

## Observational Study of Management of Ectopic Pregnancies in a Tertiary Health Centre

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Date of Submission: 11-07-2019

Date of acceptance: 26-07-2019

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An ectopic pregnancy is the one in which the fertilized ovum becomes implanted in a site other than the normal uterine cavity. It is a consequence of an abnormal implantation of the blastocyst. The frequency with which ectopic pregnancy presents in the gynaecological departments of hospitals, the variations of its symptoms and signs and the intricacies in its diagnosis has made ectopic pregnancy both an interesting and a challenging problem.

The most recent estimate by the CDC is 2%<sup>1</sup>, Ectopic pregnancy is one of the most common acute abdominal emergencies a gynaecologist has to meet in day to day practice. The incidence of ectopic pregnancy has risen in the past 20 years due to various reasons of predisposing factors like an increase in sexually transmitted diseases and resultant tubal disease and also better diagnostic techniques.

Concomitant with this increase, however there has been a profound decrease in maternal mortality. Ectopic pregnancy is still a leading cause of morbidity and mortality and there remains a racial disparity with a higher mortality rate for African American women<sup>2</sup>.

### I. Aims and Objectives

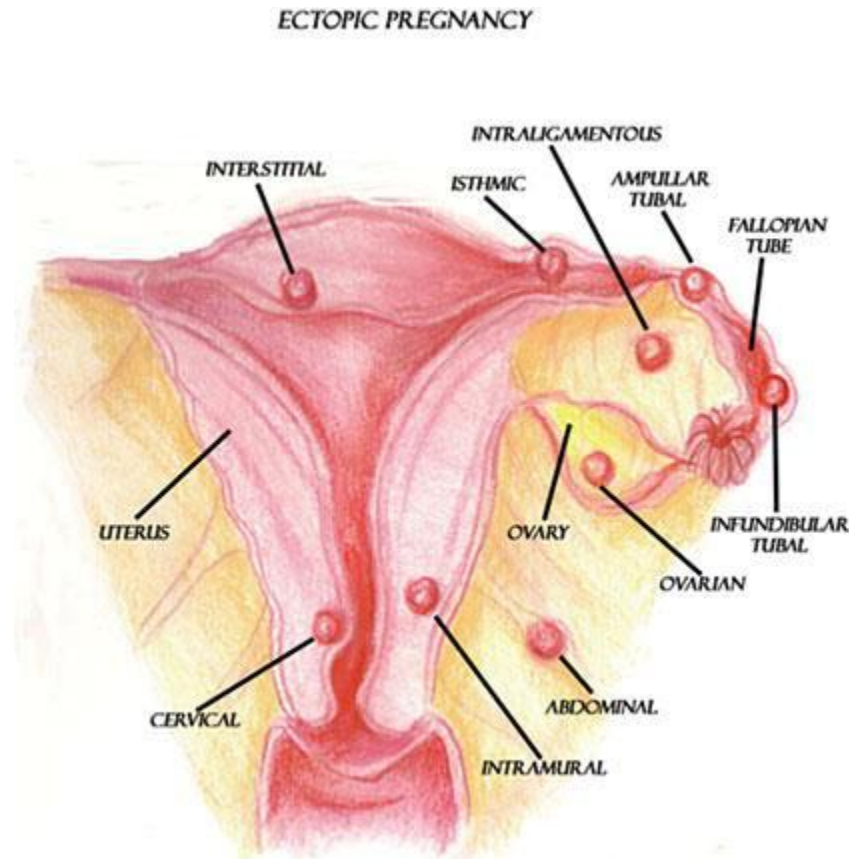
1. The aim of the present study is to analyze various methods of management of 50 consecutive cases of ectopic pregnancies attending our institution.
2. To evaluate the efficacy of different modes of management of ectopic pregnancies.
3. To determine the underlying risk factors, clinical features and operative findings of patients diagnosed with ectopic pregnancy.

### II. Review Of Literature

Following fertilization and fallopian tube transit, the blastocyst normally implants in the endometrial lining of the uterine cavity. Implantation elsewhere is considered ectopic and comprises 1 to 2% of all first trimester pregnancies in the U.S and 3 to 4% worldwide incidence.

#### Sites of Ectopic pregnancy

1. Fallopian Tubes - 95-98%
2. Uterine Cornu- 2-2.5%
3. Ovary, cervix, Abdominal cavity <1%



**Figure 1:** picture depicting the various sites of ectopic pregnancies

### **Risk Factors**

The cause of ectopic pregnancy is tubal damage or altered motility that results in the blastocyst being improperly transported and abnormally implanted.

#### **1. Pelvic infection:**

The most common cause of acute salpingitis and the preceding factor for ectopic pregnancy and histopathological evidence of salpingitis is identified in almost 50% of the tubes harbouring ectopic pregnancy. Chlamydia trachomatis is the most common (30-50%)<sup>3</sup> 2011. Tubal damage increases after successive episodes of pelvic inflammatory disease (13% after 1st episode, 35% after 2nd and 75% after 3<sup>rd</sup> episodes)<sup>4</sup>.

#### **2. Contraceptive Use:**

The risk of an ectopic pregnancy is lower in women using an IUCD than in women using no contraception, but if pregnancy occurs with an IUCD in situ 1 in 20 pregnancies are ectopic, indicating that the IUCD prevents mainly intrauterine pregnancies. But, when contraception method fails, the proportions of ectopic pregnancy may be higher than those of non users<sup>5</sup>.

Progesterone devices may alter tubal motility and polarity and hence lead to abnormal implantation.

#### **3) Tubal Surgery:**

Tubal surgery is associated with an increased risk for ectopic pregnancy with an over all rate of 2 to 7%. The risk depends on the sterilization technique and women's age at the time of sterilization.

A six year retrospective study conducted by Shah JP et al 1991<sup>6</sup> concluded that the incidence of ectopic pregnancy is higher when sterilization is performed during postpartum period because of incomplete occlusion of the tubal lumen.

#### **4) Prior ectopic pregnancy:**

Women with a previous history of ectopic pregnancy also have an increased risk, which increases further in proportion to the number of previous ectopic pregnancy. The risk of recurrent ectopic pregnancy after two prior episodes may be as high as 30%<sup>7</sup> with one prior ectopic 8-15% chance of recurrence. Single dose methotrexate conferring the lowest risk, while linear salpingostomy is associated with highest risk.

**5) Other Causes:**

**a) Prior Pelvic- Abdominal Surgery:**

The role of abdominal surgery in ectopic pregnancy is unclear. Surgery of ovarian cystectomy or wedge resection increases the risk for ectopic pregnancy, because of peritubular scarring<sup>8</sup>. Any previous pelvic or abdominal surgery is also a risk factor with an incidence of 13% according to a case control study conducted by Ahmed Ragab et al 2016<sup>9</sup>.

**b) Infertility:**

The incidence of ectopic pregnancy increases with age and parity and there is significant increase in nulliparous women undergoing infertility treatment. For Nulliparous women, conception after at least 1 year of unprotected intercourse are 2-6 times more likely to be tubal. The use of Assisted Reproductive Techniques [ART] increases the rate of ectopic pregnancies.

