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A prospective clinical study of ectopic pregnancy at a tertiary care hospital, Shillong, Meghalaya

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Abstract
Background: Ectopic pregnancy is one of the commonest cause of acute abdominal emergencies in obstetric practise with a case fatality rate of 1-3 % in developing countries. Therefore, it is imperative to diagnose the unruptured ectopic pregnancy to prevent morbidity and mortality
Materials and Methodology: This was a prospective observational study of 1 year with the sample size of 44 cases out of 976 newly diagnosed first trimester pregnancies.
Results: The incidence was found to be 4.5 % with the majority of a cases belonging to the age group of 31-34 years and lower socioeconomic class. Clinical presentation was mostly between gestational age 4-8 weeks with 70.5% being multigravida. Out of all risk factors, history of previous abortion was found to be most common. Most common presentation of the cases was pain abdomen. Out of all 79.5% cases were ruptured and 20.5% were unruptured. Ampullary region was the commonest site and majority of the cases were managed laparoscopically.
Conclusions: Ectopic pregnancy is still major challenge because of its bizarre clinical presentation. Early diagnosis and timely intervention are the key factor for prevention of mortality and morbidity. Therefore, strong suspicion and multidisciplinary approach with blood transfusion facilities and early tertiary care referral will go a long way to prevent morbidity and mortality.

Keywords: ectopic pregnancy, tubectomy, ultrasound, urine pregnancy test, salpingectomy, laparoscopy

Introduction
An ectopic pregnancy is one in which the fertilized ovum is implanted in a site other than the uterine cavity. The term Ectopic Pregnancy is originated from 'Ektopos', a Greek word. Ectopic pregnancy is a significant problem for reproductive age women and their health care providers. An ectopic pregnancy results from disruption within the tubal transport process and it complicates 2% of all pregnancies in western countries.
It is the foremost important reason for maternal mortality and morbidity in the first trimester of pregnancy. In current century, the developed countries are facing with four-fold rise in the occurrence of ectopic pregnancy (from 0.3 to 1.2%). This rise is mainly because of advanced techniques for diagnosing the ectopic pregnancy in earlier stage and increased prevalence of ART & PID.
Despite the relatively high frequency of ectopic pregnancy, early detection may be challenging. In up to half of all ectopic pregnancy presenting to an emergency department is not identified at the initial medical assessment due to several factors like delay in seeking health care, absence of investigations (like hCG, progesterone assays, transvaginal sonography) and lack of suspicion in the diagnosis of ectopic of pregnancy by most of the inexperienced clinicians, early diagnosis is nearly impossible in most developing countries.
Site of ectopic pregnancy includes Fallopian tube (Ampullary, isthmic, fimbrial), Ovary, Abdominal cavity, Abnormal position within the uterus (cornual, cervical), Prior caesarean scar. Highest percentage (98.3%) of ectopic pregnancies occurs in the fallopian tubes.
Risk factors associated with ectopic pregnancy are Previous ectopic pregnancy, Tubal corrective surgery, Tubal sterilization, Intrauterine devices, Tubal pathology, Assisted reproductive techniques, PID, Smoking, Prior abortions, Infertility, Multiple sexual partner. Ectopic pregnancy classically presents with the triad of delayed menstruation, Pain and Vaginal bleeding or Spotting. Diagnosis of ectopic pregnancy is usually made with help of History, Clinical physical examinations, Urine pregnancy test, Serum beta HCG, Ultrasound of the abdomen. Treatment includes both medical and surgical options.

This prospective observational study is aimed to find the incidence of ectopic pregnancy in the study population and to investigate the risk factors, clinical presentation and to analyse the morbidity and mortality occurring in these patients.

Methods

It was a Prospective Observational clinical study of Ectopic Pregnancy among all new pregnancies coming to hospital for the first time during first trimester of pregnancy.

