

# A profile of ectopic pregnancy at Nepal Medical College Teaching Hospital

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## ABSTRACT

A retrospective study of ectopic pregnancy at Nepal Medical College Teaching Hospital between January 2001 to June 2006 was carried out to determine incidence, demographic features, clinical presentation, duration at presentation and treatment, and the management protocol. A total of 36 cases of ectopic pregnancy were treated giving the incidence of ectopic pregnancy of 10.2/1000 deliveries and 7.3 /1000 pregnancies. The mean age is 30.1 years (range 23-45 years) and the mean parity is 1.2 with nulliparous at 49%. The mean gestational age is 6.9 weeks (range 5-11 weeks). Among the ethnicity, *Mongolians* constituted at 54.6%. The commonest risk factors present were infertility (33.3%), previous ectopic pregnancy (16.7%), pelvic inflammatory disease (13.9%) and tubal surgery (13.9%). The commonest symptoms at presentation are abdominal pain (94.4%), amenorrhea (72.2%) and abnormal vaginal bleeding (58.3%); and commonest signs were abdominal tenderness (91.7%), adnexal tenderness (72.2%) and cervical excitation (50.0%). The mean time from symptom to treatment was 176.58 hours and mean time from admission to treatment was 12.88 hours. Ectopic pregnancy was correctly diagnosed clinically in 85.0% patients including 42.5% (12/36) of ruptured ectopic pregnancy. Abdominal ultrasound and urinary  $\beta$ -hCG tests (ELISA test) were additional diagnostic tools. Sixty one percent (22/36) presented in subacute condition. Two cases (5.6%) were presented late causing diagnostic problem and more morbidity like anaemia, blood transfusion, adhesion needing major operations. Salpingectomy is the mainstay of treatment. Only one case has conservative surgery. Late presentation and ruptured ectopic pregnancy is associated with increased morbidity and mortality. High index of suspicion and early recourse to laparotomy save the life from this obstetric disaster.

**Keywords:** Clinical diagnosis, Clinical presentation Ectopic pregnancy, Salpingectomy, Salpingo-phorectomy

## INTRODUCTION

Ectopic pregnancy is of considerable medical importance because of its associated maternal deaths, sterility and adverse outcome in subsequent pregnancies. Evidence suggests that the incidence of ectopic pregnancy has risen by 3 folds over the last two decades in the industrial countries and it is accounted for 12.2% of all direct maternal death and remained the leading cause of death in the first trimester.<sup>1-4</sup> Earlier diagnosis by sensitive and specific radio-immuno assays of  $\beta$ -human chorionic gonadotrophin ( $\beta$ -hCG) sensitivity 98-100%<sup>5</sup> and high resolution of transvaginal ultrasound (sensitivity 82-95% and specificity of 93-95%)<sup>6</sup> also play a role by identifying ectopic pregnancy that would have spontaneously resolved. Evidence also shows that this actual increased incidence is probably due to a sexually transmitted agent.<sup>3</sup>

Clinical diagnosis of early unruptured ectopic pregnancy remains a great challenge to the clinicians. Laparoscopy is regarded as the definitive diagnostic test in suspected ectopic pregnancy and laparoscopic treatment of tubal pregnancy is safe and effective.<sup>4-8</sup> It has false negative rate of 3-4% and false positive rate of 5.0%.<sup>5</sup> However a combination of clinical features, a high index of suspicion with quantitative  $\beta$ -hCG and high resolution transvaginal ultrasound scan have enabled an early and accurate diagnosis of ectopic pregnancy to be made without resorting to laparoscopy. The treatments available are expectant, medical or operative (laparotomy or laparoscopy). Factors influencing which choice to pursue depend on issues such as cost, surgeons expertise, availability of advance technology, patient's condition at admission.<sup>6-8</sup> In the emergency group, there is evidence of hemoperitoneum with clinical shock, hypotension and tachycardia. These signs correlate well with the amount of blood present in the peritoneal cavity. After a rapid  $\beta$ -hCG measurement to confirm pregnancy, immediate treatment without delay is needed as hemorrhagic shock is the commonest reason for the high mortality associated with ectopic pregnancy.<sup>9</sup> The most common situation is that of a subacute presentation with amenorrhea, abdominal pain and sometimes irregular vaginal bleeding. If tubal rupture or abortion occurs, gradually

the signs and symptoms are less drastic and the true diagnosis may be missed. The morbidity and mortality associated with ectopic pregnancy are directly influenced by the time interval between the onset of symptoms and start of treatment.

The present study was undertaken to determine the incidence, epidemiological characteristics and management protocol of ectopic pregnancy in this newly opened institution.

