

ORIGINAL STUDIES

# Ectopic Pregnancy and its Effect on Future Fertility

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**Abstract:** A hospital based study on ectopic pregnancy was carried out at B and B Hospital, Gwarkhu, Kathmandu over a period of 8 years. During this period 88 patients came for the treatment of ectopic pregnancy. Their background information was recorded and almost all of them were managed surgically. The incidence of ectopic pregnancy is found to be 1.8% of all women admitted in the hospital with pregnancy related conditions. Sixty-six (77%) of them were of less than 30 years age. They presented with wide spectrum of symptoms and signs ranging from amenorrhea, abdominal pain and abnormal vaginal bleeding. Almost all (97.76%) of them had tubal pregnancy with 92% presenting in an acute stage with ruptured gestational sac. Two of these women lost their life due to this pathology. Out of the remaining 86 women, 71(82.55%) expressed the desire to try for another pregnancy in future. Few (5.84%) of them were true defaulters and could not be followed up. A follow-up study was done therefore on remaining 66(76.74%) patients who desired to be pregnant again after this ectopic pregnancy. The main objective of the study was to assess the future fertility of these 66 patients. Eighteen percent of them remained infertile and 82% (54) of them became pregnant. Twelve (18%) of them had repeat ectopic pregnancy, whereas 42 (63.63%) of them had intrauterine pregnancy. Out of 42 intrauterine pregnancies, only 39(59.09%) were able to continue the pregnancy till term and three pregnancies (4.54%) ended-up with spontaneous miscarriage.

**Keywords:** Ectopic pregnancy, fertility, amenorrhea, infertile, intrauterine pregnancy, term, miscarriage.

## INTRODUCTION

Ectopic pregnancy is a life-threatening condition where the pregnancy is implanted outside the uterine cavity.<sup>1</sup> More than ninety five percent of the ectopic pregnancy occurs in the fallopian tubes and are known as tubal pregnancy. Recent advances have been made to diagnose this condition very early and various new modalities of treatment have also been invented

and practiced to save the women on time but ectopic pregnancy is still a significant cause of mortality and morbidity for the women of reproductive age group. Even a small delay in initiating the treatment can take patients life and one fallopian tube may have to be sacrificed in many cases. This issue is of great concern for her future fertility. If the condition is diagnosed in an un-ruptured state or if the woman's future fertility is important and if the other-sided tube is absent or unhealthy, attempt is made to save the affected fallopian tube by doing conservative surgery. Stress and strain faced by the woman and their family due to ectopic pregnancy and the fear of its recurrence in the future is the main cause of anxiety and concern for them. Their primary concern is usually for their future fertility because the rates of fertility after surgery for ectopic pregnancy are claimed to be low. It has been found that 10 to 50% of ectopic pregnancy has a subsequent ectopic pregnancy and 60 to 70% has fertility problems.<sup>2</sup> This depends on the study population, study period, predisposing risk factors and operative procedures practiced.

B and B Hospital and research centre is a private general hospital affiliated with Kathmandu University Medical School. It has 150 beds. It is mostly known for its orthopedic and urology services but it also provides 24 hours emergency, OPD, indoor and operative services for good number obstetrics and gynecological patients of Nepal.

## OBJECTIVES

### Overall Objective

This study was undertaken to—evaluate fertility rates of the women after the surgery for ectopic pregnancies.

## Specific Objectives

This study was carried out to find out

1. The magnitude of this problem in a private teaching hospital.
2. The age distribution and the presenting symptoms and signs of patients with ectopic pregnancy.
3. The sites of ectopic pregnancies and the percentage of ectopic pregnancy which are diagnosed in an unruptured state.
4. The type of surgeries performed to manage ectopic pregnancies.
5. The percentages of the women who desire to get pregnant after one ectopic pregnancy.
6. The overall pregnancy rate and intrauterine conception rate after ectopic pregnancy.
7. The percentage of women with intrauterine pregnancy after ectopic pregnancy, who could continue the pregnancy to term and deliver.

## METHODOLOGY

This is a prospective and hospital-based study done for eight years from 15th November 1997 to 15th November 2005. The study population consisted of 88 patients presented and operated for ectopic pregnancy at B and B hospital, Lalitpur, Nepal. Background information of all the cases of ectopic pregnancies were recorded in detail in the admission form in the process of routine history writing. A copy of these history forms from each patient were collected and saved. A separate register was also maintained to have their information on her age, LMP, history of sub-fertility, PID or tuberculosis, obstetric history, contraceptive history focussing on IUCD, status of ectopic pregnancy, Hb level, blood group, types of surgeries performed and need for blood transfusion.

As this study is primarily to assess the future fertility, two women who died due to this cause were not counted in the study. Therefore background information of 86 women have been collected here and another fifteen patients who used contraception or were sterilized after ectopic pregnancy were also excluded from the study. Remaining 71 clients who desired to get pregnant in future were the total sample size of this study.