**c) smoking:**

One third of all cases of ectopic pregnancies are thought to be associated with smoking and it is a dose-dependent relationship with highest adjusted odds ratio (OR) (3.9) when more than 20 cigarettes are smoked a day<sup>10</sup>.

**d) Salpingitis Isthmica Nodosa (SIN):**

It is an inflammatory pathological condition of the tube is strongly associated with infertility and ectopic pregnancy, particularly in recurrent cases.

**e) Diethylstilbestrol (DES) :**

Women exposed to diethylstilbestrol in-utero who subsequently conceive are at increased risk for ectopic pregnancy.

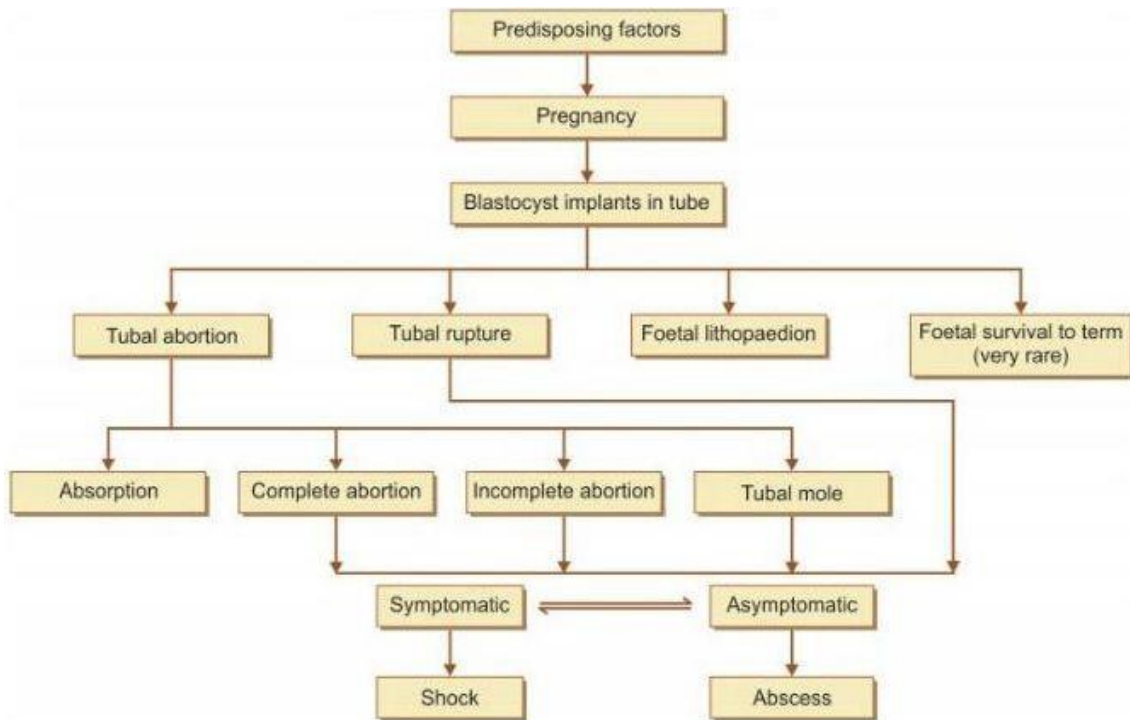
**Etiology:**

The exact etiology of ectopic pregnancy is unknown. It is thought that tubal implantation occurs as a result of a combination of arrest of the embryo in the fallopian tube and changes in the tubal microenvironment that allow early implantation to occur<sup>11</sup>. Inflammation within the tube, resulting from infection or smoking may effect embryo tubal transport by disrupting smooth muscle contractility and ciliary beat activity and may also provide provide pro-implantation signals. Molecular research generally involves studying fallopian tube biopsies taken from women with ectopic pregnancies.

**Clinical Presentation**

Patients with an ectopic pregnancy commonly present with pain and vaginal bleeding between 6&10 weeks gestation<sup>12</sup>. There are common symptoms in early pregnancy with one third of women experiencing some pain and or bleeding. The classic symptomatic triad of ectopic pregnancy is pain, amenorrhea and vaginal bleeding. This symptom group is present in about 50% of patients and is typical in patients with a ruptured ectopic pregnancy. Shoulder tip pain, syncope and shock occurs in up to 20% of women and abdominal tenderness in more than 75%. A palpable adnexal mass in about 50%. One third of women with ectopic pregnancy have no clinical signs and 9% have no symptoms. A ruptured ectopic pregnancy should be strongly suspected if a woman has positive pregnancy test and presents with syncope and signs of shock including tachycardia, pallor and collapse. Ectopic pregnancy may mimic other gynecological disorders and gastrointestinal or urinary tract disease including appendicitis, salpingitis, ruptured corpus luteum or follicular cysts, threatened or inevitable spontaneous abortion, ovarian torsion and urinary tract infections.

### Course of tubal pregnancy



### Clinical features

Ectopic pregnancy presents as a chronic or an acute illness or as an acute-on-chronic. Acute symptoms are acute abdominal pain which is, crampy or colicky type, abdominal tenderness, and any haemodynamic instability like hypotension, collapse, shock. Chronic symptoms are slight vaginal bleeding which is brownish in colour (due to presence of decidual cast).

### Signs and symptoms

1. Abdominal pain - 97%
2. Vaginal bleeding - 79%
3. Abdominal tenderness - 91%
4. Adrenal tenderness - 54%
5. History of infertility - 15%
6. History of intrauterine contraceptive device - 14%
7. History of previous ectopic - 11%

### Laboratory Assessment:

Rapid and accurate determination of pregnancy is essential to identify an ectopic pregnancy. Current serum and urine pregnancy tests that use enzyme linked immunosorbent assays (ELISA's) for beta-hCG are sensitive to levels of 10 to 20 mIU/ml and are positive in >99% of ectopic pregnancies.

## III. Tests And Aids To Diagnosis

### 1. Urine pregnancy test (UPT):

It is positive in about 50% of cases. (a negative test is seen in cases due to dead chorionic tissue or disruption of connection of ectopic to maternal circulation). Shradha Shetty K et al 2014 and Rajita S Jani et al 2014 have found the results of positive UPT to be on average of 88-90%.

### 2. beta-hCG levels:

Usually this hormone is detected in urine and blood as early as one week before an expected menstrual period. Serum testing detects levels as low as 5 IU/ml, whereas in urine as low as 20-50 IU/ml<sup>13</sup>. Serial hCG levels are usually required when the results of initial ultrasonography findings are indeterminate. Low serum beta-hCG level (<1000 IU/ml) is associated with a higher relative risk of ectopic pregnancy.

