

EXPERIENCE IN LAPAROSCOPIC TREATMENT OF ECTOPIC GESTATION

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Abstract

Objectives: to assess the value of operative laparoscopy in the management of ectopic gestation in term of diagnosis, treatment, post-operative complication and post-ectopic pregnancy.

Materials & Methods: 12 cases of ectopic gestation treated by operative laparoscopic surgery. 4 cases presented as acute abdomen. Average age 25 years. History of infertility found in 5 cases (41.6%), three primary and two secondary infertility.

Results: 12 ectopic gestation were treated laparoscopically; 7 ruptured, 4 unruptured and one tubal abortion. Eight in the right tube and four in the left tube. Salpingostomy was the treatment in 7 cases and partial salpingectomy was the treatment in 5 cases. All cases discharged home with in 24 hours without complication

and none required another laparoscopy or laparotomy. Four patients conceived within 10 months.

Conclusion: 12 ectopic gestations treated successfully by the laparoscope with no operative or post-operative complication. Operation time ranged between 45 minutes-1 ½ hour. These results are very encouraging in comparison with conventional surgery. Keeping in mind the short hospital stay & better cosmetic results to the patients. Ectopic gestation can be treated successfully by the laparoscope even if the patient in acute abdomen, but the procedure has to be conducted by an experienced laparoscopic surgeon.

Key words: Operative laparoscopy. Tubal ectopic gestation, Salpingostomy, Salpingectomy

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Introduction

Ectopic pregnancy is implantation occurring elsewhere than the cavity of the uterus, 99% of extra-uterine pregnancies occur in the fallopian tube. Incidence of extra-uterine pregnancy has increased from 0.5% thirty years ago, to a present day 1-2%¹. Incidence in the UK is 1 per 150 mature births, but much higher in other countries as France 20.2/1000 live -births, Finland 28/1000 births, USA 22/1000 live births, etc. The overall incidence is increasing, but the case fatality rate has decreased². Mortality rates dropped, from 1.7% in the 1970s to 0.3% in the 1980s.

Presentation of ectopic pregnancy could be acute abdomen that required immediate interference when rupture occurred, but in the majority it is the subacute or asymptomatic form & in the last form especially unruptured small ectopic a non-surgical treatment could be feasible with systemic methotrexate or by local injection of drugs into the gestational sac, either laparoscopically, trans-vaginally, or by transcervical tubal cannulation. Fertility rates after salpingotomy via laparoscopy or Laparotomy are similar.

Long term follow up shows similar tubal patency rates, whereas the no. of repeat ectopic pregnancies lowers, although these differences are not statistically significant. The laparoscopic approach is less costly as a result of significantly less blood loss and analgesia requirement, and a shorter duration of operation time, hospital stay, and convalescence time. Systemic methotrexate in a single dose intramuscular regimen is not effective enough in eliminating tubal pregnancy compared to laparoscopic salpingostomy. Only in patients with low initial serum hCG level systemic methotrexate leads to cost saving compared to laparoscopic salpingostomy³. Laparoscopy can be used for diagnosis & treatment of ruptured and unruptured ectopic pregnancy. Laparoscopic surgical treatment of ectopic gestation offers numerous advantages: reduced operating time, hospital stay and cost, earlier return to activity & improved cosmetic results⁴.

Ectopic pregnancy is one of the life threatening disease in which prevalence has increased as mortality has declined. The life threatening ectopic pregnancy is now evolving into a medical disease, with the possibility of lower-cost treatment, faster recovery, & higher subsequent fertility.

The above has been achieved by: increased sensitivity of serum beta human gonadotrophin (B-hCG) immunoassay & improved quality

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transvaginal sonography, combined with a heightened awareness and increased suspicion of the condition among clinicians which has allowed early detection of ectopic pregnancy. Laparotomy once the standard treatment of ectopic pregnancy has been replaced mostly by operative laparoscopy. Laparotomy however remains necessary in cases with haemodynamic instability & with exceptional locations, e.g. cervical, abdominal, and interstitial implantation. Methotrexate or other treatment therapies can be employed with some success and lastly expectant management involving follow up using serial hCG measurements & ultra-sound scans^{1,2,4}.

