Laparoscopic Treatment Of Ectopic Pregnancy

Savitha Devi Yelamanchi
Swapna Nursing Home, Begumpet, Hyderabad.

Summary

Fifty two cases of ectopic pregnancy were treated by laparoscopic surgery. Early diagnosis was possible with urine Beta-HCG test and transvaginal sonography. Conservative surgery was done in 29 in the form of salpingostomy, fimbrial aspiration and partial ovariotomy. Radical surgery was done when the patient did not desire further childbearing or when the tube was badly damaged in 23 patients. There were no failures in this series. Seventeen patients were actively trying to conceive. Six of them had intrauterine pregnancies and 2 had repeat ectopics. Conservative surgery did not increase the repeat ectopic rate. The contralateral tube and the pelvic status were assessed and any co existing pathology was simultaneously treated. Laparoscopy seems to be a safe, and effective, method of treating ectopic pregnancy.

Introduction

Ectopic gestation is an important cause of maternal mortality and its incidence is increasing due to the rising frequency of STDS, use of IUCDs, tubal surgeries and assisted reproductive capabilities and prompt treatment is important for the conservation of the reproductive potential. The technical advances and improvements in operative laproscopic instrumentation and techniques have provided the endoscopic approach to ectopic pregnancy with several advantages.

Material & Methods

Patients:- From November 1994 to December 1997, 52 cases of ectopic pregnancy were treated at Swapna Nursing Home, Hyderabad by laparoscopy. During the same period, only 2 patients had laparotomy for ectopic pregnancy due to massive haemoperitoneum and unstable haemodynamic condition.

Diagnosis:- In all the cases, after clinical suspicion, the diagnosis was confirmed by a urine test for Beta-HCG and a transvaginal sonography. No case needed culdocentesis for diagnosis.

Counselling: Adequate pre-operative counselling was done regarding the options of treatment available, and the risks of conservative surgery like haemorrhage or persistent trophoblastic disease.

Operative technique:- The surgical technique used was laparoscopy which confirms the diagnosis, allows an assessment of the details of the ectopic pregnancy, the state of the pelvis and of the contralateral tube, and also gives an opportunity to deal with any other associated pathology. Multiple puncture approach was used using one 10mm portal and 2-3 5mm portals. The decision for conservative (salpingostomy, fimbrial aspiration) or radical (salpingectomy) surgery was made taking into account the patient's desire for childbearing, the size and the state of the tubal pregnancy and the state of the affected and the opposite tubes.

Salpingostomy was done for proximal unruptured tubal pregnancies in the ampullary or the isthmic regions; fimbrial aspiration for tubal abortions or fimbrial pregnancies; salpingectomy when the woman finished her childbearing, for a big haematosalpinx, (>6Cms) or a badly damaged tube; and partial ovariotomy for an ovarian pregnancy.

After evacuating the haemoperitoneum, the peritoneal cavity was washed with copious amounts of warmed ringer lactate, and all the clots and blood were meticulously removed.

The specimen was retrieved through the side port of 5 mm, which in some cases needed to be enlarged to 10mm, when the specimen was big. In a few cases, we had to use an endo bag to keep the friable tube and the products to be removed as a whole.

In the later cases of our series methylene blue test was done to assess the tubal patency. Other

associated pathologies like endometriosis, polycystic ovaries, adhesions etc; were simultaneously dealt with. Followup:- The patients were asked to come back 1 week after their discharge from the hospital when they were examined and urine sample was checked for Beta-HCG. Counselling was done regarding further followup, if they wanted to conceive.

Results:-

Fifty two ectopic pregnancies were treated by laparoscopic techniques over a period of 3 years. The mean age of patients was 27.78 years (range 20-42) and 36.5% were more than 31 years. Out of 52 only 13 had one or more children; 28 had no previous pregnancy and 11 had 1-4 abortions. 69.23% of ectopics were diagnosed unruptured. (Table-I). The commnest site of ectopic pregnancy was the ampullary part of the fallopian tube followed by the fimbrial and the isthmic areas. (Table II). Conservative laparoscopic surgery was done for 29 of these patients in the form of salpingectomy for 24, fimbrial aspiration for 4, and partial ovariotomy for 1. Salpingectomy was done for 22 patients and salpingooopherectomy for one. (Table III). The condition of the tubes was assessed (Table-VI). There were no failures of treatment-meaning that in no instance was there an incomplete removal of trophoblast. (Table IV). Any other incidental pathology found was simultaneously dealt with. (Table-VIII).