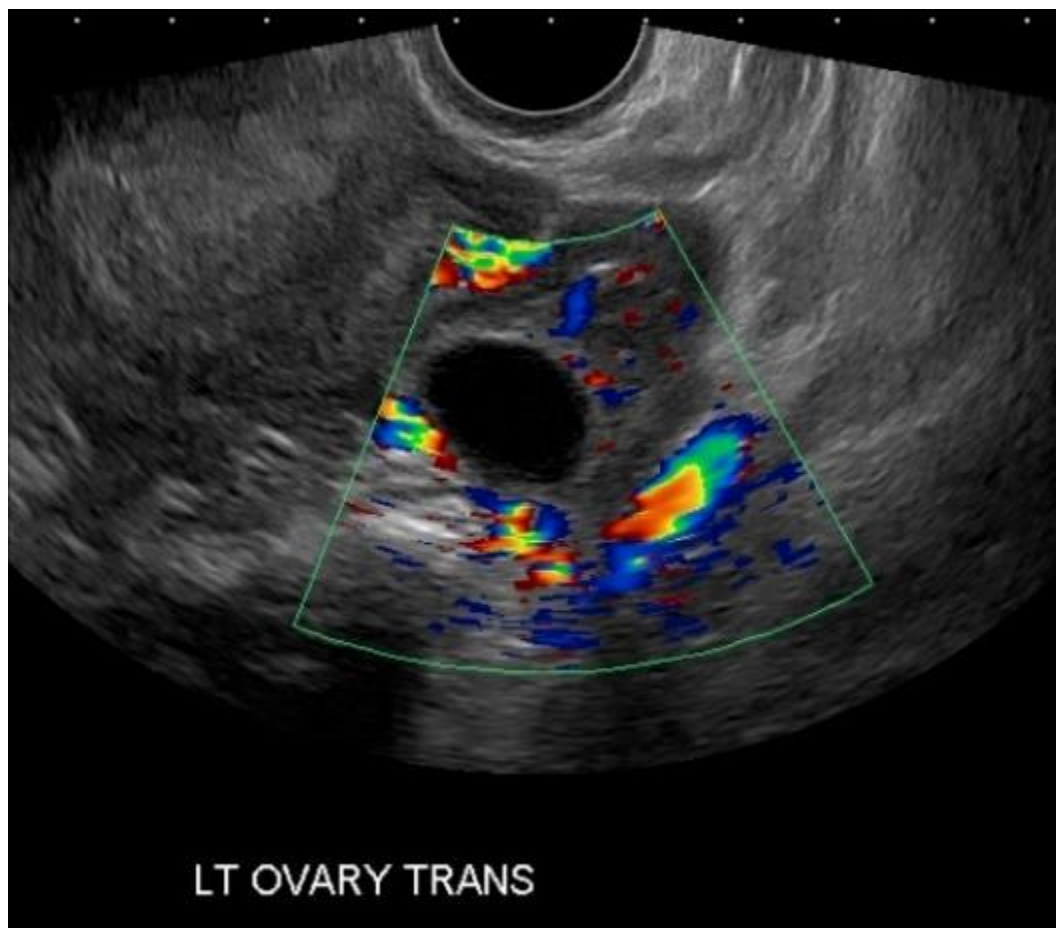
### **3.Serum Progesterone:**

Useful as an adjunct to beta-hCG in evaluating ectopic pregnancy. Serum progesterone levels can detect pregnancy failure and identify patients at risk for ectopic pregnancy, but they are not diagnostic of ectopic pregnancy. Sensitivity for diagnosis for ectopic pregnancy. Maternal serum alpha-fetoprotein (AFP) levels are elevated in ectopic pregnancies.

### **4.Ultrasonography:**

High definition ultrasonography, particularly using the Transvaginal route, has revolutionized the assessment of patients with early pregnancy problems, allowing for clearer visualization of both normal and abnormal gestation<sup>14</sup>. The positive identification of a non-cystic adnexal mass with an empty uterus has a sensitivity of 84-90% and a specificity of 94-99% for the diagnosis of an ectopic gestation<sup>15</sup>. Many prospective studies have shown that TVS has high accuracy in confirming both intrauterine and ectopic pregnancy.

Vaginal Color Doppler: This technique consists of identifying an intrauterine or extrauterine site of vascular colour in a characteristic placental shape, the so-called 'Ring of fire' pattern and a high velocity, low impedance flow that is compatible with placental perfusion seen outside the uterine cavity characterizes ectopic pregnancies.



**Figure 2** : picture showing "ring of fire" pattern on vaginal colour Doppler

### **5.Culdocentesis:**

It was used widely as a diagnostic technique for ectopic pregnancy. With the use of hCG testing and TVS, it is now rarely indicated.

### **6.Laparoscopy:**

It is the gold standard for the diagnosis of ectopic pregnancy. It is performed when an ectopic is suspected and ultrasound is inconclusive, a diagnostic laparoscopy may be required.

Indeed, reluctance or delay in performing a diagnostic laparoscopy has been highlighted as a factor in fatal cases<sup>16</sup>. In one study, 2 of 44 (4.5%) women reported to have no evidence of an ectopic pregnancy at the time of laparoscopy were subsequently diagnosed with one<sup>17</sup>.

#### **IV. Management Of Ectopic Pregnancy**

Ectopic pregnancy can be managed surgically, medically or expectantly. In these days of increasing outpatient diagnosis and management it is important to remember the risks of ruptured ectopic pregnancy. Clear documentation of diagnostic and management strategies-with clinical, sonographic and biochemical assessment of the patient-is therefore important.

Which management is most appropriate depends on ongoing assessment and on numerous clinical factors like their clinical presentation and on the severity of the condition, suitability of treatment options and patient preference. Patients in a hemodynamically unstable condition should undergo immediate surgical intervention. Patients with a stable, relatively asymptomatic condition may be assessed as outpatients.

Minimally invasive surgical techniques and medical management with methotrexate are the commonly used treatment options for ectopic pregnancies. The treatment approach depends on the clinical circumstances, the site of the ectopic pregnancy, and the available resources.

##### **1.Surgical Management:**

Operative management is imperative in the clinical scenario and the most widely used treatment for ectopic pregnancy. Surgical treatments may be radical (salpingectomy) or conservative (salpingostomy). The surgical approach (laparotomy verses laparoscopy) and procedure (salpingectomy verses salpingostomy) used to treat depends on the clinical features, available resources and provider skill level.

##### **Laparotomy verses laparoscopy:**

Laparotomy is indicated when the patient becomes haemodynamically unstable i.e., those who present with rupture and are in a state of hypovolemic shock and compromise and an expedited abdominal entry is required. A ruptured ectopic pregnancy does not necessarily require laparotomy. Laparoscopy approach is preferable to an open approach in a patient who is haemodynamically stable.

##### **Salpingectomy verses Salpingostomy:**

Whether to treat the ectopic pregnancy with a subsequent pregnancy with a salpingostomy or salpingectomy is strongly debated and multiple studies have investigated this issue. The decision to choose one technique over the other depends on the condition of the affected tube and contralateral tube, history of previous ectopic pregnancy in the affected tube, and the patients desire for future fertility.

Salpingostomy preserves the tube, but bears the risks of both persistent trophoblast and repeat ipsilateral tubal ectopic. Salpingectomy, avoids these risks, but leaves only one tube for reproductive capacity<sup>18</sup>. Clausen et al. reported a recurrent ectopic pregnancy rate of 10% after salpingectomy compared with 15% after salpingostomy.

##### **Salpingostomy:**

It was first described by Stromme in 1953. A salpingostomy is the procedure where the products of conception are removed through an incision made into the tube on its antimesenteric border and the opened tube is irrigated with ringer lactate solution (not normal saline)

##### **Salpingectomy:**

Removal of part or all of the affected tube is the usual procedure, if the patient has completed her family, if the tube appears grossly damaged or if ectopic pregnancy has recurred in a tube already treated conservatively.

