

# A five-year review of ectopic pregnancy

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## Summary

During the five years from 1990-1994, 98 women underwent surgery for ectopic pregnancy. For every 167 deliveries, one patient underwent surgery for ectopic pregnancy. The incidence is 0.59 per cent with a rising trend. The commonest presenting symptom was abdominal pain (97%) followed by vaginal bleeding (79%). Four patients were asymptomatic and were diagnosed at routine antenatal ultrasound scan. The most frequent physical findings were abdominal tenderness (91%), followed by adnexal tenderness (54%). Histories of infertility (15%), use of intrauterine contraceptive devices (14%), and previous ectopic pregnancy (11%) were elicited. Five patients had a false negative urinary pregnancy test and subsequently required surgery. The ectopic pregnancies were tubal in 98 per cent of the cases. The diagnosis and management of ectopic pregnancy has changed significantly over the last decade. The increasing use of quantitative BHCG assay and vaginal ultrasonography have made early diagnosis possible, allowing conservative tubal surgery when indicated.

*Key words:* Ectopic pregnancy.

## Introduction

Ectopic pregnancy was first described in 963 A. D. by Abulcasis [1]. It was first discussed as an obstetrical complication by Mauriceau in the 17th Century [2]. Tait was the first person to perform a successful salpingectomy for an ectopic pregnancy [3].

While the incidence of ectopic pregnancy has increased over the past decade, the fatality rate has generally declined. The total number of ectopic pregnancies in the United States increased from 4.5 to 16.8 per 1,000 pregnancies between 1970 and 1987 [4]. Yet surprisingly the fatality rate fell some 90 per cent from 35.5 to 3.5 per 10,000 during the same interval [5]. Between 1991-1993, nine women died in the United Kingdom from this condition [6].

The presence of ectopic pregnancy subjects women to the risk of intra-abdominal bleeding, performance of laparoscopy or laparotomy and possibly extended hospital stay. The advances in the detection of ectopic pregnancy over the past 20 years have resulted in earlier and more consistent diagnosis. Most centres now are able to intervene prior to tubal rupture in more than 80 per cent of cases [5].

In the present study, we review the incidence, trends, and diagnostic tests of ectopic pregnancy.

## Patients and Methods

This review is a retrospective study of case records of patients treated for ectopic pregnancy at Northwick Park Hospital between 1990-1994. The patients were identified from Registers in the histopathology department, operating theatres and gynaecology ward. The notes of 98 cases of ectopic pregnancy were reviewed.

## Results

Ninety-eight ectopic pregnancies were found between 1990 and 1994. During that period there were 16,434 deliveries. The incidence is one in 167 deliveries or 0.59 per cent. A number of aetiological factors are associated with ectopic pregnancy. Their occurrence in the cases studied is shown in Table 1.

The commonest presenting symptom was abdominal pain (97%) followed by vaginal bleeding preceding the pain in 78 cases. Twenty-three patients (23%) complained of nausea and vomiting. Dizziness was another frequent symptom (16%), and shoulder tip pain (11%). Four patients were asymptomatic and were diagnosed by pelvic ultrasound scan carried out for early pregnancy dating.

Table 2 lists the commonest finding on physical examination. There were 14 patients found to have tachycardia of over 100 beats/minute and 17 patients were hypotensive with blood pressure below 90/60 mmHg. Only seven patients were pyrexial at the time of their symptoms. Anatomical locations of the ectopic pregnancies established at laparotomy or laparoscopy are shown in Table 3. Of the 96 tubal ectopic pregnancies, the majority were found in the ampulla (69%), with fimbrial and

Table 1. — *Ectopic pregnancy: possible aetiological factors*

	NO. OF CASES
— Past investigations for infertility	15 (15%)
— Previous use of intrauterine contraceptive devices	14 (14%)
— Previous ectopic pregnancy	11 (11%)
— Previous appendectomy	7 (7%)
— Previous pelvic inflammatory disease	6 (6%)
— Previous tubal surgery	6 (6%)
— Endometriosis	5 (5%)
— Use of Progesterone-only pill	4 (4%)

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Table 2. — Ectopic pregnancy: commonest findings on physical examinations

	NO. OF CASES
– Abdominal tenderness	89 (91%)
– Adnexal tenderness	53 (54%)
– Vaginal bleeding	43 (44%)
– Cervical excitation	36 (37%)
– Enlarged uterus	31 (32%)
– Adnexal mass	14 (14%)

Table 3. — Anatomical location of ectopic pregnancy

LOCATION	NO. OF CASES
– Tubal:	
Right Fallopian Tube	58
Left Fallopian Tube	38
– Ovarian	1
– Cervical	1

isthmic ectopic pregnancies in 13% and 10%, respectively. There were no ectopic pregnancies found in the interstitial area. In this series of 98 ectopic pregnancies studied, five patients had a negative urine pregnancy test (sensitivity 200 iu/L HCG) and they subsequently required surgery. Seventy-one patients (72%) had a positive pregnancy test and in the remainder the test was inconclusive or not documented (22 patients). Serum BHCG was performed on 19 patients, and of these only two patients required quantitative serial BHCG.

