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Annual audit of ectopic pregnancy in tertiary care hospital

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Abstract
Ectopic pregnancy is a well-known entity whenever maternal mortality and now, maternal near miss cases are analysed. It needs to be diagnosed emphatically and early before it lays its hands on patient's life.
Aims and Objectives: To analyze the demographic profile, risk factors, clinical presentation, USG diagnosis/findings, outcomes and management of ectopic pregnancy in tertiary care hospital.
Material and Methods: A prospective study of patients admitted with diagnosis of Ectopic pregnancy either by USG or clinically in labour room of Government Medical College and Rajindra Hospital Patiala from July 2017 to June 2018 was done.
Results: The incidence of ectopic pregnancy came out to be 1.64%. 71.08% were managed surgically, 21.69% medically and 7.23% were managed conservatively.
TVS picked up tubal pregnancy in 80.7% of patients. Cornual, ovarian and caesarean scar pregnancy was identified in 3.6%, 8.4% and 2.4% of the patients respectively. Intraoperatively 76.2% patients had ruptured tubal ectopic, 5.1% each had tubal abortion and cornual pregnancy, 6.8% ovarian pregnancy and interstitial and secondary abdominal pregnancy was found in 1.7% each. There was 3.4% incidence of caesarean scar pregnancy.
There was no mortality and 8.4% fulfilled criteria of maternal near miss.
Conclusion: USG has replaced the diagnostic laparoscopy for the diagnosis of ectopic pregnancy. Early diagnosis and management of ectopic pregnancy can help reduce maternal morbidity. Caesarean scar pregnancy is rising in incidence and needs to be addressed with judicious use and audit of primary caesarean sections.

Keywords: ectopic pregnancy, transvaginal sonography, laparotomy, caesarean scar pregnancy

Introduction
An Ectopic pregnancy or extra-uterine pregnancy anywhere is one in which blastocyst implants anywhere other than the endometrial lining of uterine cavity [1]. Ectopic pregnancy is a common life threatening emergency of early pregnancy and leading cause of maternal morbidity and mortality [2]. The incidence of Ectopic pregnancy is around 1-2% and is rising day by day specially following Artificial Reproduction Techniques [1-10]. The incidence of Ectopic pregnancy varies from country to country depending upon risk factors in the population. The increase is specially due to increasing pelvic infections, ART technologies, tubal surgery including sterilization, IUCDs and also because of early diagnosis due to sensitive tests and USG available [2]. Early diagnosis has reduced the mortality rate from ruptured ectopic pregnancy.
Nearly 95% of ectopic pregnancy implant in fallopian tube and others being ovarian pregnancy, cervical pregnancy, interstitial pregnancy, Cornual pregnancy, Caesarean scar pregnancy, Primary abdominal and secondary abdominal pregnancy [1].
High resolution imaging USG has revolutionized the diagnostic process of ectopic pregnancy and is now considered the Gold Standard for diagnosis of ectopic pregnancy. They can detect masses in adnexa as small as 10mm and can provide more detail about character of mass and amount of free intraperitoneal fluid. Since serum β-hCG levels correlates with detection of G-sac on USG, it allows us to identify ectopic pregnancy before development of life threatening events [10].
The treatment is influenced by the clinical state of the patient, the site of ectopic pregnancy, parity of the patient and available facilities [2]. Surgical treatment is preferred for

haemodynamically unstable patients and conservative management for haemodynamically stable patients.

Aims and Objectives

To analyze the demographic profile, risk factors, clinical presentation, USG diagnosis/findings, outcomes and management of ectopic pregnancy in tertiary care hospital.

Material and Methods

A prospective study of patients admitted with diagnosis of Ectopic pregnancy either ultrasonographically or clinically in labour room of Government Medical College and Rajindra Hospital Patiala from July 2017 to June 2018 was done.

Data was collected and analyzed for age, parity, booked/unbooked, rural/urban, present risk factors, USG findings, clinical presentation, intraoperative findings, blood transfusion given, management and outcome of treatment.

Total number of labour room admissions and deliveries were taken from the department of Obstetrics and Gynaecology and analyzed accordingly. Number of near miss cases was also identified according to GOI guidelines.

Results

There were total 7497 admissions in labour room during the study period and total number of live births was 5052. Total Ectopic pregnancies reported during this period were 83. The incidence of ectopic pregnancy came out to be 1.64% (16.4 per 1000 live births).

