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## Clinical Profile of Ectopic Pregnancy at a Tertiary Care Centre in Eastern Nepal- A Retrospective Study

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### ABSTRACT

**Introduction:** Ectopic pregnancy is a common life-threatening gynaecological surgical emergency. It's incidence is rising globally. It remains a major cause of morbidity and mortality in early pregnancy. The present study is aimed to determine the incidence, risk factors, clinical presentation, diagnosis, management and post-operative outcome of ectopic pregnancies in a tertiary care teaching hospital. **Methods:** The study was a retrospective study carried out in the Department of Obstetrics and Gynaecology, B.P. Koirala Institute of Health Sciences, Dharan, Nepal. Data were retrieved from the medical record section, from the case sheets of gynae admission registers and operative notes in the study duration of one year (January 2019-December 2019). The gynaecological admissions and records of the total births within the period of study were also used in the analysis. **Results:** During this study period, the incidence of ectopic pregnancy was 0.95% of total births and 7.46% of the total gynaecological admissions. The peak age group of incidence was age of 26-30 years. Use of contraception and history of abortion were the main risk factors with contributions of 27.82% each respectively. Abdominal pain (86.95%), amenorrhoea (81.73%), vaginal bleeding (54.78%) were the most frequent presenting complaints. Ampulla (58.26%) followed by cornua (8.69%) were the commonest sites of ectopic implantation. Ovarian pregnancies contributed to only 5.21%. A total of 69.56% patients presented with ruptured ectopic pregnancy but only 14.78% had hemodynamic instability. In majority of patients salpingectomy (61.73%) was done followed by salpingo-oophorectomy (8.69%). Only 11.30% received methotrexate in line of medical management and 59.13% required blood transfusion. There was no maternal mortality. **Conclusions:** Early diagnosis, timely referral, improved access to health care facility and aggressive management would help to reduce the maternal morbidity and mortality associated with ectopic pregnancy.

**Keywords:** Blood transfusion, ectopic pregnancy, risk factors, salpingectomy.

### INTRODUCTION

The word ectopic pregnancy is derived from the Greek word "ektapos", which means "out of place" (1). It is a common life-threatening gynaecological surgical emergency. It is defined as implantation of the blastocyst anywhere other than in the endometrial cavity, including the fallopian tubes, cervix, ovary, cornual region of uterus and the abdominal cavity. As the abnormally implanted gestation grows and gets

its blood supply from the site of abnormal implantation, there is increased chances of organ rupture (2). It is one of the major cause of maternal morbidity and mortality in early trimester and responsible for 80% of maternal deaths that occur in early pregnancy (3).

Clinical manifestations are diverse. The classic triad of signs and symptoms of Ectopic pregnancy (present in less than 50% of patients) includes history of a missed menstrual period followed by abnormal vaginal bleeding,

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abdominal or pelvic pain, and a tender adnexal mass (4). In spite of the comparatively high incidence of ectopic pregnancy, early detection can be difficult. Most of the time ectopic pregnancy can go unidentified at the initial medical evaluation. Usually delayed diagnosis causes serious adverse outcomes in ectopic pregnancies (5).

The chance of recurrence is 7-15% and there is only 40-60% chance of conception after surgery (6). The management approach of ectopic pregnancy in our setting is peculiar because rather than early diagnosis and conservative approach in management, we are challenged by late presentations, poor diagnostic tools, limited capacity to handle emergencies with rupture in more than 80% of cases (7). As a result there is increased maternal morbidity and mortality and reproductive failure (8).

Hence, the utility of prompt diagnosis and accurate treatment is important. So, identifying the incidence, risk factors, clinical presentation, the various treatment modalities and the cause of mortality in those patients might help to improve areas in terms of referral system, patient management protocol, use of multidisciplinary approach and follow up. Conducting an audit in ectopic pregnancy might help in the reduction of number of deaths in future and also provide a learning opportunity from different case scenario by managing preventable cause of death.