##### **Medical Management:**

Medical management is useful for patients with an unruptured tubal ectopic pregnancy who are haemodynamically stable and have minimal symptoms and a low volume of free intraperitoneal fluid on ultrasound scan<sup>19</sup>. Intramuscular methotrexate is the most widely used and successful medical therapy for ectopic pregnancy and is generally administered in a single-dose protocol.

##### **Methotrexate:**

It is a folic acid analogue that inhibits dehydrofolatereductase and there by prevents synthesis of DNA. It actively targets rapidly dividing cells and arrests mitosis. In ectopic pregnancy, the drug prevents the proliferation of cytotrophoblast cells, reducing cell viability and beta-hCG secretion and thus progesterone support for the pregnancy. This facilitates the resolution of the ectopic pregnancy and tissue remodeling.

**Indications :**

1. haemodynamically stable
2. lowhCG-<5000milliIU/ml
3. small mass-<3.5cm(not gestational sac diameter, it is presence of hemorrhage within the fallopian tube)
4. no embryonic cardiac activity
5. unruptured mass

**Contraindications:**

**Absolute contraindications Relative**

Hemodynamically unstable sac diameter >3.5cm  
Ruptured ectopic pregnancy cardiac activity present  
Unable to comply with medical management follow-up  
Breastfeeding  
Preexisting blood dyscrasias  
Known sensitivity to methotrexate  
Active pulmonary disease  
Peptic ulcer disease  
Hepatic,renal or hematological disorder

**Expectant Management:**

Some ectopic pregnancies resolve spontaneously through either regression or tubal abortion,without causing harm to the patient. Early diagnosis of ectopic pregnancy can allow for expectant management,if the symptoms are slight and subsiding. It is a conservative strategy consisting of observation and assessment of whether the ectopic pregnancy is continuing to resolve spontaneously and successfully without intervention<sup>20</sup>.

**NON-TUBAL PREGNANCIES:**

- 1.ABDOMINAL PREGNANCY
- 2.cervical pregnancy
- 3.Ovarian pregnancy

**PATIENTS AND METHODS**

STUDY DESIGN- Prospective Observational Study.

STUDY SUBJECTS-Women with history of amenorrhea, lower abdominal pain and spotting/bleeding per vagina of reproductive age group attending our obstetrics and gynaecology department after diagnosed with an ectopic pregnancy are recruited for the study after taking their consent for participation.

STUDY PERIOD- September 2015 to October 2016

SAMPLE SIZE-50

INCLUSION CRITERIA:

All the cases diagnosed as ectopic pregnancy admitted in obstetrics and gynaecology department,Gandhi Hospital during the study period of one year(September 2015-october 2016).

EXCLUSION CRITERIA:

All intrauterine pregnancies.

METHOD:

Women of reproductive age group with history of amenorrhea,lower abdominal pain and spotting or bleeding per vagina with diagnosed with ectopic gestation attending our institution are selected for study group.

Based on clinical picture,ultrasound findings and their haemodynamiccondition,few patients have been selected for medical treatment and others are managed through surgical approach.

The criteria for medical management are as follows:

- 1.haemodynamically stable
- 2.lowhCG-<5000milliIU/ml
- 3.smallmass-<3.5cm
- 4.no embryonic cardiac activity
- 5.unruptured mass

The patients who are fulfilling the above criteria are selected for medical treatment i.e.,methotrexate administration and the remaining cases who are not fulfilling the criteria are selected for surgical management.

Medically managed cases were followed up by serial beta-hCG levels until the levels have reached to non-pregnant levels(<20IU/ml) .

The efficacy of surgeries i.e.,both laparoscopy and laparotomy are assessed by duration of operative time,intraabdominal blood loss and duration of hospital stay after surgery and also in terms of any need for blood transfusion and need for postoperative analgesia are compared.

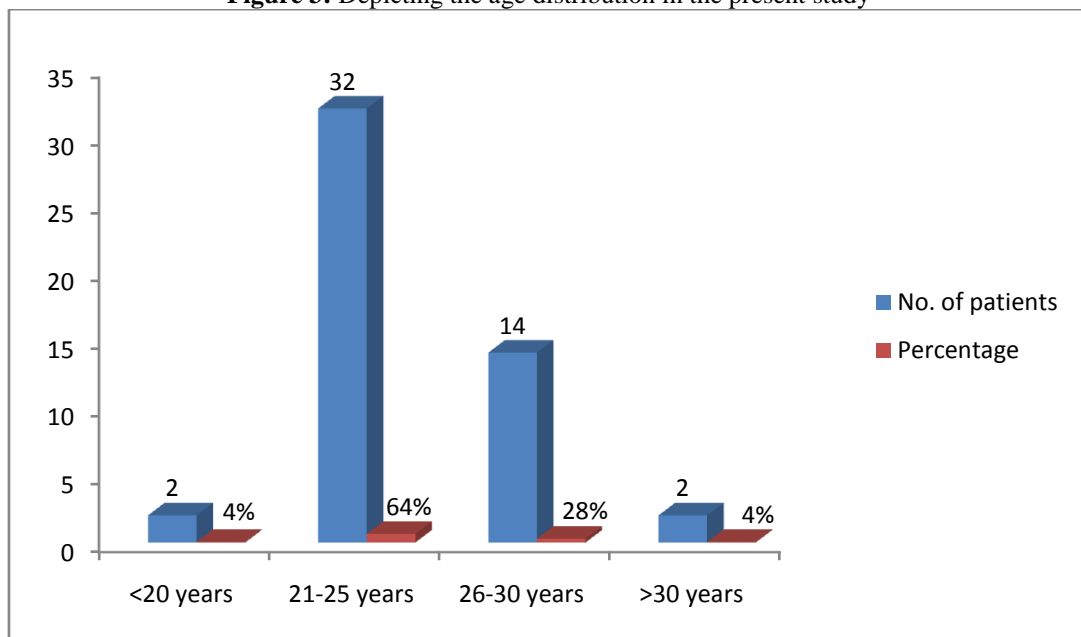
**V. Results**

In a group of 50 patients with ectopic pregnancy, 64% of the women are in the age group of 21-25 years.

**Table-1: Showing the analysis of ectopic pregnancy in relation to age of patient**

Age in Years	No. of patients	Percentage
<20 years	2	4%
21-25 years	32	64%
26-30 years	14	28%
>30 years	2	4%

