

## Prevalence and Management Outcome of Ectopic Pregnancy in Adama Hospital Medical College, East Shoa Zone, Oromia Region, Ethiopia

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### Abstract

**Introduction:** Ectopic pregnancy is the blastocyst implantation in any place other than the endometrium of the uterine cavity. This study was aimed to determine the prevalence and management outcome of ectopic pregnancy in Adama Hospital Medical College in Oromia regional state Ethiopia.

**Methods:** A retrospective review of charts of patients admitted to Adama Hospital Medical College from January 1, 2010 to December 30, 2012, was conducted using an a-priori developed check list. Data were analyzed using statistical package for social sciences version.20. Descriptive statistics were performed on all variables.

**Results:** Among 10,801 total pregnancies and 2,867 gynecological admissions recorded during the specified three years. The prevalence of ectopic pregnancy was 1.5% of total pregnancies and 5.5% of gynecologic admissions. The mean age of the women diagnosed with ectopic pregnancy was 26.54 (SD ± 4.89) years and more than half, 80 (50.6%) of the patients were found in the age group of 15 - 25 years. Most, 84 (57.1%) of the pregnancies occurred in the right tube. Salpingectomy 117 (74%) was the most common treatment of choice for ectopic pregnancy followed by salpingo-oophrectomy 36 (22.8%). Only ninety-four (59.5%) of the patients presented within the first 24 hours of their illness.

**Conclusions:** The prevalence of ectopic pregnancy has increased over time during the period from 2010 to 2012. Majority of the cases of ectopic pregnancy were found in the age group of 15 - 25 years and they were mostly nulliparous women. Majority of the pregnancies occurred in the right tube where it is liable to rupture. Hence, early diagnosis and timely referral may be helpful in treating the patients prior to tubal rupture to decrease morbidity and mortality associated with ectopic pregnancy. More than 40% of the patients sought treatment after 24 hours. Hence, it is essential to increase public awareness to promote early treatment seeking behavior.

**Keywords:** Ectopic Pregnancy; Prevalence; Management Outcome; Ethiopia

### Abbreviations

AHMC: Adama Hospital Medical College; EP: Ectopic Pregnancy; SD: Standard Deviation; SPSS: Statistical Package for Social Sciences

### Introduction

Ectopic pregnancy (EP) refers to the implantation of a fertilized egg in a location outside of the uterine cavity [1]. The ectopic pregnancies are most commonly located in the fallopian tube, cornu, cervix, ovary, or abdomen [2]. Ectopic pregnancy is one of the most critical and life-threatening emergencies in gynecological practice and is a medical emergency that requires immediate treatment. Ectopic preg-

nancy is the commonest cause of maternal morbidity and mortality in the first trimester of pregnancy. In many parts of the world, there has been a dramatic increase in the incidence of ectopic pregnancy over recent decades. The incidence has increased worldwide with an increase in pelvic infections. It causes 10% of all deaths related to pregnancy [1]. An ectopic pregnancy can cause rupture of the organ on which it is implanted, typically the fallopian tube. Rupture can result in severe internal bleeding, shock, and, rarely, death of the woman [3]. Fallopian tubes damaged because of infection, surgery or tumors will increase the risk of ectopic pregnancy. A woman that has had one ectopic pregnancy will have an increased risk of having another. The underlying tubal disorders that lead to the first ectopic pregnancy will also increase the risk for another ectopic pregnancy [3]. Despite the improvement in the clinical diagnosis and management of early-stage tubal ectopic pregnancy, the treatment and prevention options are limited. Current treatment strategies are expectant management, surgical intervention or medical therapy with methotrexate. Women with tubal EP are at increased risk of infertility and tubal EP in future pregnancies [4]. Although rare, “non-tubal ectopic” pregnancies are associated with significantly higher mortality and morbidity than tubal ones because they are often difficult to diagnose and tend to present late with sudden rupture [4]. The prevalence of EP varies in different countries. The prevalence of EP in developing countries ranges from 1 in every 44 deliveries to 1 in every 21 deliveries, while in western countries its rate is between 1 in 233 to 1 in 280 deliveries. Not only do women die from this disease but also of greater clinical importance is the indirect morbidity attributed to poor fertility prognosis and adverse outcome in subsequent pregnancies [1]. Serious adverse outcomes in ectopic pregnancies are typically caused by delayed diagnosis [5]. The probability of the next intrauterine pregnancy is 50-80%. Early diagnosis of ectopic pregnancy, before tubal rupture and excessive bleeding, is important to prevent life-threatening hemorrhagic shock and further damage of the tube [5]. There is only limited study conducted at the study site. The main aim of this study was to determine the prevalence and management outcome of ectopic pregnancy in Adama Hospital Medical College through a retrospective review of records of patients admitted to the hospital from January 1, 2010 to December 30, 2012.