At the time of admission most of the patients and their family were not in a state to give consent for the study. Therefore most of the patients operated for ectopic pregnancy were enrolled in the study on their first follow-up visit after surgery on 11th to 14th postoperative day. Few of the patients managed by separate consultants were enrolled with their verbal consent on the 3rd postoperative day. This second group of patients were traced by phone and e-mail. At the time of the enrolment, objectives

of the study were explained to the patients, their verbal consent was taken and telephone number and e-mail address was exchanged. Verbal agreement was made to contact each other directly on the phone or e-mail as per requirement. Thus verbal agreement was made for a long-term follow-up and to get information on their future fertility status.

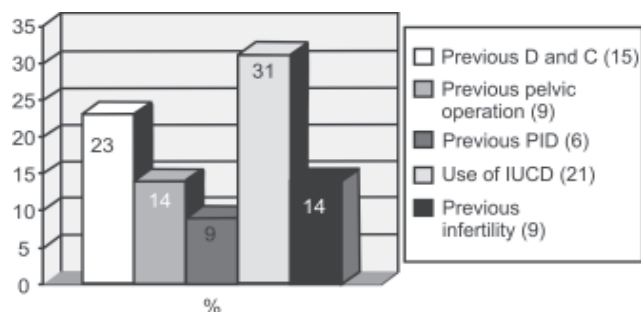
They were followed-up in one week after discharge, then every month twice, then every six months twice, then yearly for at least 3 years and they were requested to report at any time if they missed their periods and or suspected pregnancy. These women were followed for 3-6 years and the last date of their follow-up for this study was 15th November 2008. Information on the gynecological and obstetrical events until this date was collected either at their follow-up visit or on telephonic conversation. Twenty two patients failed to come for follow after 3-6 months period. Seventeen of them were traced after 3-4 years either on telephone or on e-mail but five of them could not be traced. Thus 66 patients who desired for pregnancy and could be followed-up were assessed for their future fertility. Future fertility after ectopic pregnancy was assessed by overall pregnancy rate, intrauterine conception rate, subsequent deliveries, ectopic pregnancies and infertility status. Patients who had more than one intrauterine pregnancy were counted only once.

## RESULT

There were total of 4860 pregnancy related cases admitted in the hospital during the study period. Out of them 88 patients were diagnosed and admitted with the confirmed diagnosis of ectopic pregnancy. Thus the incidence of ectopic pregnancy here was 1.8% of all admitted patients with pregnancy related conditions. Over the period of these eight years, there were 6 maternal deaths, 2 of which were from ectopic pregnancy. One patient died within 10 minutes of arrival to the hospital and the other one died on the third postoperative day due to adult respiratory distress syndrome. Information obtained from remaining 86 patients was analyzed. These cases presented with wide spectrum of symptoms and signs as shown in Table 1.

**Table 1:** Presenting symptoms and signs

<i>Symptoms and signs</i>	<i>Number</i>	<i>%</i>
Abdominal pain	82	95.34
Shoulder pain	18	20.93
Abnormal uterine bleeding	59	68.60
Amenorrhea <2 weeks	61	70.93
Syncope	29	33.72
Adnexal tenderness	79	91.86
Adnexal mass	45	52.32

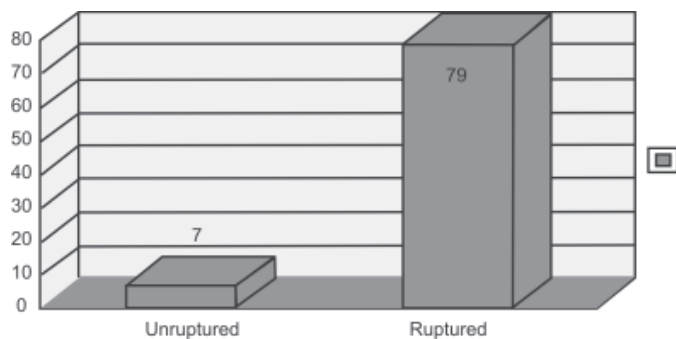


**Fig. 1:** History of previous D and C, PID, pelvic surgery, infertility and IUCD use

As shown in Figure 1, 31% of them were IUCD users, 23% had history of D and C in the past, 14% each had history of previous subfertility and previous pelvic surgery and 9% had history of treatment for subfertility.

Almost all (84) of the 86 patients had tubal pregnancy and remaining 2 had ovarian pregnancy.

Most (92%) of these cases had presented in a ruptured state with hemoperitoneum, whereas only 8% of them, could be diagnosed in an unruptured state (Fig. 2). Out of 79 cases presenting with hemoperitoneum four cases had tubal abortion with gestational sac still partially lying in the fallopian tube. All of them were managed surgically performed by open method. Blood transfusion was required for 69 (80%) patients.