## AIMS AND OBJECTIVE OF THE STUDY

The study was conducted to analyse the incidence, the risk factors, the common presentation, the treatment modalities and the management outcome with a view to suggest interventions that would decrease the incidence.

## MATERIALS AND METHODS

This study was conducted in the Department of Obstetrics and Gynaecology, B. P. Koirala Institute of Health Sciences, Dharan, Nepal after obtaining ethical clearance from the Institutional Research Committee (IRC). This was a hospital based retrospective study conducted for a period of one year (January 2019 –December 2019). All patients diagnosed

and treated for ectopic pregnancy in the hospital were included in the study. Patients with inadequate data and those patients who refused treatment at this centre were excluded from the study. The case sheets of the patients were traced through the operation theatre registers and the Gynae admission registers. Details of demographic characteristics, risk factors, clinical presentation, operative findings and outcome of treatment given for the ectopic pregnancy as well as associated morbidity and mortality were obtained. Purposive sampling was done. According to Poonam et al., the incidence of Ectopic pregnancy was 2.92 % (9). Considering 2% as the prevalence of Ectopic Pregnancy, 95% Confidence interval, 80% power; the final corrected sample size was 115. Data collected in the proforma was entered in Microsoft Excel 2013 and was transferred to SPSS version 23.0; SPSS, Chicago, IL, USA. Detailed analysis was done using descriptive statistics and presented as percentages in tables.

## RESULTS

The total number of deliveries during the study period was 12096 and the total gynecologic admissions were 1540. One hundred nineteen patients were admitted with the diagnosis of Ectopic pregnancy, of whom data of 115 (96.63%) patients were retrieved and used for further data analysis, based on which the prevalence of ectopic pregnancy in B P Koirala Institute of Health Sciences is estimated to be 10 in every 1000 pregnancies and 7.46% of the total gynecological admissions. The incidence of ectopic pregnancy is slightly raised from 9.3 per 1000 deliveries to 10 per 1000 deliveries over the past 15 years in the institute. The incidence of ectopic pregnancy was 0.95% in our study.

### Age distribution

One third (N=39; 33.91%) of the patients belonged to the age group 26-30 years. Lesser incidence (N=13; 11.30%) was found in elderly women those who were 36 years and above (Table 1).

### Gravidity

Gravida status ranged from primigravida to fourth gravida and above. Majority of patients patients were gravida two and above (N=90; 78.26%) (Table 2).

**Table 1:** Distribution of patients with age (N=115)

Age(years)	Number of cases (N)	Percentage (%)
20-25	32	27.82
26-30	39	33.91
31-35	31	26.95
≥36	13	11.30
Total	115	100

**Table 2:** Distribution of patients with gravidity (N=115)

Gravida	Number of cases (N)	Percentage (%)
1	25	21.73
2	30	26.086
3	32	27.82
≥4	28	24.34
Total	115	100

**Marital status**

Majority (N=111; 96.52%) of patients were married. Four patients, (N=4; 3.47%) were unmarried (Table 3).

**Clinical presentation**

Most of the patients presented with more than one symptoms. But the most common amongst those was abdominal pain as expected. It was present in around (N=100 ;86.95%) of the cases. Amenorrhea was present in 94 patients.. More than fifty 50% of patients (N=100, 54.78%) had abdominal tenderness whereas 17.39% presented with abdominal distension either alone or in combination with other symptoms. In 40% of the cases, cervical motion tenderness could be elicited. Regarding the duration of

ectopic, 21(18.26 %) patients did not miss their periods (Table 4).

**Risk factors**

Use of contraception and history of abortion constituted the major risk factors (27.82%). Spontaneous abortion exceeded the number of induced abortions. 25 patients i.e. 21.73% had history of previous abdominopelvic surgery .

Majority of patients i.e. 72.17%, were not using any contraception. Three patients gave history of tubal ligation. In this study, two patients, (1.73%) had primary infertility whereas (6.95 %) i.e. eight patients had secondary subfertility (Table 5).