## **Materials and Methods**

### **Study setting**

A three-year retrospective review of charts of patients admitted to Adama Hospital Medical College was conducted. Adama Hospital Medical College (AHMC) is located in Adama town, East Shoa Zone of Oromia regional state. Adama town is located approximately 99 kilometers from Addis Ababa, the capital city of Ethiopia. At present the town is the capital of East Shoa Zone and Adama Special Zone. Adama Hospital Medical College is a public referral hospital and provides a referral service for different parts of East Shoa Zone (Adama Town Health Administration Office report, 2010, unpublished document).

### **Sample size and sampling procedure**

Records of all pregnancies and gynecological admissions to AHMC in the three-year period, from January 1, 2010 to December 30, 2012 were reviewed. All records of women who experienced ectopic pregnancy and who were managed for the case from January 1, 2010 to December 30, 2012 that were complete were included in the study and used for analysis.

### **Data collection**

The three-year hospital based gynecological admissions and records of the total pregnancies were conducted using an a-priori developed checklist. The checklist was developed in English language to extract relevant information about age, residence, history of previous ectopic pregnancy, duration of presentation, operative findings, site of pregnancy and type of procedure and duration of hospital stay and management outcome of the patients. The checklist was tested before the actual data collection period to ensure its clarity. The filled checklists were checked for their clarity, understandability, completeness and consistency and corrections were made accordingly by the principal investigator. A two-days training was given for data collectors and supervisors prior to data collection. Four clinical nurses collected the data from the patients' card and registration log-book. Two health officers supervised the daily activity, consistency and completeness of the checklist and appropriate support was given during the data collection process.

### **Data processing and analysis**

Data were checked for accuracy, consistency and completeness. Following that, data were entered into SPSS (statistical package for social science) version 20 for analyses. Descriptive statistics was used to describe the prevalence and management outcome of ectopic pregnancy.

## Results

### Prevalence of ectopic pregnancy

There was a total of 10,801 pregnancies recorded in Adama Hospital Medical College from January 2010 to December 2012. One hundred sixty-five patients were admitted with the diagnosis of EP, of whom data of 158 (95.8%) patients were retrieved and used for further data analysis. Among 10,801 pregnancies recorded during the period, 158 cases of ectopic pregnancy were reported based on which the prevalence of ectopic pregnancy in Adama Hospital Medical College is estimated 15 in every 1000 pregnancies and 5.5% of the total gynecological admissions (2867) (Table 1).

Period	Registered pregnancies	Ectopic pregnancies	% of total
2010	3,482	43	1.23
2011	3,609	45	1.25
2012	3,710	70	1.89
Total	10,801	158	1.5

**Table 1:** Yearly distribution of ectopic pregnancy per number of registered pregnancies in Adama Hospital Medical College from 2010 to 2012.

### Socio-demographic and gynecologic characteristics of women with ectopic pregnancy

The ages of women diagnosed with ectopic pregnancy ranged between 18 and 45 years with mean age of 26.54 (SD ± 4.89) years. Ninety-two (58.2%) were from the rural area. Sixty-six (41.8%) and 44 (27.8%) of the patients were primigravida and gravida two respectively. More than half of the women with ectopic pregnancy, 80 (50.6%) were found in the age group of 15 - 25 years (Table 2).

Characteristics	Frequency	Percent (%)
<b>Age</b>		
15 - 25 years	80	50.6
26 - 35 years	71	45
36 - 45 years	7	4.4
Total	158	100
<b>Residence</b>		
Rural	92	58.2
Urban	66	41.8
Total	158	100
<b>Gravidity</b>		
Primigravida	66	41.8
Gravida two	44	27.8
Gravida three	31	19.6
Gravida four	12	7.6
Greater than gravida four	5	3.2
Total	158	100

**Table 2:** Socio-demographic and Gynecologic characteristics of patients with ectopic pregnancy in Adama Hospital Medical College from 2010 to 2012.