**Figure 3: Depicting the age distribution in the present study**



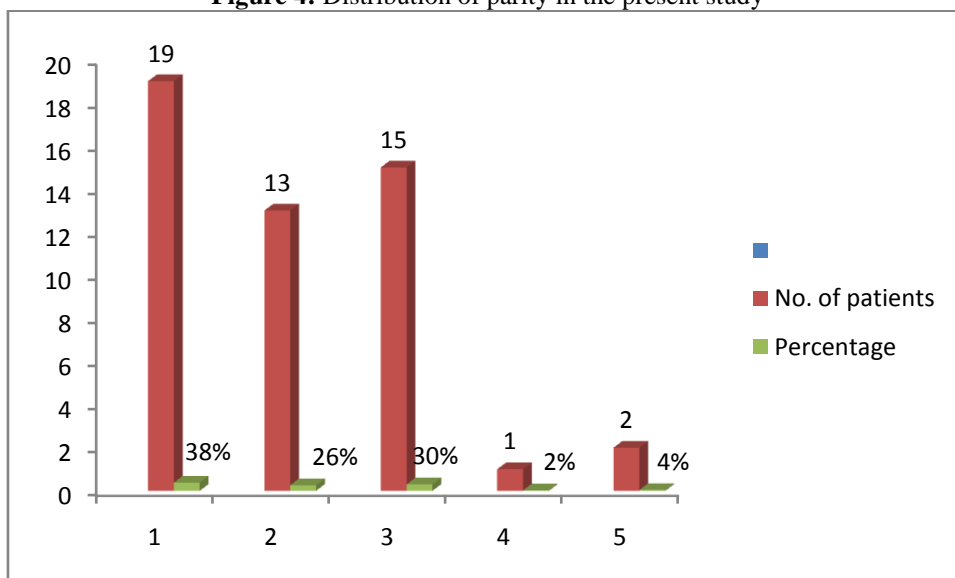
**Table-2: Showing the analysis of ectopic pregnancy in relation to parity**

Parity	No. of patients	Percentage
0	19	38%
1	13	26%
2	15	30%
3	1	2%
4	2	4%

In the present study 62% of the patients are multiparous and 38% are nulliparous.



**Figure 4:** Distribution of parity in the present study

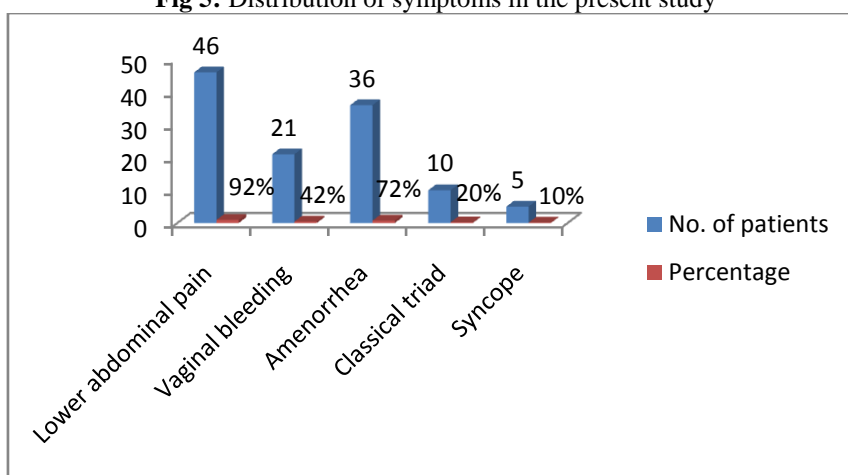


**Table-3:** Analysis of presenting symptoms in ectopic pregnancy

Presenting Symptoms	No. of patients	Percentage
Lower abdominal pain	46	92%
Vaginal bleeding	21	42%
Amenorrhea	36	72%
Classical triad	10	20%
Syncope	5	10%

Present study have shown the results that 92% of the patients presented with lower abdominal pain and classical triad was observed in only 20% of the patients.

**Fig 5:** Distribution of symptoms in the present study

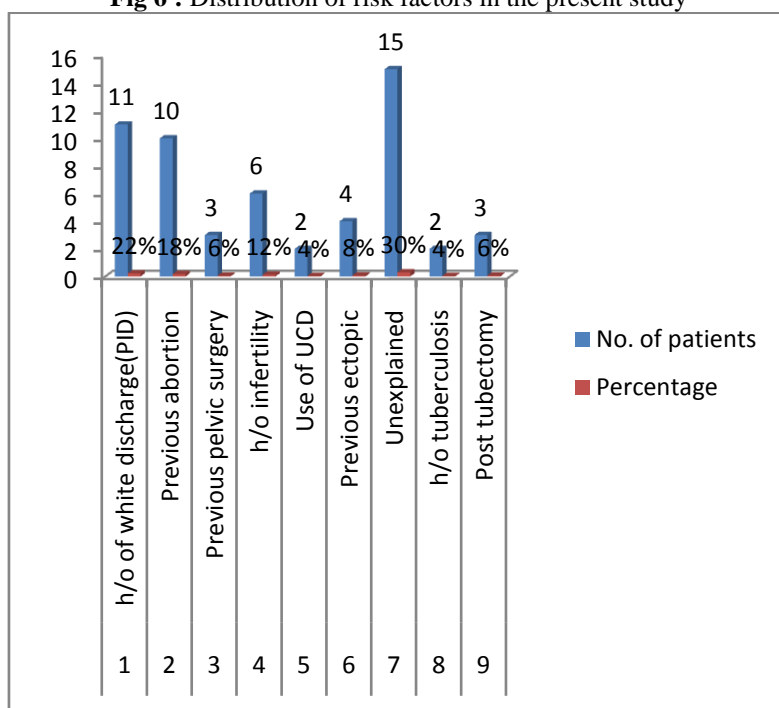


**Table - 4:** Analysis of underlying risk factors in patients with ectopic pregnancy

Sl.No.	Predisposing factors	No. of patients	Percentage
1	h/o of white discharge(PID)	11	22%
2	Previous abortion	10	18%
3	Previous pelvic surgery	3	6%
4	h/o infertility	6	12%
5	Use of UCD	2	4%
6	Previous ectopic	4	8%
7	Unexplained	15	30%
8	h/o tuberculosis	2	4%
9	Post tubectomy	3	6%

11(22%) patients have a h/o chronic white discharge suspecting the cause of pelvic inflammatory disease, 30% have unexplained factors and previous ectopic have contributed to 8%.

**Fig 6 :** Distribution of risk factors in the present study

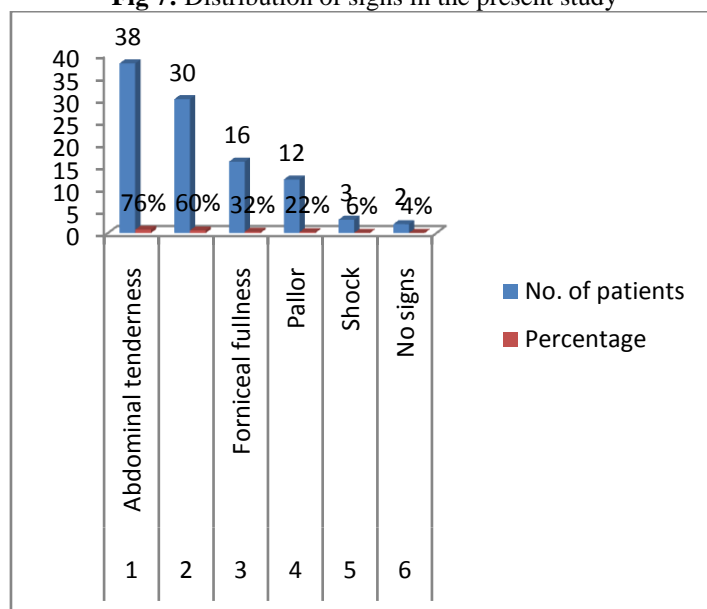


**Table-5: Analysis of cases depending on clinical signs in ectopic pregnancy**

Sl.No.	clinical signs	No. of patients	Percentage
1	Abdominal tenderness	38	76%
2	Cervical motion tenderness	30	60%
3	Forniceal fullness	16	32%
4	Pallor	12	22%
5	Shock	3	6%
6	No signs	2	4%

Abdominal tenderness was the most common complaint presented in the study with 76% and 2 out of 50(4%) didn't present with any signs.