Detailed History taking from the patient (if the patient was in shock the history was taken retrospectively), detailed physical examination, Urine Pregnancy Test, Blood investigations and ultrasonography was done. Ectopic pregnancy was diagnosed by correlation of Clinical features, USG and Serum B-HCG. Treatment modality was Laparoscopic /Open Salpingectomy. Patient were followed up till discharge and HPE report was documented. All these information was recorded in predesigned structured proforma after obtaining consent.

Results and Observations

During this period of 12 months, we came across 44 cases of ectopic pregnancy. All patients were followed up as per pre-established protocol and none of them were lost on follow up. The study population was estimated to be 4.5% (n = 44), out of 976 newly diagnosed first trimester pregnancy during the study period.

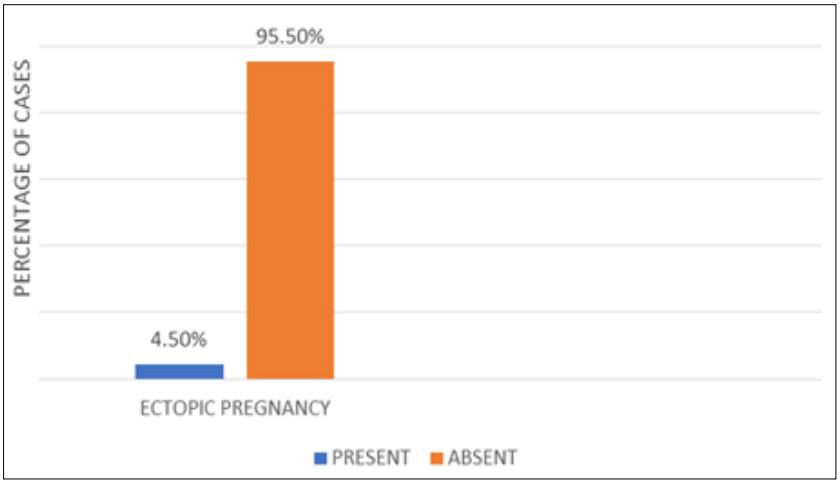

Fig 1: Distribution of the Cases in Terms of Ectopic Pregnancy

In present study, maximum number of cases were observed between 31- 34 yrs (40.9%). According to BJ Prasad classification, majority of cases belong to lower socioeconomic status (61.4%). 75.0% of the participants had BMI in range of 18.5-24.9 Kg/m^2 while 13.6% of the participants had BMI in range of 25.0-29.9 Kg/m^2. we observed that most of the patients had education up to secondary level (17/44; 38.6%). The variable Gestational Age (Weeks) was not normally distributed (Shapiro-Wilk Test: p = 0.048). The mean (SD) of Gestational Age (Weeks) was 5.67 (2.07). Most of patients presented with Gestational Age of 4-8 Weeks (28/44). Most common group was Multigravida (31/44; 70.5%) and 18.2% of women were Primigravida.

History of previous abortion was found to be the most common risk factor in this study accounting for nearly 27.28% while 22.72%% of the cases had LSCS in their previous pregnancies.

Table 1: Distribution of Risk Factors in Ectopic Pregnancy (n= 44)

Risk Factors	No. of Cases	Percentage
None	13	29.54%
Previous Abortion	12	27.28%
PID	6	13.63%
Previous ectopic pregnancy	3	6.81%
Multiple sexual partners	8	18.18%
IUCD	1	2.27%
OCP	6	13.63%
Tubal sterilization	1	2.27%
Infertility	3	6.81%
D & E	5	11.36%
LSCS	10	22.72%
Appendectomy	1	2.27%
Cholecystectomy	1	2.27%
Ovarian cystectomy	2	4.5%
D & E + Appendectomy	1	2.27%
H/O Tuberculosis	9	20.45%

In this study, we evaluated age of patient at her first sexual debut and found that 34.1% of the participant's age at first sexual was less than 20 Years. In our study, abdominal pain was most significant clinical presentation, with 77.3% (34/44) cases; followed by amenorrhea (68.2%) and bleeding P/V in 61.4%. Other symptoms were giddiness, nausea and vomiting, syncopal attacks in 27.28% of cases. In our study, 13 out of 44 (29.5%) patients presented with Classical Triad.