**Table 3:** Distribution of patients according to marital status (N=115)

Marrital status	Number of cases (N)	Percentage (%)
Unmarried	4	3.47
Married	111	96.52
Total	115	100

**Table 4:** Distribution of patients according to clinical presentation

Presenting symptoms and sign	Number of cases (N)	Percentage (%)
Amenorrhea	94	81.73
Periods not missed	21	18.26
Abdominal Pain	100	86.95
Vaginal Bleeding	63	54.78
Vomiting	15	13.04
Syncopal Attacks	10	8.69
Shock	17	14.78
Abdominal distension	20	17.39
Abdominal Tenderness	63	54.78
Adnexal Tenderness	48	41.73
Cervical motion Tenderness	46	40

**Table 5:** Distribution of patients according to risk factors

Risk factors	Number of patients (N)	Percentage (%)
<b>Abortion</b>	32	27.82
Spontaneous	19	16.52
Induced	13	11.30
<b>Previous surgery</b>	25	21.73
Bilateral tubal ligation	2	1.73
Appendicectomy	2	1.73
Cesarean section	15	13.04
Previous ectopic	4	3.47
Other abdomino pelvic surgery	2	1.73
<b>Contraception</b>	32	27.82
IUCD	4	3.47

Depo provera	3	2.60
OCP	15	13.04
Barrier	10	8.69
No contraception	83	72.17
<b>Infertility</b>	10	8.69
Primary	2	1.73
Secondary	8	6.95
<b>History of</b>		
Tuberculosis	4	3.47
Pelvic inflammatory disease	20	17.39

**Type of ectopic pregnancy**

Majority (N=80, 69.56%) of patients had ruptured ectopic pregnancy at the time of admission. Unruptured ectopic pregnancy was seen in only (N=14, 12.17%) patients. Tubal abortion was present in 18.26% patients (Table 6).

**Site of ectopic pregnancy**

In majority (N=85, 73.91%) of patients, the ectopic pregnancy was in fallopian tube. Of these, in about five patients (4.34%) the exact

location could not be made out in ultrasonography and laparotomy both due to extensive tubular damage. In 67 (58.2%) patients ectopic gestation was located in ampullary part of fallopian tube, followed by isthmus and infundibulum part in nine (7.82%) patients each. Ovarian ectopic was seen in six (5.21%) patients Five patients had heterotopic pregnancy. Rudimentary horn rupture was detected intaoperatively in four patients who had presented in a state of shock at the time of admission (Table7).

**Table 6:** Distribution of patients according to Type of ectopic pregnancy

Type of ectopic pregnancy.	Number of patients (N)	Percentage (%)
Ruptured	80	69.56
Unruptured	14	12.17
Tubal abortion	21	18.26
<b>Total</b>	<b>115</b>	<b>100</b>

**Table 7:** Distribution of patients according to site of ectopic pregnancy

Site of ectopic pregnancy	Number of patients (N)	Percentage (%)
Fallopian Tube	85	73.91
Ampulla	67	58.26
Isthmus	9	7.82
Infundibulum	9	7.82
Cornua	10	8.69
Ovarian	6	5.21
Rudimentary Horn	4	3.47
Heterotopic	5	4.34
Fallopian tube but unspecified	5	4.34

**Type of surgery**

Majority of patients (N=102, 88.69%) were managed by surgical methods. Only (N=13, 11.30%) patients were managed by medical method where methotrexate was given (Table 8).

Among the surgical method, laparotomy was done in majority (N=91, 89.69%) of the patients. Laparoscopy was done only in (N=11, 9.56%) patients. The most common procedure which was done was salpingectomy in (N=71, 61.73%) of the patients.. In eight patients cornual rupture reconstruction done. There were five ruptured heterotopic pregnancy for which unilateral

salpingectomy with suction and evacuation was done (Table 9).