**Fig. 2:** State of the tubal pregnancy

Conservative surgery like Salpingotomy, Ovum milking and ovarian resection has been done on 14 cases. Radical surgery like salpingectomy and salpingoohorectomy has been done on 52 patients of ectopic pregnancy.

As expressed in Table 2, out of 86 patients of ectopic pregnancy, fifteen (17.44%) either did not need or decided not to get pregnant again. Remaining seventy one patients showed their willingness to get pregnant again but wanted to know the

ways and means by which they could avoid such mishaps again. Out of 71 patients, 22 patients failed to communicate or to come for scheduled check up visits. Seventeen of them could be traced on telephone or e-mail and interviewed whereas 5 (5.81%) could not be contacted. Therefore future fertility was assessed on remaining 66 (76.74%) patients who desired to get pregnant again and could be followed-up.

**Table 2:** n = 86 patients of ectopic pregnancy

Categories	Number	%
No desire to be pregnant	15	17.44
Desired to be pregnant again	71	82.56
<b>Total</b>	<b>86</b>	<b>100</b>
True loss to follow-up. (lost to follow-up -22, 17 could be contacted and interviewed on phone)	5	5.81*
Final number of women who desired to be pregnant and could be followed-up	66	76.74*
<b>Total</b>	<b>71</b>	

\*Percentage out of 86 patients.

As shown in Table 3 almost 77% of the total 86 patients and 78.79% of 66 patients who were eager for next pregnancy were of less than 30 years of age.

**Table 3:** Eager for next pregnancy

Age group in years	No. of total ectopic pregnancy	%	No. of eager for pregnancy	%
≤19	17	19.77	9	13.64
20-24	22	25.59	21	31.82
25-29	27	31.39	22	33.33
30-34	9	10.46	8	12.12
35-39	6	6.98	4	6.06
≤ 40	5	5.81	2	3.03
<b>Total</b>	<b>86</b>	<b>100</b>	<b>66</b>	<b>100</b>

Tables 4 to 7 show that 18% (12) of 66 women remained infertile and 82% (54) of them became pregnant. Therefore overall conception rate after ectopic pregnancy is 82%. Eighty-five percent of all subsequent pregnancy of the 66 patients and 60% of the recurrent ectopic pregnancy occurred within 2 years after the operation.

**Table 4:** Those who desired to be pregnant again (n = 66)

Categories	Number	Percentage
Remained infertile	12	18
Became pregnant	54	82
<b>Total</b>	<b>66</b>	<b>100</b>

Out of the 54, who became pregnant, twelve had ectopic pregnancy again, whereas 42 of them had intrauterine pregnancy. Thus intrauterine conception rate was 64%. Out of 42 patients who had intrauterine pregnancy, 39 were able to continue the pregnancy till term. Three of them lost the pregnancy because of spontaneous abortion. Six patients had an additional miscarriage and three patients had additional induced abortion after a normal delivery.

**Table 5:** Those who became pregnant (n = 54)

Categories	Number	Percentage
Had repeat ectopic pregnancy	12	22 (18*)
Had intrauterine pregnancy	42	78 (64*)
<b>Total</b>	<b>54</b>	<b>100 (82*)</b>

\*Percentage out of total 66 who desired to be pregnant.

**Table 6:** Those who had intrauterine pregnancy (n = 42)

Categories	Number	Percentage
Had miscarriage	3	7
Had one or more deliveries	39	93(59.09%*)
<b>Total</b>	<b>42</b>	<b>100</b>

\* Percentage out of total 66 who desired to be pregnant.

Table 7 shows subsequent deliveries, ectopic pregnancies and infertility after ectopic pregnancy in relation to the type of primary operation.

**Table 7:** Subsequent obstetric outcome

Procedure	Number of patients with subsequent		
	Delivery	Ectopic pregnancy	Infertility
<b>Conservative 14</b>	<b>8</b>	<b>4</b>	<b>2</b>
Salpingotomy	3	3	1
Ovum milking	3	1	1
Ovarian resection	2	–	–
<b>Radical 52*</b>	<b>31</b>	<b>8</b>	<b>10</b>
Salpingectomy	12	7	5
Salpingo-oophorectomy	19	1	5

\*3 had miscarriage

## DISCUSSION

Exact incidence of ectopic pregnancy remains largely unknown. Many times diagnosis is missed when ectopic pregnancy resolves spontaneously at an early stage and many times patients do not reach the facility. Incidence ranges from 0.25 to 1.5% of all pregnancies including live births, induced abortions and ectopic gestation.<sup>1</sup> Different denominators are used to report the incidence by different authors. Here incidence has been calculated out of total patients admitted in the maternity unit of B and B hospital for the pregnancy related conditions.