**Fig 7:** Distribution of signs in the present study



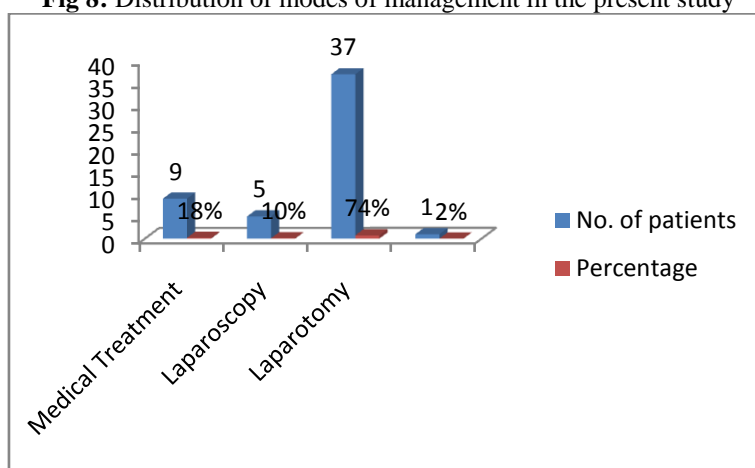
**Table-6:** Analysis of mode of management in ectopic pregnancy

Type of management	No. of patients	Percentage
Medical Treatment	9	18%
Laparoscopy	5	10%
Laparotomy	37	74%
Methotrexate- laparotomy	1	2%

Out of 50 patients,9 (18%) patients were fulfilling the criteria for medical management and 8 patients were given multiple dose regimen i.e.methotrexate 1mg/kg bd.wt on Day 1,3,5,7 and leucovorin 0.1mg/kg bd.wt,for 1 patient methotrexate was given on day 1,3 but on day 4 patient was complaining severe pain abdomen and ultrasound revealed tubal abortion(ruptured),emergency laparotomy was performed.

In 42 patients surgical intervention was taken,among them laparotomy was performed in 74% of the patients and laparoscopy in 10% of the cases.

**Fig 8:** Distribution of modes of management in the present study



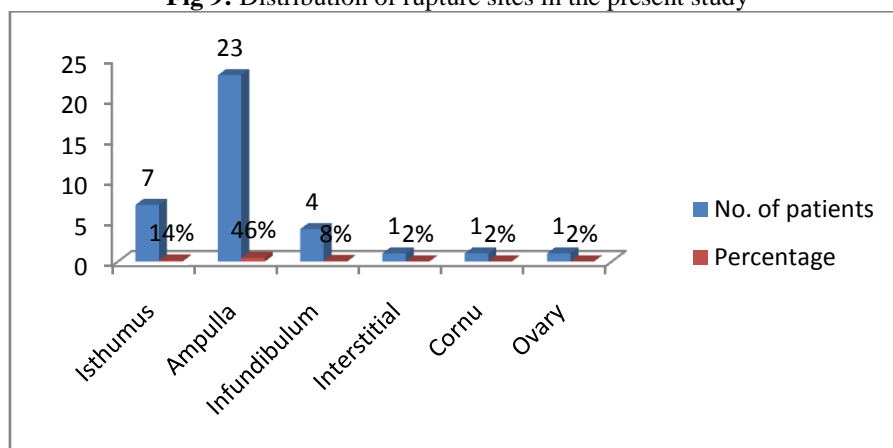
Since in the present study,most of the patients are ruptured ectopic,laparotomic surgery was performed

**Table-7:** Analysis of site of ectopic on ultrasound findings

Site of rupture	No. of patients	Percentage
Isthmus	7	14%
Ampulla	23	46%
Infundibulum	4	8%
Interstitial	1	2%
Cornu	1	2%
Ovary	1	2%

Ampulla was the most common site of rupture(46%) and next common site is isthmus(14%) and one case shown ectopic pregnancy in the ovary(2%) and cornual and interstitium contributed each 1%.

**Fig 9:** Distribution of rupture sites in the present study

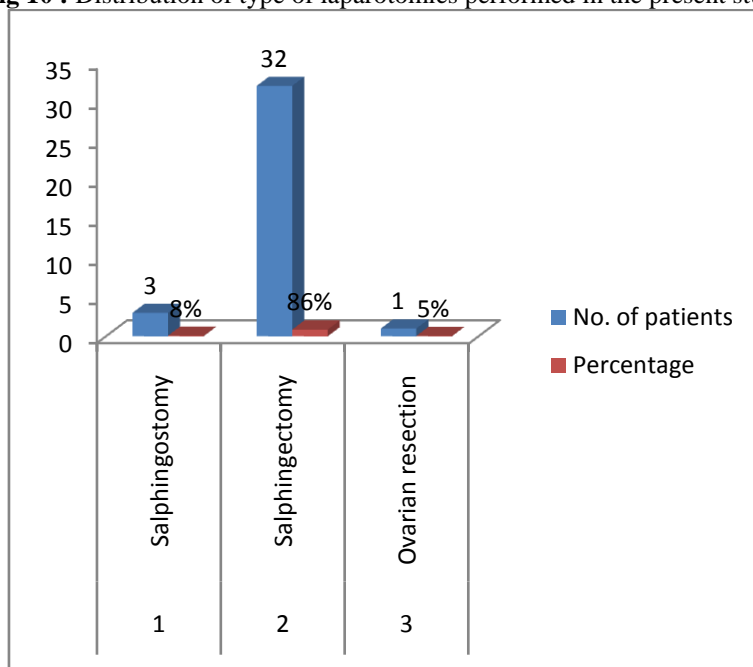


**Table-8:** Analysis of type of laparotomies performed

Sl.No.	Type of surgeries	No. of patients	Percentage
1	Salphingostomy	3	8%
2	Salphingectomy	32	86%
3	Ovarian resection	1	5%

In laparotomy, 86% of the patients underwent salphingectomy and cornual segmental resection was done in 1 patient and ovarian segmental resection in 1 patient.

**Fig 10 :** Distribution of type of laparotomies performed in the present study

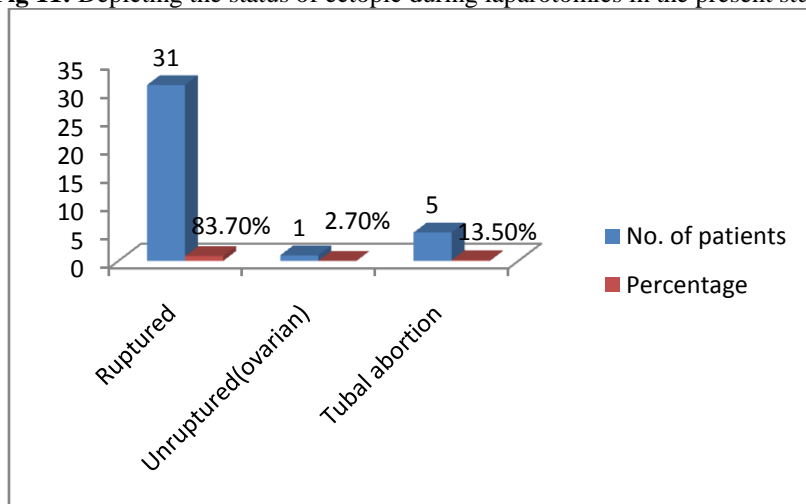


**Table-9:** Analysis of Status of ectopic on laparotomy

Status	No. of patients	Percentage
Ruptured	31	83.7%
Unruptured(ovarian)	1	2.7%
Tubal abortion	5	13.5%

During laparotomy, 83.7% of the patients have shown the features of ruptured ectopic and tubal abortion was noted in 13.5% of the cases.