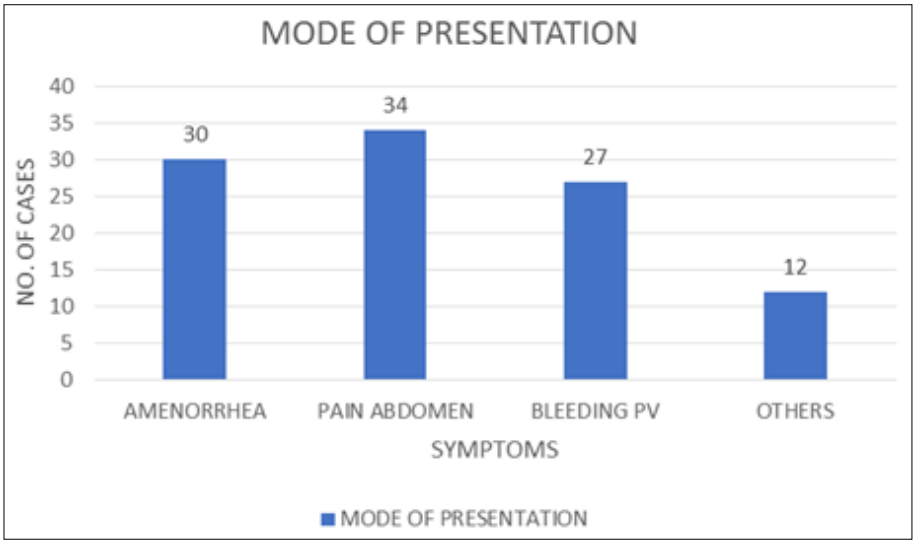

Fig 2: Distribution of Cases as per Clinical Symptoms

Out of total 44 patients, 31 cases were managed with Laparoscopic surgery (70.5%of the participants), while Laparotomy was done in 29.5% of the participants. Isthmus was found to be most commonly affected site accounting for 54.5% of the participants, for 15.9% of the participants ampulla was the site of ectopic, Fimbria was site of ectopic in 18.2% of the participants, Interstitium accounted for 9.1% of the participants, and in 2.3% of the participants Site of Ectopic was Ovarian.

Table 3: Distribution of the Participants in Terms of Site of Ectopic (n = 44)

Site of Ectopic	Frequency	Percentage
Ampulla	24	54.5%
Fimbrial	8	18.2%
Interstitium	4	9.1%
Isthmus	7	15.9%
Ovarian	1	2.3%
Total	44	100.0%

We found that left side (54.5%) was found to be more involved comparatively than right sided ectopic pregnancy which was 45.5%. 79.5% of the participant Ruptured ectopic was seen and in 20.5% of the participants Unruptured ectopic was seen. 15.9% of the participants there was no hemoperitoneum, in 25.0% of the participants hemoperitoneum was mild, 45.5% of the participants hemoperitoneum was Moderate, whereas in 13.6% of the participants hemoperitoneum was Severe. 93.2% of the participants had no complications at all. Out of 44 patients, 18 needed blood transfusion (40.9%) while 59.1% of the participants (26/44) didn't receive blood transfusion as they were found to be hemodynamically stable.