Out of 83, 59 patients underwent surgical management. Other 24 were managed either expectantly or by medical methods. (Table No.1)

Table 1: Showing node of management of patients

Management of Ectopic Pregnancy	No. of cases	% age
Surgical	59	71.08
Medical	18	21.69
Expectant	6	7.23
Total cases	83	100

Majority of patients i.e. 45.8% were in the age group of 25-30 years. 78.3% of patients were multigravida and primigravida constituted only 21.7%. 96.4% of subjects were unbooked with our institute and 90.4% of the patients were from rural areas. (Table No. 2)

Table 2: Showing demographic profile

AGE	No of patients	%age
20-24	27	32.5
25-30	38	45.8
31-35	12	14.5
>35	6	7.2
Obstetric history		
G1	18	21.7
G2	18	21.7
G3	30	36.1
>G3	17	20.5
Booked	3	3.6
Unbooked	80	96.4
Rural	75	90.4
Urban	8	9.6
Previous NVD	46	55.4
LSCS	16	19.2
ABORTION	4	4.8

39.6% patients had previous surgery as risk factor including previous ectopic pregnancy, 26.5% patients had PID as risk factor and contraceptive devices constituted 8.4%. Infertility (primary or secondary) was risk factor in 15.6% of patients. Genital tuberculosis was another risk factor in 9.6% of patients. (Table No.3)

Table 3: Showing various risk factors

Risk factor	No of patients	%age
Previous Ectopic	6	7.2
Previous Surgery -		
D & C/ MTP pill intake	3	3.6
H/O MROP	1	1.2
Tubal Ligation	3	3.6
Previous C-Section	16	19.2
Tubal Recanalization	1	1.2
Other Surgeries	3	3.6
Contraception(IUCD)	7	8.4
Infertility	13	15.6
Genital Tuberculosis	8	9.6
Pelvic Inflammatory Disease	22	26.5

Most of the patients presented with clinical triad of amenorrhoea, pain and vaginal bleeding. Out of 83 patients 9.6% patient had an amenorrhea of 28 to 34 days, 44.5% patients had amenorrhoea of 35 to 45 days, 42.1% patients had amenorrhoea 50 to 70 days and 3.6% had lactational amenorrhoea. 62.6% presented with acute pain and 49% of patients had fainting attacks. 79.5% patients had reported bleeding per vaginum. Six (7.2%) reported in shock in emergency. Abdominal tenderness, distension and guarding was found in 28.9%, 14.4% and 15.6% of the patients respectively .Uterine size clinically was found to be less than period of amenorrhoea in 15.6% of patients. Cervical motion tenderness could be elicited in 57.8% of patients. Paracentesis was positive in 42% of patients. Palpable adnexal mass was a finding in 71.1% of cases. Urine for pregnancy test was found positive in 95% of patients while in 4 patients it was negative. (Table No.4)

Table 4: Distribution according To Clinical Examination

Clinical findings	No of patients	%age
Abdominal Tenderness	24	28.9
Abdominal Distention	12	14.4
Adnexal Mass	59	71.1
Cervical Motion Tenderness	48	57.8
Shock	6	7.2

(There were more than one finding in a case)

44.5% of patients had an acute fall in haemoglobin and reported with less than 7 gm%. Out of them, 9.6% patients had less than 4.5 gm% of haemoglobin.

Most of the patients reported with ultrasound reports which were confirmed by departmental ultrasound. On ultrasonography 61.4% of patients had adnexal mass more than 3.5 cm and 31.3% had mass less than 3.5 cm. Extrauterine gestational sac was identified in 80.7% and intraperitoneal fluids in 60.2% patients. Increased flow on Doppler velocimetry was seen in 55.4% of patients. Cornual, ovarian and caesarean scar pregnancy was identified in 3.6%, 8.4% and 2.4% of the patients respectively. There were 3.6% of patients with heterotopic pregnancy and 7.2% had ruptured corpus luteal cyst. (Table No 5)

Table 5: Showing USG findings

USG Findings	No of patients	% age
Complex adnexal mass-		
>3.5cm	26	31.3
<3.5cm	51	61.4
Extrauterine G-sac	67	80.7
Increased Doppler velocimetry	46	55.4
Intraperitoneal fluid/ Hemoperitoneum	50	60.2
Intrauterine pseudo G-sac	3	3.6
Site of ectopic-		
Cornual	3	3.6
Ovarian	7	8.4
Caesarean scar	2	2.4
Heterotypic pregnancy	3	3.6
Ruptured corpus luteal cyst	6	7.2

Laparotomy was done in 69.8% and in one diagnostic laparoscopy to confirm diagnosis was done before laparotomy. Intraoperatively 76.2% patient had ruptured tubal ectopic, (55.9% were in ampullary region and 20.3% in isthmic region) 5.1% had tubal abortion, previous LSCS scar pregnancy was seen in 3.3% and secondary abdominal pregnancy in 1.7% (Table No 6)

Table 6: Laparotomy findings (N=59)

Site	No of patients	%age
Interstitial	1	1.7
Ovarian	4	6.8
Ruptured ampullary	33	55.9
Ruptured isthmic	12	20.3
Ruptured cornual	3	5.1
Tubal abortion/ tubal mole	3	5.1
Caesarean scar	2	3.4
Secondary abdominal pregnancy	1	1.7