The standard surgical treatment for ectopic tubal gestation is either salpingostomy especially with unruptured tubes or partial salpingectomy especially with ruptured and damaged tubes and when bleeding control is inadequate⁵.

Fimbrial evacuation or squeezing is better avoided and should be abandoned if anything more than very minor tubal pressure does not affect evacuation of the distal pregnancy⁶. It should be noted that there is a 5-10 % risk of persistent trophoblast remaining after conservative treatment, i.e both medical and surgical that might require a further treatment⁷. After conservative surgery approximately 50% of patients will have a subsequent intra-uterine pregnancy; 40% a live birth and 12% a repeat ectopic pregnancy

Fertility rate after laparoscopic salpingostomy is similar to that after laparotomy. The rate of intra-uterine pregnancy after radical procedures 45% is not significantly different to that after conservative surgery, but the repeat ectopic pregnancy rate is lower 9%.

Women with only one fallopian tube undergone salpingostomy or salpingotomy for ectopic gestation have a live birth rate of approximately 40% and a repeat ectopic pregnancy rate of 20%. The presence of risk factors increases the chances of recurrent ectopic and reduces the likelihood of intra-uterine pregnancy².

Fertility prospects after ectopic pregnancy treatment is not correlated to the features, but depends mainly on patients' age and past history⁸. In comparing Laparoscopic surgery with laparotomy to treat ectopic pregnancy after exclusion of patients with shock, laparoscopic surgery offered a significant shorter post-operative hospital stay (mean 2.7 days versus 5.5

days), a slightly lower peri-operative complication rate (8.1% versus 13.9%) and more conservative surgery (90.1% of all salpingotomies) than Laparotomy. A longer operating time was needed for Laparoscopic surgery (1.2 hours versus 1.01 hours)⁹.

Operative laparoscopy is currently the best treatment for ectopic pregnancy and it can be conservative (salpingostomy), or radical (salpingectomy).

Materials & Methods

From January 2000 till January 2001, 12 cases of ectopic pregnancy were treated by laparoscopy at Elwiya maternity teaching hospital and Kamal Al -Sammariae fertility and IVF center.

Average age 27 years (youngest 22 and oldest 34). 5 patients were nullipara, while the rest have one or more children.

Infertility of more than one year encountered in 6 cases 50% (two primary and 4 secondary infertility). Three cases gave history of IUCD of more than 3 years duration and one was on oral combined contraceptive, but irregular use.

Table 1: Signs and symptoms of ectopic pregnancy

Sign and symptom	Number	%
Amenorrhoea	8	66.6
Abdominal pain	9	75
Irregular vaginal bleeding	10	83.3
Acute abdomen	4	33.3
Incomplete abortion evacuated 1 month before	1	8.3

Table 1 showed the frequency of signs and symptoms: the commonest presenting symptom was irregular vaginal bleeding which was encountered in 83.3% of cases. HB %, blood grouping and Rh were performed in all cases prior to surgery with preparation of 2 units of blood. Sonography performed in 8 cases because in the rest the cases were in acute state.

Operating Technique:

Laparoscopy confirmed the diagnosis and permitted assessment and surgery. Blood transfusion was given before surgery to the acute abdomen cases (4 cases), while the other ruptured ectopic pregnancies required blood transfusion during operation or in the post-operative period. None of the unruptured ectopic required blood transfusion.

Laparoscopy was performed under general anesthesia with endotracheal intubation, CO₂ used for insufflation, 10 mm laparoscope was introduced subumbilically and another two

portae for the introduction of two 5mm trocar and cannulae were introduced into the iliac fossae, one for the atraumatic forceps and the other for introduction of 5mm scissor that attached to a unipolar diathermy probe (Karl-Storz autocon 200 unipolar) high frequency elector-surgical and thermo-coagulation generator. A bipolar probe also available and used sometimes to control bleeding. Suction and irrigation is essential to wash the peritoneal cavity with normal saline before embarking on surgery.