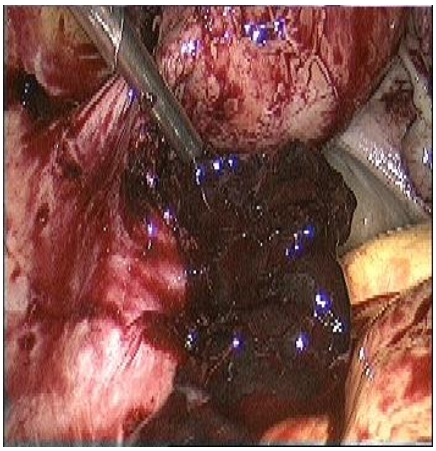

Fig 3: Ruptured Right Sided Ectopic Pregnancy

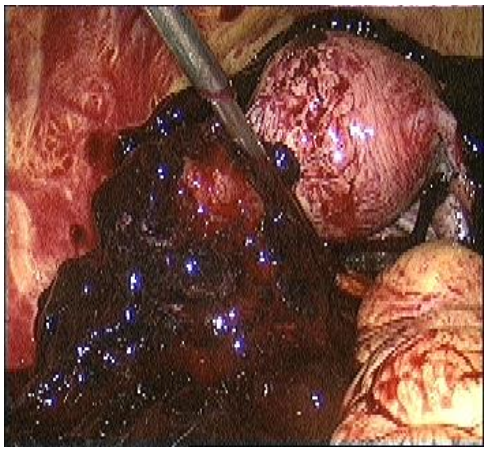

Fig 4: Massive Haemoperitoneum

Discussion

The incidence of ectopic pregnancy among women varies from place to place even in the same country. Ectopic pregnancy may occur at any age from menarche to menopause.

In our study conducted over one-year duration, incidence was found to be 4.5%. Similar studies show varying conclusion, with different regions. Shraddha Shetty *et al.* (120) found incidence rate of 5.65, whereas Rajendra Wakankar *et al.* (121) found it to be around 1.99%; the age wise prevalence of Ectopic pregnancy varies from region to region. In study conducted by Nootan Dayal (137) *et al.* found most of the women between 25-29 yrs. and Shraddha Shetty *et al.* (120) found it to be 25-30 yrs. In this study we concluded it between 31-34 yrs. In our study we found that most of the patients belong to lower income group (61.4 %); similarly, Mamata Soren *et al.* (133) too observed the same (57 %).

In our study we found maximum number of women presenting between gestational age of 4-8 weeks (63.6%). Nootan Dayal *et al.* (137) found it between 6-8 weeks (72.5%); Rajendra Wakankar *et al.* (121) observed it between 6-8 weeks. Ectopic pregnancy is most common seen in multigravida, in present study we found 70.5% women to be multigravida which is similar with other study done by Shraddha *et al.* (120) in their study found 83.9% women in multigravida and V S Sudha *et al.* (128) observed 81.5% to be multigravida.

There are multiple established risk factors associated with ectopic pregnancy like H/O previous pregnancy, abortion, PID, tuberculosis, IUCD use, multiple sexual partners and previous h/0 surgeries. In our study, we observed that most common risk factor to be previous H/O Abortion (27.28%). Nootan Dayal *et al.* (137) also found that most common risk factor as h/o abortion (31.25%) and Shraddha *et al.* (120) also concluded previous abortion to be most common risk factor (29%) whereas V S Sudha *et al.* (128) found PID as most common risk factor (15.78%) and Mamata Soren *et al.* (133) found in their study h/o tubectomy as most common risk factor (30.56%) In the present study, we observed that, abdominal pain was most significant clinical presentation, with 77.3% (34/44) cases; followed by amenorrhea (68.2%) and bleeding p/v (per vagina) in case of 27 patients (61.4%). Study by Meenakshi *et al.* (132) also concluded in their study, that pain abdomen was the most common presenting feature (92.47%) followed by amenorrhea (77.41%). Presence of all three together; pain abdomen, amenorrhea, bleeding per vaginal is known as classical triad. Rajendra *et al.* (121) in their study concluded that classical triad was present in 53.84% cases; whereas Mamata Soren *et al.* (133) observed it to be 54.2%. In our study we observed 29.5% patients with classical triad.

Salpingectomy was the commonest life-saving procedure as most of the cases were ruptured ectopic pregnancy with massive hemoperitoneum. In our study, out of total 44 patients, 31 cases were managed with Laparoscopic surgery (70.5% of the participants), while Laparotomy was done in 29.5% of the participants due to unavailability of trained laparoscopic surgeons. In study done by Archana *et al.* (134), more than half cases were managed with open salpingectomy (51.25%), in case of V S Sudha *et al.* (128) 90.35% patients were managed with open laparotomy. Fallopian tube if ruptured, leads to hemoperitoneum and shock; thus, adding to morbidity and mortality in study population.