## METHODS AND MATERIALS

This analysis is a retrospective review of every ectopic pregnancy managed operatively at Nepal Medical College Teaching Hospital from January 2001 to April 2006. A total of 36 cases were evaluated by patients age, race, parity, gestational age, ectopic risk factors, laboratory tests results, time interval to treatment and procedure performed. The surgeons were middle grade and Consultant specialists in general gynaecology. The facilities for diagnosis like ultrasonogram and urinary  $\beta$ -hCG test (ELISA test) and treatment were available at all times. Laparoscopy and serum  $\beta$ -hCG was not used here due to technical reasons. The procedure preferred at laparotomy depends upon the state of patient's condition, state of the ectopic tube, contra lateral tubal pathology and experience of the surgeons. Information on the total number of maternities (live and stillborn) was obtained from the obstetric ward register and operation theatre record register. Similarly, the number of legal abortion during this period was obtained from the comprehensive abortion care record under the 2002 Act. The cases of early pregnancy losses were obtained from the operation theatre record book. The antenatal cases admitted due to medical or obstetrical complications were obtained from obstetric register book.

## RESULTS

There were total of 36 ectopic pregnancy cases treated during five and a half year period (January 2001-June 2006). During the same period there were 3515 deliveries and a total of 4926 pregnancies admitted in the unit. The incidence of ectopic pregnancy is 10.2/1000 deliveries and 7.3/1000 pregnancies in this study. This incidence was in comparable to other countries. The mean age of the patients was 30.1 years with range of 23-45 years (Table-1). The mean parity was 1.2 years (range 0-4) and 49.0% were nulliparous (Table-1). The mean gestational age is 6.9 weeks (range 5-11 weeks) (Table-1). Among the ethnicity, Mongolians (*Lama, Sherpa, Tamang, Gurung, Rai, Magar*) constituted at 54.3% (Table-1). Twelve patients (33.3%) had history of infertility and six patients (16.6%) had previous ectopic pregnancies. Five patients (13.9%) of each had history of tuberculosis, pelvic inflammatory disease and tubal sterilization surgery respectively. Four patients (11.1%) had intrauterine contraceptive used at the time of admission.

The commonest symptoms at admission were abdominal pain (94.4%), amenorrhea (72.2%) and abnormal uterine bleeding (58.3%). Nine patients (25.0%) of women gave history of fainting attacks and ten patients (27.8%) had referred pain to shoulder. The significant signs were abdominal tenderness (91.7%), cervical excitation (50.0%) and adenaxal tenderness with or without mass in 72.2%. Coldocentesis was done in only one case and it was positive. (Table-2) In fifteen patients (41.7%) the ruptured tubal pregnancy was diagnosed clinically and was operated without delay. In two cases, diagnosis was made as tubo-ovarian masses and therefore operation was delayed as late as three weeks. Both had organized ectopic pregnancy with low hemoglobin levels needing blood transfusion. Urine  $\beta$ -hCG test (ELISA test) was done in thirty three patients (91.7%) and was positive in 30 patients (90.1%) with false negative rate of 8.9%. Abdominal ultrasound was done in 25 patients (69.4%) and diagnosis was correct in over 96.0% of the cases. (Table-3) At laparotomy, haemoperitoneum of about 1 liter was present in 28 cases. (80.0 %) and the rest have 1 to 2 liters of haemoperitoneum. Previous pelvic infection was judged to be present by the finding of adhesions and dilated, retort-shaped hydrosalpinx on the contralateral side. Eighteen patients (50.0%) had evidence of adhesions and 11 patients (30.6%) had contralateral damaged tube. Different sites of ectopic pregnancy were ampullary part – 29 cases (80.6%), isthmus part – 4 cases (11.1%), fimbria – 2 cases (5.6%) and one ovarian (2.8%). (Table-4) The mean time from symptom to treatment was 176.58 hours (range 5 hrs to 33 days) and the mean time from admission to treatment was 12.88 hrs (range less than 1 hr to 3.02 days).(Table-5) Morbidities like anaemia and blood transfusion are increased with the long duration of symptoms to admission and to treatment. Twenty seven patients (75.0%) had salpingectomy and eight patients (22.2%) had salpingo-oophorectomy including one ovarian pregnancy. Only one case (2.8%) had conservative surgery in a nulliparous patient but she had second ectopic pregnancy in the same tube a year later. (Fig. 1) Blood transfusion from one pint to eight pints was needed for 17 patients (47.2%). There were no maternal deaths in this study.