### Time of presentation to hospital and clinical manifestation

Ninety-four (59.5%) of patients presented within the first 24 hours of their illness while 64 (40.5%) of them presented after 24 hours of the onset of their illness. The mean duration of presentation was 24.77 (SD ± 12.03) hours. The commonest presenting symptoms were abdominal pain in 155 (98.1%), vaginal bleeding in 126 (79.7%) and amenorrhea in 116 (73.4%). More than two-third of the patients,

106 (67.1%) had amenorrhea for the duration of time ranging from four to eight weeks. Twenty-six (16.5%) patients presented with unstable vital sign, 125 (79.1%) had abdominal tenderness and 122 (77.2%) had adnexal tenderness on examination (Table 3).

Characteristics	Frequency	Percent (%)
<b>Abdominal pain</b>		
Yes	155	98.1
No	3	1.9
<b>Vaginal bleeding</b>		
Yes	126	79.7
No	32	20.3
<b>Amenorrhea</b>		
Yes	116	73.4
No	42	26.6
<b>Vital sign at presentation</b>		
Stable	132	83.5
Not stable	26	16.5
<b>Abdominal tenderness</b>		
Yes	125	79.1
No	27	17.1
Not mentioned	6	3.8
<b>Adnexal tenderness</b>		
Yes	122	77.2
No	24	15.2
Not mentioned	12	7.6

Table 3: Presenting Clinical features of patients with ectopic pregnancy in Adama Hospital Medical College from 2010 to 2012.

Sites of ectopic pregnancy

From the various sites of ectopic pregnancy implantation, in this study, tubal pregnancy with a frequency of 98.7%, was the most prevalent type of ectopic pregnancy which mostly occurred in the right tube 84 (57.1%). In 63 (42.9%) women, the pregnancy occurred in the left tube. In nine (5.7%) of the cases the location was not mentioned. The other site of implantation was in the ovary, which accounted for 2 (1.3%) of the total cases.

Management outcome of ectopic pregnancy

Salpingectomy was the most common treatment of choice for ectopic pregnancy, which was a treatment option for 117 (74%) of the cases followed by salpingo-oophrectomy 36 (22.8%). Salpingostomy in 2 (1.3%), cornual excision in 1 (0.6%) and oophrectomy in 2 (1.3%) of the total (Figure 1).

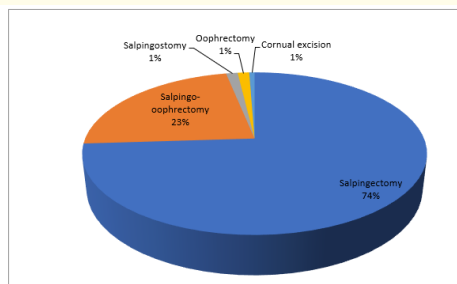


Figure 1: Relative frequency distribution of type of surgery done in patients with ectopic pregnancy in Adama Hospital Medical College from 2010 to 2012.

Post-operative complications were developed in nine (5.7%) of the cases. Paralytic ileus, wound infection and wound dehiscence occurred in 5 (3.2%), 3 (1.9%) and 1 (0.6%) patients respectively. Two (1.3%) maternal deaths were registered among the 158 women during the study period whose cause of death were hypovolemic shock and sepsis. All the other patients improved and discharged. The duration of hospital stays ranged from 3 - 11 days with mean duration of 3.99 (SD ± 1.41) days.

## **Discussions**

The results of the three-year retrospective review in Adama Hospital Medical College demonstrated that the prevalence of ectopic pregnancy during the years 2010 - 2012 was 15 in every 1000 pregnancies. The prevalence of ectopic pregnancy was higher in nulliparous or primiparous women. This finding is comparable to the findings of the studies conducted in Nigeria and Sargodha [6,7]. The higher prevalence of EP in null parity has important implication for fertility of these women, who intend to have next pregnancies in the future.

Of the 158 women admitted to the hospital for EP between 2010 and 2012, 7 (4.4%) had previous history of EP, which agrees with the study reported from Guinea (5%) but higher than the findings reported by the study done in Nepal (2.6%) [8,9].

Ectopic pregnancy represented 1.5% of all pregnancies and 5.5% of the total gynecological admissions. These findings are comparable to the findings of the study done in Guinea, Nepal and Nigeria [8-10]. But this prevalence was lower than the findings of the study done in Aminu Kano, Nigeria [7]. The results explain that the frequency of ectopic pregnancy in Adama Hospital Medical College has been increasing from 2010 - 2012, reaching 12.3 in every 1000 pregnancies in 2010 to 18.9 in every 1000 pregnancies in 2012. The prevalence of ectopic pregnancy in the year 2012 was 1.54 times as much as it was during the year 2010. Increasing trends in the prevalence of ectopic pregnancy was also reported by the study conducted in Hamadan [5]. The increasing prevalence of ectopic pregnancy over time may be due to the improvement of diagnostic methods, due to increased health seeking behavior or due to increased risk factors of ectopic pregnancy or both. In any case, it implies that there should be medical preparedness to accommodate the increased service demand and case load.