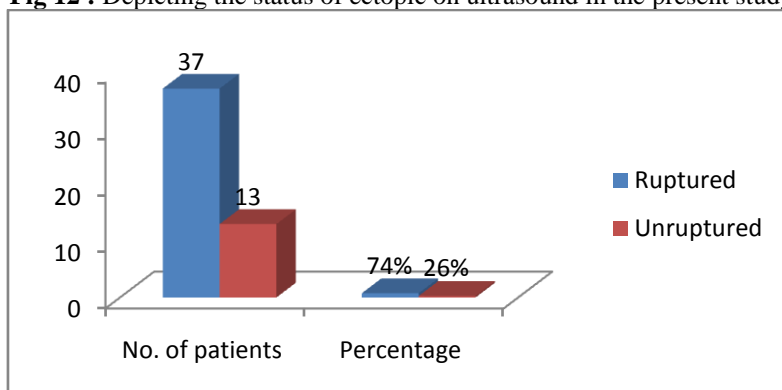
**Fig 11:** Depicting the status of ectopic during laparotomies in the present study



**Table-10:** Analysis of status of ectopic on ultrasound findings

Status	No. of patients	Percentage
Ruptured	37	74%
Unruptured	13	26%

**Fig 12 :** Depicting the status of ectopic on ultrasound in the present study



In ultrasound 74% of the cases have the picture of ruptured ectopic and 26% of the patients have shown the impression of unruptured ectopic. 13 patients have shown unruptured ectopic on ultrasound, out of them 8 were selected for medical management, 3 tubal abortions were also seen as unruptured on ultrasound, 1 patient was diagnosed to have unruptured ovarian ectopic pregnancy and 1 more case was found with ectopic gestation at ampulla site with unruptured features.

**Table-11:** Accuracy of UPT in confirming pregnancy

	Positive	Negative
Number Of Cases	49(98%)	1(2%)

Urine pregnancy test was performed in all the 50 cases, 98% cases have shown UPT as positive and in only one patient it was negative.

**Table 12:** comparison of post operative morbidity in laparotomy versus laparoscopy

Variable		Laparoscopy	Laparotomy
1. Intra operative Blood loss (ml)	N	5	37
	Mean	246.00	357.03
	Standard deviation	215.824	358.476
2. Operative time (min)	N	5	37
	Mean	24.00	31.62
	Standard deviation	4.183	7.602
3. Hospital Stay (days)	N	5	37
	Mean	2.40	5.43
	Standard deviation	0.548	1.405

Intraoperative blood loss in laparoscopy group is 246ml whereas in laparotomy cases it is 357 ml, mean operative time in laparoscopy group is 24min and 31 min in laparotomy cases. Duration of hospital stay in laparoscopy group is 2 days and 5 days in laparotomy cases.

**Table13:** Comparison of post operative morbidity of laparoscopy versus laparotomy in terms of blood transfusion and need for postop analgesia.

Parameters	Laparoscopy	Laparotomy
Blood transfusion	1	15
Need for post op analgesia	2	24

15 cases of laparotomy were required blood transfusion because of more amount of blood loss and need for post op analgesia was required for 2 laparoscopic cases.

## VI. Discussion

A total 50 pregnant women with ectopic pregnancy were included in the study. The study was conducted at Gandhi Hospital from September 2015 to October 2016. In the present study, our results suggested that most of the ectopic cases have landed in an emergency situation with the most common complaint of lower abdominal pain in 92% cases followed by amenorrhoea which is seen in 72% of patients. Among 50 cases, 37

have shown the ultrasound features of ruptured ectopic and taken for emergency laparotomy and salpingectomy was done in 35 cases. Histopathology reports have shown the result that PID is the most common underlying risk factor.

During this one year study period, there were a total of 10932 deliveries and among them 50 cases were diagnosed to have ectopic gestation giving an incidence of 0.45%. The incidence of ectopic pregnancy has been increasing worldwide. Similar results were also noted in a study conducted by Shraddha Shetty K, et al. The incidence of ectopic pregnancies was 5.6/1000 deliveries and in Prasanna B, et al. study the incidence is 1.8%.

In the present study majority of the patients have fallen in the age group of 21-25 years (62%) followed by 26-30 years (30%) indicating that ectopic pregnancy is more common in reproductive age group. Similar results were observed by some studies conducted by Gupta R, et al. (47.5%), Vandana Bhuria, et al. (50%).

**Table 14 :** comparing age distribution of the present study with other studies

Studies	21-25 years	26-30 years
Samiya M et al	23%	63%
Jani R S et al	48%	34%
Present study	62% (n=32)	30% (n=14)

Same results in the age group between 21-30 years are found with studies conducted by Samiya Mufti, et al. (75.4%) and Prasanna B, et al. (74%) and 85% in Saeed JA, et al. In developing countries like India, most of the girls get married at an early age and conceive and complete their family at an early age.

Present study has given the result that most common age group exposed to ectopic pregnancy is between 21 and 25 years and also between 26 and 30 years and least in the age group of > 31 years with 2% of patients showing ectopic.

**Table 15:** comparison of parity distribution in present study to other similar studies

Studies	Primipara	Multipara
Shraddha S et al	16.1%	83.9%
Prasanna B et al	16%	84%
Present study	26% (n=13)	36% (n=18)

In the present study 26% are primiparous and 36% are multiparous and remaining 38% are nulliparous, concluding that nulliparous women are at more risk of ectopic pregnancy and similar result were also found with Samiya M et al study where 53.50% of the patients are nulliparous.

Majority of the women with ectopic pregnancy in the present study are multiparas (82%) correlating with studies done by Shetty S et al (83.9%), Prasanna B et al (84%) and also Wakankar R et al (76.93%), Panchal D et al (81.66%). These results have come to a conclusion that multigravidas are more prone for ectopic pregnancy probably because of previous miscarriages and infections causing tubal damage.

**Table 16 :** comparison of PID as risk factor in the present study with other studies

Studies	% of PID
Samiya M et al	10.01%
Shraddha S et al	3.2%
Rani J S et al	24%
Prasanna B et al	26%
Bhavna et al	22.7%
Present study	22% (n=11)

Incidence of predisposing risk factor for ectopic pregnancy like Pelvic Inflammatory Diseases came to be 22%, these results coincided with other studies conducted by Jani R S et al (24%), Prasanna B et al (26%) and by Bhavna et al study (22.7%). In studies done by Samiya Mufti et al (24%) and in Shetty S et al (29%), Prasanna B et al (16%) found the incidence of previous abortion as a risk factor coinciding with the result of the present study (18%).