## DISCUSSION

Ectopic pregnancy is a great masquerader. The clinical presentation varies from vaginal spotting to vasomotor shock with haemoperitoneum, making the accuracy of clinical diagnosis about 50%.<sup>8</sup> In many parts of the world there has been a dramatic increase in incidence over recent decades with most studies showing at least a doubling rate.<sup>1-4</sup> The incidence in this study is 10.2/1000 deliveries and 7.3/1000 pregnancies and this denominator included deliveries, antenatal cases admitted, abortions (spontaneous or induced) and hydatidiform moles. Most reports on the incidence are derived from the deliveries in a given unit and are bound to be affected by the number of births in that hospital.

The majority of our cases were in the age group of 20-35yrs. Ectopic pregnancy has been reported to be more common in older women<sup>3</sup> but there is decreasing mean age and a rising incidence in young women this may be due to the fact that young women are sexually active.<sup>3</sup> The mean parity was 1.2 yrs in this study while the national mean parity is 4.2 years.<sup>10</sup> The plausible explanation seems to be due to severe tubal damage causing complete block resulting infertility. A history of infertility (33.3%) and pelvic inflammatory disease (13.9%) were risk factors in our patients. A meta-analysis of 27 case control studies and 9 cohort studies found the highest relative risk to be associated with previous ectopic pregnancy, previous tubal surgery, tubal pathology, history of infertility, pelvic infection, pelvic surgery, previous sterilization and pregnancy with an intrauterine contraceptive device(IUCD) in situ.<sup>11</sup> Pelvic inflammatory disease is of more consequence. The most common genitourinary infection in women currently is due to *Chlamydia trachomatis* and rate of exposure has increased more than fourfold between 1981-1996.<sup>12,13</sup> A large case control study in France attributed 43.0% of cases of ectopic pregnancy to previous sexually transmitted disease in either partner, and to seropositivity for *Chlamydia trachomatis*.<sup>14</sup> A carefully conducted meta-analysis suggests that past IUCD use could slightly increase the risk of ectopic pregnancy. However the current IUCD does not increase the risk of ectopic pregnancy although a pregnancy with an IUCD in place is more often an ectopic pregnancy than a pregnancy with no IUCD in place.<sup>14,15</sup> Among ethnicity *Mongolian* group shows highest incidence of ectopic pregnancy at 54.6%. The probable explanation would be poverty, illiteracy or occupational hazards like taxi driver, tour and trekking guide of the partners. The incidence of recurrent ectopic pregnancy of 16.7% in this study is similar to other reported studies at 10-20%.<sup>5,16,17</sup> Once a woman has had an ectopic pregnancy her odds of having another ectopic pregnancy are doubled.<sup>3</sup> Biologically the tubal damaged resulting from salpingitis appears irreversible and post infection intraluminal scarring has long lasting effects.<sup>17</sup> Over 50.0% of the patients had one child or more. Nulliparous constituted at 49% quite high compared to 13.0% in one study<sup>18</sup> but similar to study reporting 60.0%.<sup>19</sup> Forty-two percent of the cases had ruptured tubal pregnancies and surgical treatment was carried out without delay. Clinical diagnosis of early unruptured ectopic pregnancy remains a great challenge to the clinicians. Laparoscopy is regarded as the definitive diagnostic tests in suspected ectopic pregnancy. It has false negative and false positive rate at 5.0%<sup>9</sup> and was not used in this study due to technical reasons. Transabdominal ultrasonography was suggestive of ectopic pregnancy in most of our cases and urinary hCG test (ELISA tests) was positive in 90.9% of the cases. A combination of clinical features, a high index of suspicion with above technical tests has made it possible to diagnose the ectopic pregnancy in over 85.0% of the cases without resorting to laparoscopy similar to other studies.<sup>9,20,21</sup> The findings at laparotomy were similar to those in other series: the commonest site of implantation was the ampulla followed by isthmus and the fimbria. In 66% of the patients the right tube was involved and 34% of the cases had contra lateral tube damaged (dilated, tortuous, retort shaped or hydrosalpinx) and adhesions of tubes with uterus, ovaries and omentum and intestines were evident in 18 (50.0%) of the cases. The operative procedure carried out was partial salpingectomy in 97.7% of the patients. Eight cases (22.2%) had ovary removed due to presence of pathology or adhesions including one case of ovarian ectopic pregnancy. Only one patient had conservative surgery but she had repeat ectopic pregnancy on the same tube a year later. There was no significant complications and maternal death in this study. However, community-based study done in Nepal reported direct maternal mortality rate due to ectopic pregnancy is 1.1%.<sup>10</sup>

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**Table-1:** Ectopic Pregnancy - Population characteristics

<b>Characteristics</b>	
<b>Age</b>	
Mean	30.1 yrs
Range	23 – 45 yrs
<b>Parity</b>	
Mean	1.2
Range	0 – 4
<b>Gestational Age (GA)</b>	
Mean GA	6.9 wks
Range	5 – 11 wks
<b>Ethnicity</b>	
Mangols	54.6%
Aryans	45.4%
<b>Past medical condition</b>	
Tuberculosis	5 (13.9%)
Infertility	12 (33.3%)
Previous ectopic	6 (16.7%)