In few cases we might require a fourth porta for fixation of the tissues and was usually introduced in the suprapubic region (2 Cases). The standard procedure is salpingostomy; trying to conserve the tubal function by making incision along the ante-mesenteric border over the ectopic 1-2 cm length, then the product of gestation are flushed with the suction irrigation system. Bleeding points controlled by cauterization with unipolar or bipolar diathermy, then operation area are flushed again to ascertain haemostasis, and then peritoneal cavity was washed with normal saline to ascertain no bleeding or left trophoblasts

If we could not control bleeding or the tube is damaged and conservative surgery is not feasible, partial salingectomy was performed with the use of scissor attached to unipolar diathermy to control bleeding and the same steps taken to control bleeding as before.

All patients were given antibiotic cover started before surgery & continued for 5 days (ampicillin 500mg QDS + metronidazol 500mg TDS), to guard against infection especially conserving future fertility.

Results

All 12 cases of ectopic pregnancy treated by laparoscope, no one required laparotomy i.e. no failure. Cases treated, laparoscopic finding and method of treatment employed are presented in tables 2, 3 and 4. Table 2 showed the treatment employed to treat the 12 cases.

Table 2: Results of treatment

Technique	Number of cases	%	Failure
Salpingostomy	7	58	nil
Salpingectomy	5	42	nil

There were 7 cases (58.3%) ruptured ectopic pregnancies; 4 out of them are in acute abdomen state that required resuscitation and blood

transfusion before Laparoscopy; 6 on the right tube and one on the left tube (3 at the ampulla and 4 at the fimbria). 4 unruptured ectopic (33.3%); 2 on the right side and 2 on the left side, (one ampullary and 3 fimbrial) and one tubal abortion (8.3%) on the left side.

So the right side affected 66.6% while the left side affected in 33.4 %. Salpingostomy was the treatment in all unruptured ectopic and tubal abortion & was successfully performed in another 2 cases of ruptured ectopic pregnancies; (table 3 cases no. 7, 8). Average operation time 1 hour 10 minutes.

Blood transfusion was not required in all unruptured ectopic and tubal abortion, but was required (1-3 units) in all ruptured ectopic. All patients discharged home within 24 hours. No case required another laparoscopy or laparotomy. No post operative complications encountered. 4 cases conceived (cases 3, 5, 7, and 12) Table 2; 2 pregnancies occurred in the unruptured ectopic (5 and 12), one in the tubal abortion (case 3) and the 4th pregnancy in a ruptured ectopic (cases 7) that was treated by salpingostomy.

Table 3: Cases, presentation, laparoscopic findings and treatment

No	Age	Presentation	Laparoscopic findings	Treatment	Blood given
1	22	1ry infertility 3years	Rt. unruptured fimbrial ectopic	Salpingostomy	No
2	24	Para 1+2	Lt. fimbrial tubal abortion	Partial Salpingectomy	2 unit
3	21	Married 9 months	Rt. Ruptured ampullary	Partial salpingectomy	no
4	32	Para 5+1 2ndary infertility 2 years	ectopic (acute abdomen)		2 unit
5	31	Para 2 2ndary infertility 2 years	Lt. unruptured ampullary ectopic	Salpingostomy	no
6	34	Para 6+3	Rt. unruptured ampullary ectopic (acute abdomen)	Salpingostomy	2 unit
7	26	1ry infertility 2 years	Rt. Ruptured fimbrial ectopic	Salpingostomy	2 unit
8	29	para 2+1	Lt. Ruptured fimbrial ectopic	Salpingostomy	2 unit
9	25	para 1+5	Lt. unruptured fimbrial ectopic	Salpingostomy	no
10	27	para 3+4	Rt. Ruptured ampullary ectopic (acute abdomen)	Partial salpingectome	2 unit
11	25	1ry infertility 2 years	Rt. Ruptured fimbrial ectopic (acute abdomen)	Partial salpingectomy	3 unit
12	28	para 2+1	Rt. Unruptured fimbrial ectopic	Partial salpingectome	no

Table 4: Side and site of ectopic pregnancies

Rt. Tube	Lt. tube
8 (66.6%)	4 (33.3%)
6 ruptured	1 ruptured
2 unruptured	2 unruptured
	1 tubal abortion
3 ampullary	1 ampullary
5 fimbrial	3 fimbrial

Discussion

Laparoscopy has evolved the management of ectopic pregnancy dramatically. Nowadays there is no way to keep patients in hospital as had practiced before with a diagnosis of suspected ectopic pregnancy because these patients has to be scoped to ascertain the diagnosis and treat accordingly.