In the present study, we observed that intraoperatively in 79.5% of the participant Ruptured ectopic was seen and in 20.5% of the participants Unruptured ectopic was seen, this might be because of late presentation to the hospital. In the study done by Archana *et al.* (134), they found in 55% cases, fallopian tube was ruptured; whereas V S Sudha *et al.* (128) found that 66.6% cases were with ruptured fallopian tube. In present study, left side (54.5%) was found to be more involved comparatively than right sided ectopic pregnancy which was 45.5%. V S Sudha *et al.* (128) found in their study, right side to be more involved (64%). Shraddha *et al.* (120) found right side (62.1%) to be more common than left. In our study, ampulla was found to be most commonly affected site accounting for 54.5% of the participants, for 15.9% of the participants isthmus was the site of ectopic, Fimbria was site of ectopic in 18.2% of the participants, Interstitium accounted for 9.1% of the participants, and in 2.3% of the participants Site of Ectopic was Ovarian. Comparing with other similar studies, Archana *et al.* (134) found ampulla to be most common site of ectopic pregnancy (42.5%); whereas V S Sudha *et al.* (128) also concluded ampulla as mc site (63.15%) in their study.

Hemoperitoneum is very commonly encountered as most of the cases presents with ruptured fallopian tube. In our study, it was found that in 15.9% of the participants there was no hemoperitoneum and rest of the cases showed hemoperitoneum of varying degree (84.1%). Shraddha *et al.* (120) concluded that in 56% cases hemoperitoneum was present whereas Rajendra *et al.* (121) in their study, encountered hemoperitoneum in around 84% of patients.

In present study, out of 44 patients, 18 needed blood transfusion (40.9%) while 59.1% of the participants (26/44) didn't receive blood transfusion as they were found to be hemodynamically stable. In study done by V S Sudha *et al.* (128) transfusion was done in around 76% cases; Shraddha *et al.* (120) 54.8% and Mamata Soren *et al.* (133) reported need of transfusion in 68% cases.

In present study, 93.2% of the participants had no complications at all. One of the participants complained of fever, one patient (2.3%) had superficial wound infection which was managed with i.v. antibiotics and debridement and one patient complained about urinary retention. No maternal mortality was found during the study period. Similarly, V S Sudha *et al.* (128) also reported wound infection in 4.38% of cases whereas Rajendra *et al.* (121) encountered high incidence of wound infection in post-operative cases (21.15%). Universally we sent all cases for histopathological examination which confirmed our diagnosis in each case. In one such similar study done by Mamata *et al.* (133) sent 14 samples for HPE out of 72 which also showed evidence of ectopic tissue.

Conclusion and Recommendations

Ectopic pregnancy is still major challenge because of its bizarre clinical presentation. Strong suspicion is required for its early diagnosis. It is one of the most common cause of maternal morbidity and mortality in 1st trimester. In developing countries, majority of hospital -based studies have reported ectopic pregnancy case fatality rate of around 1-3 %. Therefore, Strong suspicion is required for its early diagnosis. In our study, we observed that there is a rising trend in ectopic pregnancy due to early diagnosis by the availability of more sensitive tests. Amenorrhea was found in 68.2% of participants. Thus, amenorrhea is not necessary for the diagnosis of ectopic pregnancy. UPT and ultrasound should be advised to all reproductive age group patients presenting with abdominal pain, bleeding p/v (per vagina) with or without amenorrhea. Ultrasound is the simple and gold standard diagnostic method for ectopic pregnancy in low resource settings. Routine first trimester ultrasound should be done in all pregnant women at the

first visit itself. We encountered one case of ectopic pregnancy in patient who earlier underwent Sterilization procedure. So, we should have high index of suspicion for ectopic pregnancy even in such patients.

Majority of cases (80%) were referred and came late to the hospital after ectopic pregnancy has ruptured, but fortunately there has not been even a single mortality. Hence early diagnosis and referral can significantly decrease morbidity.

Because of the high incidence of tubal rupture in our set up, community education is required to inform the women to attend the health facilities as early as possible once they have symptoms.

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