy in stable patients.

Methods: A prospective cohort study conducted on 40 women with ectopic pregnancy, divided into two groups; **Group 1** included 20 patients for whom laparoscopic salpingectomy was done and **group 2** included 20 patients for whom salpingectomy was done via posterior colpotomy approach. Operative and postoperative data were collected and analyzed.

Results: Operative time was significantly shorter in group 2; 45 ± 8.1 min versus 56.5 ± 13 min in group 1 ($P < 0.05$). Postoperative pain scoring was significantly lower in group 2 (5.7 ± 1.1 vs 6.8 ± 1.6 in group 2 and group 1 respectively) ($P < 0.05$). Urgent laparotomy was performed for one patient in group 1 and two patients in group 2 ($P > 0.05$). There was no significant difference between the two groups regarding patient characteristics, clinical data, hospital stay and the need for blood transfusion.

Conclusion: Posterior colpotomy is a promising approach for surgical treatment of tubal ectopic pregnancy especially if laparoscopy is not available.

Keywords: posterior colpotomy; ectopic pregnancy; salpingectomy; tubal pregnancy.

INTRODUCTION

Ectopic pregnancy occurs when the fertilized ovum is implanted outside the uterine cavity with tubal ectopic being the commonest type [1].

It is one the most important causes of maternal morbidity and mortality. Up to 6% of pregnancy associated mortality are attributed to ectopic pregnancy [2].

Serial transvaginal ultrasound (TVS) along with serum β -human chorionic gonadotropin (hCG) allowed the possibility to diagnose early ectopic pregnancy. Management options include expectant, pharmacological (methotrexate) and surgical management [3].

Surgical management can be via laparoscopy which is the gold standard or laparotomy if laparoscopy is not possible either due to lack of equipment, surgeon experience or unstable patient [4].

Before the era of laparoscopy, posterior colpotomy approach was used for diagnosis and /or treatment of ectopic pregnancy [5,6,7].

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When laparoscopy is unavailable, posterior colpotomy approach has been suggested as an alternative procedure with shorter operative time hospital stay and reduced blood loss by a relatively recent reports [8,9].

The aim of the study was to assess the the posterior colpotomy approach versus laparoscopic approach in the surgical management of ectopic pregnancy in stable patients.

Materials and methods

A prospective cohort study conducted in Obstetrics and Gynecology department, Gama hospital, Al-khobar, Kingdom of Saudia Arabia in the period between March 2017 and March 2020. All women attending early pregnancy clinic or emergency room and diagnosed with tubal ectopic pregnancy by abnormal doubling of beta-hCG, emopty uterus and ectopic mass by transvaginal ultrasound (TVS) were invited to participate in the study. The institutional review board and the ethical committee in Gama hospital have formally reviewed and approved the study protocol and all women who accepted to participate signed the informed consent form after thorough explanation of the study objectives. Women aged 18-40 years, 6-8 weeks of gestation, vitally stable, minimal or no free fluid in the pouch of Douglas by TVS, diagnosed as ectopic pregnancy, candidates for surgical management and accepted to participate were included in the study. Women who were vitally unstable, disturbed ectopic with massive intra-peritoneal collection, previous laparotomy , previous vaginal surgery and those with chronic medical disorders were excluded from the study. Also, women with documented ovarian pregnancy and those who refused to participate, there data were not included in the analysis. The study included 40 patients divided into two groups; Group 1 included 20 patients for whom laparoscopic salpingectomy was done and group 2 included 20 patients for whom salpingectomy was done via posterior colpotomy approach. Laparoscopy was done using the closed technique, main port in the umbilicus and two ports in the right and left iliac fossae. Posterior colpotomy was done in the lithotomy position after vaginal retraction using a weighted speculum against the posterior vaginal wall, clamping and traction of the posterior lipof the cervix, transverse

incision in the transition between the mucosa of the posterior vaginal wall and cervix followed by dissection of the vaginal wall, drainage of free blood, salpingectomy, washing of the pelvic cavity then closure. The first surgeon was the same person in all patients. In some cases, some surgical difficulties were faced; improper field in some was managed by using long- bladed vaginal retractors. Inability to access the tube was another important difficulty seen in few cases and was managed by antero-superior traction on the cervix by volsellum making the uterus retroverted (RVF). If still not accessible, Zumi uterine manipulator injector (disposable one used in laparoscopy in the hospital) was inserted to allow better manipulation; better RVF and side displacement of the uterus and that maneuver facilitated caching the tube and bringing it down by Babcock forceps. As per hospital policy, salpingectomy was the procedure of choice as there is no difference between conservative surgery and salpingectomy in terms of subsequent intrauterine pregnancy from the literature [10].

Outcome measures included mean operative time, average blood loss, pain. Post-operative pain intensity and the need for blood transfusion. Pain intensity was evaluated using the Visual Analogue Scale (VAS) with range from zero to ten directly with points of 0 = no pain at all and 10 = the most distressing pain. Close monitoring was done to report any postoperative complications then at discharge, they were given appointment in the outpatient clinic after seven days for evaluation of persistent symptoms or complications.