Like in any other study, here also ectopic pregnancy cases presented in a bewildering variety of anatomical, physiological and clinical expression. Ectopic pregnancy however is very difficult to detect and diagnose in an unruptured state. They usually present in a critical and acute state with massive hemoperitoneum. Gupta and his colleagues in 1992 observed 60% of the ectopic pregnancy was ruptured and 4% had intact tubal gestation during surgery.<sup>1,3</sup> Eight percent of the cases in this study were diagnosed in an unruptured state.

Although IUCD users are supposed to be protected from both intra and extrauterine pregnancy, it has been found that a woman who conceives with IUCD *in situ* is seven times more likely to have tubal pregnancy in comparison to a woman who conceives without IUCD.<sup>1</sup> Similarly, previous tubal surgery, induced abortions, pelvic inflammatory disease and history of previous subfertility seems to be some of the important risk factors for extrauterine pregnancy.<sup>1,4</sup> This study also indicates towards the same direction because a good number of women with ectopic pregnancies were found to be IUCD users and had a past history of D and C, subfertility, pelvic surgery and PID.

There were 6 maternal deaths over the study period, 2 of which were due to ectopic gestation, i.e. 33 percent of maternal death was due to ectopic pregnancy. In 1988, USA, there were 44 deaths due to ectopic pregnancy which came out to be 15% of maternal death and in UK, from 1991-1993 there were 9 deaths due to this reason, which increased to 12 during three years from 1994 to 1996.<sup>5</sup>

Approach of the treatment of this life threatening condition has changed from radical surgery to conservative tubal surgery to expectant management to medical treatment.<sup>6</sup> If medical treatment becomes successful laparoscopic diagnosis and surgical treatment will loose its importance and will be the story of the past.<sup>5</sup> In this study, all the cases of ectopic pregnancies were diagnosed either clinically or by USG and all of them were treated by surgical approach. Most of the cases had radical surgery like salpingectomy or salpingo-oophorectomy and some of them were treated by conservative surgeries. Trend of preserving the tube involved with a gestation has become a

common practice now a days but controversy still prevails as to whether patients treated conservatively have better outcome than those treated radically by salpingectomy.<sup>9</sup> This study reflected that 57.14% of women operated conservatively and 59.61% of women operated radically for ectopic pregnancy had delivered full-term baby in their next pregnancy. However, it is not sufficient to relate postectopic pregnancy to surgical procedures only because background factors like age, PID and previous subfertility also have a great impact on future fertility.

Medical treatment mostly with systemic methotrexate is practiced for managing a case of unruptured ectopic pregnancy.<sup>6</sup> Medical management was not at all practiced here. This is because of the confidence of all the service providers over the surgical management which is being practiced for a long time and is therefore time tested.

All the women who experienced ectopic pregnancy were very scared to be pregnant again. After counseling, they knew that there is always a possibility of infertility and repeat ectopic pregnancy after one incidence of such dreadful condition. It was very clear that the women, mostly of less than 30 years of age had to overcome this fear and take the risk of another pregnancy because of the social pressure and many times to maintain their marital harmony too.

The overall conception rate and intrauterine pregnancy (82% and 64%) found in this study are higher than some of the large series reported in literatures so far.<sup>7,8</sup> In our study, 59.09% of the patients actively trying to conceive after one ectopic pregnancy had a full-term intrauterine pregnancy. Gupta and his colleagues in 1992 found that only less than 50% of the patients with ectopic pregnancy conceive again and 12-18% of them report with recurrent ectopic pregnancy.<sup>3</sup> The rate of recurrent ectopic pregnancy in the current study (18%) is slightly less than in Finland study (20%).<sup>4</sup>

The proportion of pregnancies which were carried to term (93%) is also higher than the study done in Finland and the rate of infertility is also low.<sup>4</sup>

## CONCLUSION

Ectopic pregnancy is a very important cause of maternal death and still holds a diagnostic challenge. A service provider should always 'think ectopic first' for any women of reproductive age presenting with triad of abdominal pain, irregular vaginal bleeding and amenorrhea. It has to be managed efficiently, energetically and promptly, failing to do so might take the life of the affected woman. Life of the women has to be saved first

and once her life is saved, her future fertility needs has to be addressed. Counselling about the chances and possible consequences of next pregnancy has to be counselled to the woman, her partner and her family very well because on the whole fertility is poor after an extrauterine pregnancy. The risk of ectopic pregnancy after one ectopic pregnancy is increased to 30 to 50 fold but results of this study are encouraging for the present female population desiring further pregnancies after ectopic pregnancy that there is no severe impairment of subsequent reproductive performance. This is especially encouraging in view of the massive increase of the ectopic pregnancy in the country.

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