**Post-operative management and complications**

Majority (N=68,59.13%) of patients required blood transfusion. 52.17% had post-op fever. 22.60% required MICU (Maternal intensive care unit) admission. 8.69% patients had hospital stay longer than 10 days. Wound infection and urinary tract infection developed in four patients each respectively .There was 12 patients who developed respiratory tract infection However, there was no maternal mortality (Table 10).

**Table 8:** Distribution of patients according to management options adopted

Management	Number of patients (N)	Percentage (%)
<b>Surgical</b>	102	88.69
Laparoscopy	11	9.56
Laparotomy	91	79.13
<b>Medical</b>		
Methotrexate	13	11.30
<b>Total</b>	115	100

**Table 9:** Distribution of patients according to Type of surgery

Management (Laparotomy and laparoscopy)	Number of patients (N)	Percentage (%)
Salpingectomy	71	61.73
Salpingo oophorectomy	10	8.69
Salpingostomy	0	0
Corneal Resection	10	6.95
Total unilateral salpingectomy with opposite tubectomy	6	5.21
Total unilateral salpingectogmy with Suction and Evacuation	5	4.34

**Table 10:** Distribution of patients according to post-operative complications

Post-operative Requirements and complications	Number of patients (N)	Percentage (%)
Blood Transfusion	68	59.13
MICU Admission	26	22.60
Hospital stay >10days	10	8.69
Wound Infection	4	3.47
Fever	60	52.17
Urinary tract infection	4	3.47
Respiratory tract infection	12	10.43
Maternal Mortality	0	0

## DISCUSSION

In the present study, the incidence of ectopic pregnancy was 0.95%. We compared the incidence of ectopic pregnancy in the institute from 2002 to 2004 and found that the incidence is slightly raised over the last 15 years (9.3 per 1000 deliveries to 10 per 1000 deliveries). Similarly, in a study done by Jophy and Porwa et al., there was an increasing trend in the incidence of ectopic pregnancies (7.4 per 1000 live births to 15.2 per 1000 live births) (10,11). Shobeiri et al., conducted a study of 872 women with ectopic pregnancy in Iran during 2000 to 2010. They found that the incidence of ectopic pregnancy increased from 1.5 per 1000 pregnancy in 2000 to 4.8 per 1000 pregnancy in 2010 (12).

In the present study, 75 % of women were in the age group of 20-35 years. Similarly many studies reported that majority of women diagnosed with ectopic pregnancy belonged to this age group (11, 13-22). This is probably because this age group is the period of highest sexual activity and fertility. In the present study, 75% of the women were multiparous which was comparable with studies by Bhuria et al. , Rakhi et al., Yadav et al. and Prasanna et al. (14, 21-23).

We have observed that amenorrhea was present in majority (81.73%) of patients. Pain in abdomen, bleeding per vaginum, and vomiting

was presented in 86.95%, 54.78% and 13.04% patients respectively. 8.69% patients had one or more fainting episode. This is comparable to the study by AO Igwegbe et al. where majority, 80.6% (75/93) presented with abdominal pain and 35.8% (33/93) presented with vaginal bleeding (24). The studies by Perveen F et al. , Manthan et al. and Shivkumar HC et al. also found almost similar trends of presenting complaints (25-27). However in the study of Hassan N et al. , abdominal pain was seen in 70.97%, amenorrhea only in 51.61% and irregular vaginal bleeding in 25.81% patients (28). In our study, about 14.78% patients were brought in the state of shock. This is in contrast to the study of Shaikh BN et al. and Shanti Suri Asuri et al. where 38% and 40.5% patients were brought in a state of shock (25, 29).