Statistical analysis: data were statistically analyzed by SPSS version 20 (SPSS Inc, Chicago, IL). Normally distributed numerical data were presented as a mean and standard deviation and were compared with unpaired Student's t-test. Qualitative data were presented as the number and percentage. Qualitative data were compared using chi-square test. For all tests, the statistical significance was considered when $p < .05$.

Results

There was no significant difference between the two groups regarding patient characteristics in terms of age, parity, body mass index, gestational age, beta-hCG level and ectopic mass size by TVS as revealed in table 1.

Operative time was significantly shorter in group 2 (posterior colpotomy group), on the other hand, there was no significant difference between the two groups regarding the need for emergency laparotomy and no intraoperative blood transfusion as depicted in table 2.

Pain intensity was significantly lower in group 2 and there was no significant difference between the two groups regarding length of hospital stay and postoperative blood transfusion (table 3).

Discussion

The study included 20 patients in each group who were candidates for surgical management. Salpingectomy was done successfully in 19 patients of group 1 (laparoscopy group) and one patient needed urgent laparotomy because of significant intraoperative bleeding. Salpingectomy was done successfully in 18 patients in posterior colpotomy group (group 2), urgent laparotomy was done for two patients, one due to significant intraoperative bleeding and another due to difficulty to access the fallopian tube. Mean operative time and postoperative pain were significantly lower in the posterior colpotomy group. Hospital stay as well as the need for blood transfusion was comparable between the two groups.

Women with successful procedure expressed their satisfaction specially due to absence of abdominal scar.

Surgical treatment of ectopic pregnancy through laparotomy was the standard procedure until Shapiro and Adler described the laparoscopic approach in the early 1970s [11].

With great development of diagnostic modalities and early diagnosis, expectant and pharmacological treatments are successful in many patients. But surgical treatment, being the most definitive, is still indicated in some cases [12].

With advancement of laparoscopic equipment and skills, operative laparoscopy is considered the gold standard for surgical management of ectopic pregnancy patients who are hemodynamically stable.

In 2008, there was report of two cases of tubal pregnancy treated successfully via posterior colpotomy

my approach. The first patient refused laparoscopy as she did not wish to have incision scars in her abdomen. The second patient had an early ectopic pregnancy, candidate for medical treatment however, was not offered because of concerns regarding compliance with the treatment protocol [13].

Posterior colpotomy was a feasible approach for myomectomy through vaginal route where it was successful in 40 out of 45 patients indicated for myomectomy [14].

The procedure is reported also for tubal ligation for sterilization with Advantages including absence of abdominal scar, minimal morbidity, no need for special equipment and shorter hospital stay, albeit there were some complications including urinary retention, urinary tract infection and occasional rectal injury [15].

The authors acknowledge that this is the first trial comparing posterior colpotomy approach versus laparoscopy for surgical treatment of ectopic pregnancy.

The small cohort in addition to a considerable number of women refused to participate represented unintended limitation of the study.

Future research is to conduct a randomized controlled study and to measure cost effectiveness of the posterior colpotomy approach against the standard laparoscopy for surgical treatment of ectopic pregnancy in stable patients.

Conclusion

Posterior colpotomy is a promising approach for surgical treatment of tubal ectopic pregnancy especially if laparoscopy is not available.

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Conflicts of interest

The authors declare that no conflicts of interest in relation to this article exist.

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Table 1: patient characteristics

	Group 1: N=20	Group 2: N=20	Student t-test	P-value
Age (years)	29.7±3.1	29.9±3.2	0.2	0.84
Parity	3.1±1.7	3.3±1.9	0.35	0.7
Body mass index (Kg/m ²)	25.7±4.2	26.1±3.9	0.3	0.76
Gestational age (weeks)	7.3±2.4	7.8±2.8	0.61	0.55
Serum β-hCG levels (mIU/mL)	7846±5122	7782±4982	0.04	0.97
Mass diameter by TVS (mm)	42±23	45±21	0.43	0.67
Fetal cardiac activity N (%)	4 (20%)	3(15%)	0*	1

*: Chi-square

Table 2: operative data for both groups

	Group 1: N=20	Group 2: N=20	Student t-test	P-value
Mean operative time (min)	56.5 ± 13	45 ± 8.1	3.36	0.0018
Average blood loss (cc)	428±116	411±121	0.45	0.65
Intraoperative blood transfusion	0	0	-	-
Emergency laparotomy	1(5%)	2(10%)	1.08*	0.3

*: Chi-square

Table 3: post-operative outcomes for both groups

	Group 1: N=20	Group 2: N=20	Student t-test	P-value
Pain intensity(VAS)	6.8±1.6	5.7±1.1	2.5	0.02
post-operativeHospital stay (hs)	25±4.5	23±4.3	1.44	0.16
Post-operative blood transfusion	2(10%)	3(15%)	0*	1

*: Chi-square