In this study, the commonest symptoms of ectopic pregnancy women presented with were abdominal pain, vaginal bleeding, and amenorrhea which were found in 155 (98.1%), 126 (79.7%), and 116 (73.4%) patients respectively. These findings are similar with that of the study done in Nigeria, which reported symptoms of abdominal pain, vaginal bleeding and amenorrhea in 98 (97.03%), 65 (64.36%) and 74 (73.27%) of the cases respectively [8]. On the other hand, a study conducted in Nepal reported abdominal pain and vaginal bleeding only in (69.3%) and (45.3%) of the cases respectively [9]. This difference may be due to late presentation of patients in our study context. In our study, more than forty percent of the patients presented after 24 hours of the onset of illness. This can be improved by creating public awareness and early patient referral to hospital.

Abdominal tenderness occurred in 125 (79.1%) of the cases; adnexal tenderness was reported in 122 (77.2%) of the cases and 26 (16.5%) were presented with unstable vital sign at the time of admission. In agreement with these findings, the study conducted in Nepal reported that abdominal tenderness, adnexal tenderness and unstable vital sign occurred in 79.3%, 76% and of the cases respectively [9].

Salpingectomy was the most common principal treatment option for ectopic pregnancy. Green top guideline recommends salpingectomy for women with no fertility reducing factors such as previous history of EP, pelvic inflammatory diseases or abdominal surgery, or contralateral tubal damage and recommends salpingotomy for women having these fertility-reducing factors [11]. In patients with healthy contralateral tubes, there is no significant difference in fertility prospects between salpingotomy and salpingectomy [12,13]. In this study, only 4.4% of the women had previous history of EP. The overall post-operative complication rate was 5.7% with mortality rate of 1.3%.

Right tubal gestation was more common than the left. Right tubal pregnancy is associated with higher risk tubal rupture. Delayed diagnosis of ruptured ectopic pregnancy is an important cause of death in women [14]. Hence, it is essential to encourage early case detection and treatment. This is particularly important as 40% of the patients sought treatment after 24 hours of the onset of the illness.

EP mimics virtually every condition that causes acute abdomen in women of the reproductive age group [1]. Therefore, early ultrasound scan is required to encourage women to seek early confirmation of their pregnancy and its location. In addition, emotional support, public education and counseling is critical.

### **Conclusion**

The three-year retrospective record review indicated that, the prevalence of ectopic pregnancy in Adama Hospital Medical College during the mentioned years has been 15 in 1000 pregnancies. The prevalence of ectopic pregnancy in this hospital 2012 has increased over time, reaching 1.54 times as much from 2010 - 2012. Higher prevalence of ectopic pregnancy were found in young, nulliparous women. Abdominal pain followed by vaginal bleeding and amenorrhea, adnexal and abdominal tenderness were the commonest presenting symptoms and signs respectively.

### **Recommendation**

The encouragement of early health seeking, early diagnosis and timely referral to hospital is needed to decrease the rate of tubal rupture and the resulting morbidity and mortality. In addition, attention should be given to long term effects of ectopic pregnancy, especially, infertility, as significant proportion of the victims of EP in this study were young women and primiparas.

### **Declarations**

#### **Ethics Approval and Consent to Participate**

The research proposal was approved by institutional review board of Jimma University, Jimma University Institute of Health. A permission letter was obtained from Adama Hospital Medical College. Since this was a retrospective record review, there was no need for getting consent from participants.

#### **Consent to Publish**

Not applicable.

#### **Availability of Data and Materials**

All the data included in the manuscript has been included in the form of tables and figures. The de-identified raw data is not publicly available. But the de-identified raw data can be requested from the corresponding author after providing the necessary justification for request.

#### **Competing Interest**

The authors declare no competing interest.

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#### **Authors' Contribution**

Garumma Tolu, Girma Diriba, Desta Hiko, Alemi Kebede and Abiru Neme, contributed on data analysis, and checked the draft. Garumma Tolu and Abiru Neme prepared manuscript. All authors read and approved the final paper.

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