Table I
Findings of Laparoscopy (%)

	Wills & Mohanambai (1985-1988)	Present Series (1994-1997)
Ruptured	66	30.77
Unruptured	34	69.23

Table II
Sites of ectopic pregnancy (%)

	Present Series	Khera	Wills & Mohanambai
Ampullary	61.53	71.7	'34
Isthmic	13.46	20.75	'56
Fimbrial	15.38	1.88	'6
Intestinal		5.66	'3
Ovarian	1.92		'1
Chr. Ectopic	7.69		

Table III
Method of Laparoscopic Management

Conservative	29
Salpingostomy	24
Fimbrial aspiration	4
Partial Ovariotomy	1
Radical	23
Salpingectomy	22
Salpingo oopherectomy	1

Table IV
Failures of conservative surgeries

	Present series	Bruhat et al.
Salpingostomy	0/24	0/43
Fimbrial expression / aspiration	0/4	3/17
Partial ovariotomy	0/1	no figures

Table VII
Associated Surgical Procedures

Sterilisation	4
Adhesiolysis	8
Fulguration of Endometriosis	3
Ovarian Cystectomy	3
Ovarian drilling of PCO	6

Only one patient needed a laparotomy as there was trocar injury to a mesenteric vessel due to omental & bowel adhesions to a previous subumbilical midline scar of previous laparotomy for ectopic.

There was no postoperative morbidity in any of the patients. The urine test for pregnancy became negative by the 10th day in all except one patient in whom it took 2 weeks. Twenty five out of 52 patients wanted to conceive. Out of them 3 cases were done within the last 3 months and 5 were referred for assisted reproductive techniques. Of the 17 patients who were followed at our clinic, 6 had intrauterine pregnancies and 2 had repeat ectopic pregnancies. (Table-IX).

Table IX
Subsequent Fertility

No. of patients trying for conception	17 out of 25.
No. of Intrauterine pregnancies	6
No. of repeated Ectopics	2

8 cases deducted as 5 were referred for ART, & 3 had surgery only in the last 3 months.

Discussion:-

Early diagnosis and efficient management of ectopic pregnancy are very important as it constitutes an important cause of maternal death in the first trimester. Even though there is an enoromous increase in the incidence of 2-5 fold in the last 25 years, there is a significant reduction in the mortality of 90% (Luciano et al —1997).

Incidence:- The incidence in our series is 1.7 in every 100 deliveries, which is higher than the general reported incidence of 1 in 250 by ICMR in a multicentric study (1990), 1 in 341 by Shiela & Mahanambal (1991), 1 in 160 by Arora et al (1998), and 1 in 219 by Mitra and Mandal (1980).

The reason for the higher incidence in the present study may be the availability of laparoscopic surgery whereby more patients with infertility and ectopic pregnancy are refered.

Diagnosis:- Accurate diagnosis was possible in all the cases by urine test for Beta-HCG and a transvaginal sonography. No case needed culdocentesis for diagnosis in our series in contrast to the series reported by Arora et al (1998) where only 14% were diagnosed by urine test and USG and culdocentesis was their most reliable diagnostic criteria.