The most important and common predisposing risk factor is Pelvic Inflammatory Diseases of 22% incidence in the present study explaining the fact that endosalpingitis have the risk of damaging the tubal mucosa permitting ectopic implantation and exosalpingitis gives rise to peritubal adhesions, thus impairing peristaltic movements of the fallopian tube.

**Table 17:** comparison of previous ectopic in causing ectopic pregnancy with other studies

Studies	Previous ectopic
Jani R S et al	4%
Prasanna B et al	6%
Samiya M et al	5.3%

Shraddha S et al	3.2%
Present study	8%(n=4)

**Table 18:** comparison of infertility as a risk factor in causing ectopic pregnancy with other studies

Studies	Infertility
Jani R S et al	18%
Prasanna B et al	10%
Samiya M et al	10%
Shraddha S et al	3.2%
Present study	12%(n=6)

**Table 19:** comparison of NO identifiable risk factor in causing ectopic pregnancy with other studies

Studies	NO identifiable risk factor
Jani R S et al	40%
Prasanna B et al	20%
Shraddha S et al	45%
Present study	30%(n=15)

**Table 20:** comparison of presenting symptoms in the present study to other studies

Studies	Lower abd.pain	amenorrhea	Bleeding/spotting p/v
Jani R S et al	96%	88%	40%
Shraddha S et al	80.6%	77.4%	61.3%
Gupta R et al	87.5%	90%	67.5%
Present study	92%(n=46)	72%(n=36)	42%(n=21)

In the present study group,92% of the patients had history of lower abdominal pain,72% had history of amenorrhea. These results have a close relation to a study conducted by JaniRS, et al in which lower abdominal pain was present in 96% ,amenorrhea in 88% and bleeding/spotting per vagina is 42% in the present study whereas 40% in JaniRS,et al study.Incidence of classical triad of ectopic pregnancy is 20% in the present study whereas there is a higher incidence (28%) in JaniRS, et al study.

Whereas in Shetty S, et al. study,80.6% reported with pain abdomen, bleeding per vagina in 61.3% and 77.4% cases had history of amenorrhea and Gupta R, et al had the results of amenorrhea in 90%,pain abdomen in 87.5% and bleeding per vagina in 67.5% of the patients.

The three combined features - amenorrhea, lower abdominal pain and bleeding/spotting per vagina i.e, classical triad of ectopic pregnancy is seen in 10 patients with an incidence of 20% and 10% syncopal attacks.

**Table 21:** comparison of clinical signs of present study to other studies

Studies	Abd.tenderness	Cervical motion tenderness	Mass in fornix
Jani R S et al	92%	68%	34%
Shraddha S et al	64.5%	51.6%	48.4%
Sabina yeasmin et al	70.5%	52.6%	50.4%
Present study	76%(n=38)	60%(n=30)	32%(n=16)

Highest incidence is seen with abdominal tenderness in the above studies.

In the present study signs of abdominal tenderness is seen in 38 patients with an highest incidence of 76% followed by cervical movement tenderness (60%).Similar results are found with Jani R S et al study with incidence of abdominal tenderness (92%) and cervical movement tenderness of (68%).The results of present study also correlated to another retrospective study done by Sabina Yeasmin et al with incidence of 70.5%, abdominal tenderness,cervical excitation (52.6%) and adnexal tenderness (50.4%).

**Table 22:** comparison of no.of medical management cases with other studies

Studies	% of medically managed cases
Jani R S et al study	22%
Samiya M et al study	0.87%
Present study	18%(n=9)

In the present study,18% of the patients have undergone medical management and Jan iR S et al study also found similar result which was done in 2014, whereas only 1 patient(0.87%) have been treated medically in a study conducted by Samiya M et al.

**Table 23:** comparison of salphingectomy cases in laparotomy with other studies

Studies	% of salphingectomy cases
Samiya M et al	74.5%
Shraddha S et al	90.3%
Bhuria V et al	95.2%
Present study	86%(n=32)

In the present study, in open method i.e., in laparotomies salphingectomies has come to an incidence of 86% indicating that salphingectomy is the most common method of surgery performed and this result has been compared with other studies conducted by Samiya M et al study(74.5%), Shraddha S et al study(90.3%),Bhuria V et al study(95.2%).

**Table 24:** comparison of failed medical treatment cases with Jani R S et al study

Studies	Failed medical treatment
Jani R S et al study	18%
Present study	11%(n=1)

In the present study, out of 9 patients treated medically 1 patient had failed medical treatment due to tubal abortion i.e.,11% and similar result was also found with 2 cases out of 11 patients in Jani R S et al study with 18% incidence of failed medical treatment

### VII. Summary

- The present study was conducted at Gandhi hospital in 50 women of reproductive age group with complaints of amenorrhea, lower abdominal pain and spotting/bleeding per vagina with diagnosis of ectopic.
- In the present study 64% are in age group of 21-25 years and 28% are between 26 and 30 years.Majority of women in the study are between 21 and 25 years.
- 62% of the women are multiparous and 38% are nulliparous in the present study.
- Regarding the clinical picture,the most common symptom is lower abdominal pain in 92% of the patients and classical traid was seen in only 20% of the patients.
- Abdominal tenderness was seen in 76% of the patients and cervical motion tenderness seen in 60% cases.32% of the cases had forniceal fullness.
- Chronic PID as a risk factor was seen in 22% of patients and 30% of the patients have no explainable risk factor.Previous abortion as a risk factor was seen in 18% and previous ectopic in 8% of cases.
- Out of 50 patients,9 patients were given medical treatment and among them 1 patient has failed medical treatment due to tubal abortion.5 cases were operated through laparoscopic approach, 36 cases and 1 failed medical management case have undergone laparotomy.
- Laparoscopic group has less intraoperative blood loss,shorter hospital stay,less operative time when compared to laparotomy group.The need for blood transfusion and post operative analgesia was also less in laparoscopic group concluding that laparoscopy surgeries are more efficient than laparotomy.But the present study was conducted at a tertiary health care center,there is a higher rate of referrals and most of patients have ruptured ectopic and haemodynamically unstable,the rate of laparotomies are more than laparoscopic surgeries.
- Among 37 laparotomy cases,32 patients have undergone salphingectomy and 3 patients salphingostomy and for one patient cornual segmental resection was done and ovarian resection was done in another case.
- In the present study ampulla was the most common site of rupture (46%) and isthmus is the next most common site(14%).
- During laparotomy 83.7% of the patients have shown the features of ruptured ectopic and 13.5% have shown the features of tubal abortion.74% of the cases have given the impression of ruptured ectopic on ultrasound finding and 26% are unruptured.
- Ovarian pregnancy was seen in 1 case(2%).
- No case in the present study had negative laparotomy for ectopic gestation.
- No mortality was seen in the present study.

### VIII. Conclusion

- Laparoscopic surgery has an advantage over laparotomy in terms of intraoperative blood loss,operativetime,duration of hospital stay and any need for analgesia in post operative period.
- But it depends on availability of emergency laparoscopic facility, surgeon's operative skills.



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B.Rekha. "Observational Study of Management of Ectopic Pregnancies in a Tertiary Health Centre." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 7, 2019, pp 57-73.