Laparoscopic treatment of ectopic pregnancies started by Bruhat and Manhes in France and Decherney and Diamond in USA in the late 1970s and early 1980s. Many authors reported a better results of Laparoscopic treatment of ectopic pregnancies to laparotomy^{4,9,15}.

The study covered 12 cases of ectopic pregnancies treated successfully by the laparoscope and included 4 cases acute abdomen which were managed after resuscitation by the laparoscope. Sultana et al¹⁵ reported that significant haemoperitoneum was the indication of Laparotomy in cases of ectopic pregnancy & reported 25% of attempted Laparoscopy for ectopic cases were eventually converted to Laparotomies. Laparoscopy was significantly less expensive, with shorter hospital stay. Lowe et al⁶ mentioned that the major contraindication to Laparoscopy are massive intra-abdominal bleeding and extensive intra-abdominal adhesions.

Tubal evacuation or aspiration was not attempted because of the fear of persistent trophoblast and recurrence⁴; Timonen et al¹¹ reported a recurrence in 2 out of 14 cases. Bruhat et al¹² quoted that precautions has to be taken to reduce the risk of leaving pregnancy in place:

1. To examine the aspirated fluid for the presence of product of gestation.
2. Intense and close post-operative follow-up to detect any failure and its consequences.

The study showed, that no case required Laparotomy and no post-operative complications, recurrence or persistence of trophoblast, but the number of cases treated was small (12 cases) and the sites were ampullary

and fimbrial regions which are the easiest sites for laparoscopic treatment.

Tubal patency after laparoscopic treatment of ectopic pregnancy was not checked by the usual methods of tubal patency i.e. laparoscopy or HSG, but was proved by the occurrence of 4 pregnancies (33.3%). This figure is comparable to the average figure quoted by Henri-Suhet et al¹⁶, but lower than the figure quoted by Bruhat et al¹².

All pregnancies occurred in the cases treated by salpingostomy, table 3 cases 3, 5, 7, and 12, but because number of cases is too small for these results to be statistically significant. Salpingostomy should be the standard treatment of unruptured ectopic and should be tried in ruptured ectopic if the rupture is small and bleeding is minimal. In this series, we managed to treat one of the ruptured ectopic (case no. 7) with salpingostomy.

Reproductive outcome laparoscopy or laparotomy performed for the treatment of ectopic is more or less the same and the crucial factor for future reproductive outcome after surgical treatment of ectopic gestation is the status of contralateral tube¹⁰.

The risk of subsequent recurrence of ectopic pregnancy is 15-30 %, being more after conservative than after radical surgery and subsequent intra-uterine pregnancy rate is 30-50%².

Laparoscopic treatment of ruptured ectopic with acute abdomen was successful in 4 cases, while acute abdomen was a contra-indication to laparoscopy in many other studies^{6,15}.

The present study showed that laparoscopic treatment of ectopic pregnancy is possible in almost all cases even the acute abdomen, but we should follow the laparoscopic golden rule that we have to revert to laparotomy when it is needed sooner and not later. Tubal aspiration was not attempted as mentioned before for the fear of leaving trophoblast leading to recurrence^{6,11,12}.

Conclusion:

Laparoscopy gives a better panoramic view of the peritoneal cavity than laparoscopy. If we standardize Laparoscopic treatment of ectopic pregnancy, it can be used for early diagnosis and treatment. Although the number of cases is small, the study showed that Laparoscopic

treatment of ectopic pregnancy is quick, safe, with short hospital stay even in acute cases, and better cosmetic results and very good fertility prospects. A multi-center study is required to ascertain these findings.

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