The most identified risk factors in this study were mainly use of contraception and spontaneous abortions followed by previous cesarean section, PID, infertility and Tuberculosis. Use of contraception was the principal etiologic factor in this study. This finding is consistent with the internationally identified risk factors for the overall increase in the incidence of ectopic pregnancy. However many patients were not using any contraception prior to the antecedent conception that resulted in an ectopic pregnancy. A large percentage in this study had one or more induced abortions, which were illegally performed under septic

conditions. In our study 3.47% patients had previous ectopic pregnancy, comparable to the studies of Priyadarshini et al., Shanti Suri Asuri (25, 29). Progesterone (Depo provera) users constituted 2.60 % of the patients. This slightly increased risk could be due to the inhibitory effect of progesterone on tubal motility.

We found that majority of patients had tubal ectopic pregnancy as in other studies (30, 31). 58.26% had ectopic in ampulla, followed by isthmus and infundibulum (7.82%). Ovarian ectopic was seen in 5.21% patients. Five (4.34%) patient had heterotopic pregnancy. Almost similar trend was noticed in Bouyer et al's. 10-year study on 1800 patients, who suggested sites of ectopic pregnancy as ampullary (70%), isthmic (12%), ovarian (3.2%) (32).

In our study majority (69.56%) patients had a ruptured, while only 12.17% had an unruptured ectopic pregnancy at the time of admission. The incidence of tubal rupture has been found to vary greatly between various studies from 16%, 36% (29, 30).

This shows that majority of cases with ectopic pregnancy present as ruptured ectopic pregnancies. This emphasizes the need for early diagnosis. Women with high risk of ectopic pregnancy must be emphasized to consult the obstetrician as early as possible when they miss the periods.

In the present study, all the patients with ectopic pregnancy were managed surgically. (79.13 %) patients underwent laparotomy and 9.56 % patients had laparoscopic treatment. In most studies, surgery has been the main stay of treatment (33).

Since most of our patients had ruptured tubal pregnancy, they needed an emergency laparotomy as a life saving measures. The most common procedure which was done was salpingectomy (61.73%). Salpingo-oophorectomy was done in 8.695%. Four patients had rudimentary horn rupture. Unilateral salpingectomy with suction and evacuation was done for the ruptured heterotopic pregnancy in 4.34% patients. In Yadav et al's. study also, the most common surgeries done were total unilateral salpingectomy (70.58%), Salpingo-oophorectomy (11.76%). Similar findings were also noted in different studies (30).

Since the incidence of ruptured ectopic pregnancy was high in our study, 59.13% of the patients were given one or more units of blood transfusion intra operatively and post operatively. Blood transfusion was required in 43.5%-97.3% of patients in other studies (13, 18, 19). This variability in requirement for blood

transfusion was probably because of the difference in severity of presentation, presence of hemoperitoneum, pre-existing anaemia and availability of blood products.

There was no maternal mortality due to ectopic pregnancy in the present study as in other studies (11, 13-20). This may be as a result of prompt and proper management of the patients after reporting to the hospital.

Hence, it is seen clearly that while there is an increase in incidence of ectopic pregnancy, mortality has reduced significantly, which can be because of improved diagnostic and treatment modalities.

## LIMITATION

As the study involved samples selected from BPKIHS, a tertiary care referral centre and the samples were conveniently chosen, it did not reflect the scenario of the entire eastern region. Secondly, selection bias might have occurred if missing data appeared.

## CONCLUSION

The incidence of ectopic pregnancy is rising. Due to late diagnosis and delayed referral the incidence of ruptured ectopic pregnancy is high in developing countries. Since many patients may not have identifiable risk factors, a high index of suspicion is vital for early diagnosis. Women at high risk for ectopic pregnancy must be counselled about the possibility for future ectopic pregnancy. They should be emphasised to report to their doctor as soon as they miss their periods for early diagnosis. Avoiding unnecessary pregnancies, safe sex practices, using barrier contraceptives, prompt treatment of PID/STDs can bring down the incidence of ectopic pregnancies. Early diagnosis, timely referral, aggressive management, improvement of blood bank facilities can reduce the maternal morbidity and mortality associated with ectopic pregnancy.

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## CONFLICT OF INTEREST

None.

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