PID	5 (13.9%)
Tubal surgery	5 (13.9%)
<b>Contraception</b>	
IUCD	4 (11.1%)
Sterilization	5 (13.9%)

**Table-2:** Ectopic Pregnancy: Clinical Features

<b><u>Symptoms</u></b>	<b>No</b>	<b>%</b>
Abdominal pain	34	94.4
Amenorrhoea	26	72.2
Bleeding per vaginum	21	58.3
Fainting attacks	9	25.0
Referred pain	10	27.8
<b><u>Signs</u></b>		
Tachycardia(>100/m)	8	22.2
BP(systolic >100mmHg)	29	80.5
Abdominal tenderness	33	91.7
Cervical excitation	18	50.0
Adnexal tenderness	26	72.2

**Table-3: Ectopic Pregnancy: Laboratory tests**

Tests	No (%)
<b>Haemoglobin level, n =36</b>	
Low <9gm %	12 (33.3)
Normal >10gm%	24 (66.7)
<b>USG, n = 25</b>	
Ectopic diagnosed by USG	24 (96.0)
<b>Urinary <math>\beta</math>-hCG test (Eliza test), n = 33</b>	
Positive	30 (90.9)
False Negative	3 (9.1)
<b>Blood transfusion, n = 36</b>	
2- 4 pints	16 (44.4)
8 pints	1 (2.8)

**Table-4: Ectopic Pregnancy: Findings at Laparotomy**

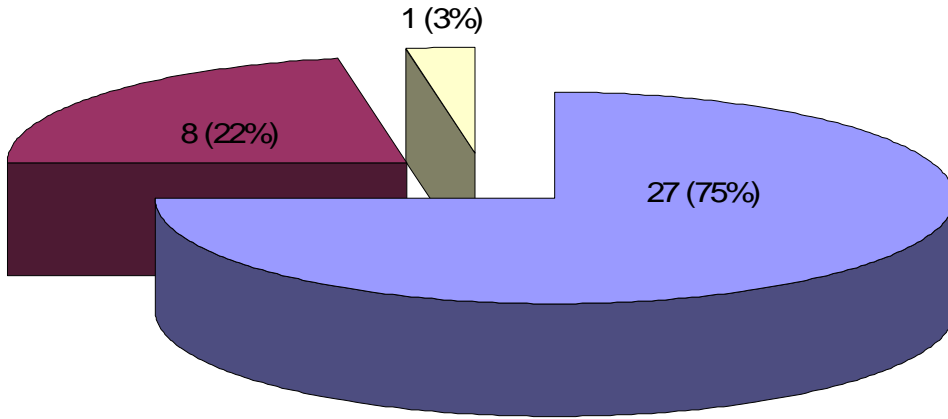
Findings	No (%)
<b>Haemoperitoneum</b>	
<1 ltrs	28 (80.0)
1 – 2 ltrs	8 (20.0)
<b>Ruptured ectopic pregnancy</b>	15 (41.7)
<b>Evidence of pelvic infection</b>	
Adhesions	18 (50.0)
Damaged contralateral tubes	11 (30.6)
<b>Previous ectopic pregnancy, n=6</b>	
Same tube	1 (3.0)
Contralateral tube	5 (15.0)
<b>Site of ectopic pregnancy, n=36</b>	
Ampulla R-19,L-10	29 (80.6)
Isthmus	4 (11.1)
Fimbria	2 (5.6)
Ovarian	1 (2.8)

**Table-5: Ectopic Pregnancy - Mean Duration of Presentation and Management**

Onset of symptoms to presentation	Symptom to treatment		Admission to treatment	
	Mean duration	Range	Mean Duration	Range
<b>N=30</b>	<b>176.58 hrs</b>	<b>5 hrs- 33 days</b>	<b>12.88 hrs</b>	<b>1 – 72.5 hrs</b>
<b>≤24 hrs</b> (n=11; 36.67%)	15.23 hrs	5 hrs – 1.5 days	7.23 hrs	1- 24 hrs
<b>1 – 5 day</b> (n=11; 36.67%)	3.60 days	1.1 – 6.08 days	12.18 hrs	0.75 hrs – 2.08 days
<b>&gt; 5 days</b> (n=8; 26.67)	21.77 days	6.29 – 33 days	21.63 hrs	3.75 hrs – 3.02 days

N = total number of patients; n = subgroup of patients

Fig. 1: Types of Operation



■ Salpingectomy ■ Salpingo-ophorectomy ■ Salpingostomy