All the patients in this series were treated by laparoscopy. The majority of the patients had a salpingectomy carried out (75%). Ten patients had a salpingostomy and another seven patients had a salpingo-oophorectomy. Seven patients were treated by digital expression of the tube leading to evacuation of the ectopic pregnancy out at the fimbriated end. In 64 per cent of cases the ectopia was intact and had not ruptured and in 36 per cent the ectopia had ruptured.

The majority of patients were referred to hospital by their general practitioner (62%). Thirty-two per cent were self-referrals to the Accident and Emergency Department and 6 per cent were referred to the Gynaecology Department from other wards within the Hospital.

## Discussion

There is considerable variation in the quoted incidence of ectopic pregnancy and controversy over how statistics relating to ectopic pregnancy should be expressed. In Jamaica the incidence is one ectopic pregnancy for every 28 live births [7], whereas in Saigon an incidence of one in 40 deliveries has been reported [8]. In the United States the incidence per live births reported has varied from one in 64 [9] to one in 241 [10]. In the present study the incidence is 1:167 deliveries or 0.59 per cent. Whatever the incidence quoted, there is no doubt that it is on

the increase. The total number of ectopic pregnancies in the United States increased from 4.5 to 16.8 per 1,000 pregnancies between 1970 and 1987 [4].

The annual rate of increase of ectopic pregnancy has been reported as 4.8 per cent in England and Wales [11], 6 per cent in Sweden [12].

The putative reasons for this rising trend are complex and include increased pelvic infection, pelvic surgery, assisted reproduction as well as advances in the detection of ectopic pregnancy which result in earlier and more consistent diagnosis. A large number of risk factors have been associated with ectopic pregnancies. In the present study 15 per cent of women had been previously investigated for infertility. The incidence of ectopic pregnancy has increased eight-fold in women who have been investigated for infertility [13]. The use of intrauterine contraceptive devices has been associated with an increase in ectopic pregnancies. Ory *et al.* [14] concluded that an intrauterine device-user had the same risk as a non-user for an ectopic pregnancy. Berol [11] linked the increase in ectopic pregnancy with the use of intrauterine contraceptive devices. In the present series 14 per cent of patients had been using the device.

Pelvic inflammatory disease is felt by many to be a significant predisposing factor. A review of the histology of tubes involved in ectopic pregnancy revealed 19 to 95 per cent (mean = 45%) of examined tubes had evidence of previous tubal infection [15]. Kitchen *et al.* found a history of this condition in 16 per cent of ectopic pregnancies [16]. We found a history suggestive of infection in only 6 per cent. Others however, have failed to find this association of a history of pelvic inflammatory disease or microscopic evidence of tubal disease in patients with an ectopic pregnancy [17].

The progesterone-only pill increases the incidence of ectopic pregnancy [18], probably by altering the mechanism of transport of fertilised ovum through the Fallopian tube. In our series 4 per cent of patients were using the progesterone-only pill.

The advent of the current generation of serum BHCG assay and ultrasound scanning has resulted in earlier and more consistent diagnosis of ectopic pregnancy. Four patients were diagnosed as having ectopic pregnancy by abdominal scan although asymptomatic. Scans have most often been used to exclude the presence of intrauterine pregnancy. The introduction of a vaginal transducer with greater resolution and proximity to pelvic organs has made it possible for intrauterine pregnancies to be detected one week earlier than by abdominal scan. In our series only two patients out of 98 had their ectopic pregnancies diagnosed by vaginal ultrasonography. With the recent appointment of more radiographers and better training and supervision, we anticipate the early detection rate of ectopic pregnancy in our hospital will increase.

Conventional urinary pregnancy tests carried out at our hospital were of the older variety with a sensitivity of 200 i.u./l HCG. Five patients had negative tests but required laparoscopy for ectopic pregnancy. Had the ectopic pregnancy been diagnosed earlier, it would have saved the patient any delay in surgery. The newer monoclonal anti-

body urine pregnancy tests have a greater sensitivity of 50 i.u./l HCG, and are proving to be good screening tests for pregnancy. The hospital has only recently introduced this kit as the standard pregnancy test.

Quantitative BHCG remains the most sensitive test for the diagnosis of ectopic pregnancy. Abnormal pregnancies are associated with impaired hCG production, while a characteristic rate of hCG increase is noted in 85 per cent of normal intrauterine pregnancies, with the average doubling time for hCG concentrations being 1.98 days [19]. The doubling time of hCG is an useful diagnostic aid in cases where vaginal scanning has not given a definite answer regarding the presence of an intrauterine pregnancy [20].

When BHCG levels are greater than 1,000 i.u./L, an intrauterine gestational sac should be detected by vaginal ultrasonography. Failure to visualise an intrauterine gestational sac, or the direct visualisation of an ectopically-placed gestational sac allows the earlier diagnosis of possible ectopic pregnancy.

Laparoscopy is still the gold standard for the diagnosis of ectopic pregnancy. This was carried out in 91 per cent of patients prior to laparotomy. Seven per cent of patients were treated by laparotomy without laparoscopy due to collapse of the patient. Salpingectomy was carried out in 75 per cent of the patients.

Conservative surgery now accomplished by laparoscopy is the treatment of choice for ectopic pregnancy in women desiring future fertility. A variety of surgical procedures including linear salpingostomy and segmental excision have been used to maintain future function. Currently linear salpingostomy is the procedure of choice for the management of uncomplicated pregnancy [21].

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