Risk Factors:- Theoretically anything that impedes the migration of the conceptus to the uterine cavity may predispose a women to develop an ectopic gestation. There may be intrinsic anatomic defects in the tubal epithelium, hormonal factors that interfere with normal transport of the conceptus, or pathological conditions that affect normal tube functioning. The most important explanation for the rising frequency is probably pelvic infection, although intrauterine device at the time of conception and ovulation induction with Clomiphene may confer a higher relative risk. The major risk factors found in the present series are compared with the relative risk quoted by March Banks et al (1998), in Table V. PID, pelvic adhesions and prior tubal surgery constituted the major risk factors in our series. We had a significant number of patients with pelvic tuberculosis which is strikingly absent in the Western series. 48.07% of our patients were infertile. Several authors have reported primary infertility as a significant risk factor- 11.2% by Arora et al (1998) 55.2% by Mitra et al and (1980).

Table V
Risk factors for ectopic pregnancy

	March Banks et al	Present Series		Wills & Mohanambal
		No.	%	
Current intrauterine device	11.9	'4	7.69%	33%
Clomiphene citrate therapy	10	'4	7.69%	8%
Prior tubal surgery	5.6	'7	13.46%	15%
Pelvic inflammatory disease	4	'13	25%	20%
Infertility	2.9	'25	48.07%	
Induced abortion	2.5	'1	1.92%	
Adhesions	2.4	'8	15.38%	
Abdominal surgery	2.3	'6	11.53%	
T-shaped uterus	2			
Myomata	1.7	'3	5.76%	1%
Progestin-only oral contraceptives	1.6			
Tuberculosis		'5	9.61%	

(Out of 21 infertile patients, 6 ectopics resulted from IUI, 1 from IVF, and we noticed ENDOMETRIOSIS in 3 and PCO in 6 during laparoscopy).

Laparoscopic management:- Traditionally laparotomy with salpingectomy was the standard practice. The treatment options have broadened considerably in the last 10 years and the contemporary surgical approach to the treatment of ectopic pregnancy rates are comparable to those reported for laparotomy (Pouly et al. 1986, Vermesh 1989, Bruhat et al. 1980). A more conservative surgical approach to unruptured ectopic pregnancy has been advocated to preserve the tubal function. (Luciano et al. 1997).

Several controlled and prospectively randomized studies have comparatively analysed the adhesion formation after laparoscopic surgery versus laparotomy (Vermesh et al 1989, Brumstead et al.1988) and the pregnancy rates, tubal patency, postoperative morbidity, length of hospital stay, duration of convalescence, and hospital cost (Vermesh et al. 1989, Brumstead et al. 1988). The conclusions drawn from these data are:

1) Laparoscopic treatment of ectopic pregnancy results in less postoperative adhesion formation and less impairment of pelvic status than laparotomy.
2) Laparoscopy is associated with significantly less blood loss and reduced analgesia requirement.
3) Laparoscopy reduced hospitalization cost and convalescence periods.

In our series we could do conservative surgery in 29 patients.

Even though in the 1980s tubal pregnancies of > 4cms, and haemoperitoneum of >500ml, obesity, and extrensive pelvic adhesions were considered as relative contra indications, now in the 90s it is realised that with adequate practice and surgical experience and with the availability of proper instrumentation, most of the ectopics can be managed successfully by laparoscopy, regardless of the size, location, number of gestations and presence or absence of tubal rupture. (Luciano, 1997). In 6 of our cases the size of the haematosalpinx was between 3-6 cms and 5 of our patients had haemoperitoneum between 500-1000cc.

However, in the critically ill patient, laparotomy may continue to have a role because of the swiftness with which it provides access to the abdomen and control of hemorrhage. (Luciano, 1997). In our series only 2 patients had laparotomy during the 3 year study period.

The Contralateral tube :- The status of the contralateral tube appears to be an important determinant of fertility potential. Hence its evaluation is important at the time of laparoscopy by inspection, dye test, salpingoscopy or subsequent hysterosalpingography. Intrauterine pregnancy rates are 85% when it is normal as against very low rates if it is involved with adhesions (Luciano, 1997).

The state of the tubes observed during laparoscopy in our patients is given in Table VI and compared with that reported by Sheila and Mohanambal (1991). PID producing adhesions was present in 25% in both series and the tubes were found to be healthy in most of the patients. There were more cases of tuberculosis, endometriosis and prior tubal surgeries in our series, Rajan et al in 1990 did not observe endometriosis in any of their ectopics.

Table VI
Pathology of tubes

Findings	Wills Shiela		Present series (Total 52)	
	1975-80	1985-88	1994-97	
	%	%	No.	%
Tuberculosis	'1%	'1%	'5	'9.61%
Endometriosis	Nil	Nil	'3	'5.76%
Absent appendix with adhesions	'8%	'30%		
Adhesions due to PID	'40%	'25%	'13%	'25%
CONDITIONS OF TUBES				
1) Healthy	'70%	'60%	'43	'82.6%
2) Absent opposite tubes	'2%	'4%	'5	'9.61%
3) Inflammed thickened and tortuous tube	'20%	'8%	'5	'9.61%
4) Chronic ectopic pregnancy				
5) Scar on tubes due to tubal surgery.	'2%	Nil	'4	'7.69%
	'1%	'3%	'7	'13.46%

Where the patient presented with infertility, we started doing chrompertubation with methylene blue in the later cases of our series. Dye test was done in 6 cases & the tubes were patent in 5 of them. Subsequent HSG was done in another 3 and one had tubal block. (Table-VIII).

Table VIII
Assessment of the Tubes

Test	No.	Patent	Blocked
Methylene blue at Laparoscopy	5	5	-
HSG	3	2	1

Fertility results :- There were 25 patients who wanted to conceive and out of them 5 were referred for ART and 3 had surgery during the last 3 months only, hence these 8 are deducted. Of the 17 patients who attended our clinic, 6 had intrauterine pregnancies and 2 had repeat ectopics. (Table IX).

Conservative surgery :- Out of 14 patients who underwent conservative surgery and were trying to conceive, 6 achieved intrauterine pregnancy (42.85%). These rates are comparable with those of the other authors. (Table X).

Table X
Results of Conservative Surgery

Authors	No. of cases	% IU pregnancies	%Ectopics
Bukowsky et al	23	60	4
De Cherney	48	40	18
Giana et al.	51	33	7.8
Henri-Suchet et al.	52	42	19
Jaruinen et al	43	60	10
Mintz	80	46	11.2
Palmer	63	20	17.5
Shulj et al.	106	22	1
Stromme	37	20	19
Timonen and Nieminem	240	38	15.7
Bruhat	25	72	12
Present Series	14	42.85	0

There was no repeat ectopic pregnancy in this group.

Radical surgery :- There were 3 patients trying for pregnancy in the radical surgery group and two out of them again had ectopic pregnancy (66.6%). (Table :-XI).

Table XI
Results of conservative & radical surgeries for ectopi pregnancies

Present series	Radical surgery		Conservative surgery	
	No. (3)	%	No. (14)	%
Intrauterine	0/3	0	6/14	42.85
Ectopic	2/3	66.6	0/14	0
De Cherney				
Intrauterine		42		39.6
Ectopic		12		11.6

In De cherney and Diamond's series (1979 the rates of intrauterine & ectopic pregnancies wer similar in both groups.

The reason for the greater incidence of ectopi in the radical surgery group in our series is that th tube was removed only when it was already basicall diseased, ruptured and there were already adhesion & haemoperitoneum, all of which predispose t ectopic.

Conclusions :- The management of ectopic pregnanc has become more challenging than ever befor because of the increasing incidence. Early detectio has made it possible to diagnose the condition befor rupture occurs and hence the treatment has shifte from a life saving immediate laparotomy to mor conservative procedures directed at preserving fertilit and reducing morbidity (Vermesh et al, 1989) Laparoscopic surgery has the advantages of avoidin the consequences of laparotomy, and linea salpingostomy is the treatment of choice fo unruptured ampullary or isthmic pregnancies an fimbrial aspirations for tubal abortions & distal tub pregnancies. Conservative surgery does not increas the repeat ectopic pregnancy rate. Salping oopherectomy offers no advantage and even if neith tube can be saved, every effort should be made t preserve the uterus & atleast one ovary to keep aliv the hope for future pregnancy with IVF (Lucian 1997).

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