Salpingectomy was done 81.3% of the patient with salpingostomy and tubal anastomosis in one each. Salpingectomy with oophorectomy was done in 1.7% of patients. Hysterectomy was done in one patient with secondary abdominal pregnancy (intraligamentary). Concurrent dilatation and curettage was done in 10.1% of patients and contralateral tubal ligation was done in 30.5%. In one patient of interstitial pregnancy repair was done. (Table No 8)

Post-operative complications were as follows:

- Our two patients required ICU admission and five patients needed inotropic support
- Blood transfusion was given in all 59 patients who needed laparotomy. 54% patients required more than 4 unit of PRBC and equal number of FFPs
- 59.3% had febrile morbidity
- Paralytic ileus in 16.9%
- Infections in 18.6%
- DVT in 1.6%

Of the 24 patients who were haemodynamically stable, 6 patients were managed expectantly because beta-hCG was less than 1000 mIU/ml, adnexal mass less than 3.5 cm and no hemoperitoneum was there. Eighteen patients were given injection methotrexate 50 mg/metre square body surface area. 55% responded to single dose without side effects. 38 percent responded to 2 doses and third dose was given in one patient only. None required surgery.

There was no maternal mortality and 8.4% fulfilled criteria of maternal near miss in our study.

Discussion

The incidence of ectopic pregnancy has been rising during past few decades throughout the world. Incidence of ectopic pregnancy in present study came out to be 1.6% which was comparable to study by Samal S *et al.* [2] and Zuber *et al.* [9] Bansal N *et al.* [5] reported a higher incidence of 5% as compared to present study.

Majority of woman in our study belonged to age group 25 to 30 years followed by 20 to 24 years as in other studies [2, 3, 4, 5, 10].

Though Bansal N *et al.* reported higher incidence in nulliparas and attributed it to early unintended pregnancy using MTP pills (medical abortion pill) predisposing them to having ectopic gestation in future pregnancies [5]. In present study 39.6% of patients had previous surgery as risk factor, be it previous lower segment caesarean section, previous one or 2 abortions or previous tubal surgery (repeat ectopic or tubectomy/sterilization) which was reported by other studies as well [2, 3, 4, 6].

Next most important factor for ectopic pregnancy was PID (pelvic inflammatory disease} 26.5% and infertility 15.6%. Zuber *et al.* reported a similar incidence proving that PID causes damage to tubal mucosa and peritubal adhesions leads to entrapment of fertilised ovum. The association of infertility with PID, with tubal pathology, with genital tuberculosis and finally its association with ectopic pregnancy are self-explanatory.

Most of the patients presented with classical triad of symptoms of amenorrhoea, pain and vaginal bleeding. 86.6% of patients had amenorrhoea of 35 to 70 days [3, 6, 8, 10]. 62.6% presented with acute pain and 79.5% had reported with bleeding on P/V. Similar results were reported by Zuber *et al,* Tahima S *et al,* Bansal N *et al,* Samal S *et al.* Other authors reported 18.6% of cases without any symptoms and signs [2, 4]. Palpable adnexal mass was finding in 71.1% of cases which is comparable to other studies.

44.5% of patients had acute fall in haemoglobin and reported with less than 7gm and 9.6% of patients have <4.5gm haemoglobin. At the time of admission during the study, some of the patients reported with ultrasound reports and some were subjected to ultrasound specially. TVS findings of USG are tabulated below. TVS has now become a gold standard for diagnosis of ectopic pregnancy [2, 6, 8, 11]. Ruptured tubal pregnancies are the commonest presentation. Ampulla of tube being the most common site of rupture in most of the studies. (Table No7)

Table 7: Comparison between sites of Ectopic Pregnancy

Site	Zuber I *et al.*	Samal S *et al.*	Bondada SC *et al.*	Shetty VH *et al.*	Bansal N *et al.*	Present Study
Tubal-						
Ampullary	45.2	66.6	40	76	54.9	55.9
Isthmic	-	18.5	22.2	12	19.8	20.3
Fimbrial	-	12.5	11.1	4	13.3	-
Interstitial	-	1.85	2.2	4	8.9	1.7
Ovarian	-	-	4.4	2	2.97	6.8
Tubal Abortion	-	38.8	-	-	-	5.1
Secondary Abdominal	-	-	-	2	-	1.7
Caesarean scar pregnancy	-	-	-	-	-	3.4

Caesarean scar pregnancy is also on the rise and the incidence in our study came out to be 3.4% but it's been reported as 6.1% by Seow KM [12]. We managed them by doing suction evacuation as elective surgery in Gynae OT but because of torrential haemorrhage which was not controlled by conservative measures and balloon tamponade, laparotomy had to be resorted to. We excised the ectopic sac and repair of uterine wall was done and hysterectomy was averted.

Laparotomy is the treatment of choice in most patients who reported with adnexal mass more than 3.5cm, with acute fall in haemoglobin with hemoperitoneum and unstable haemodynamic status. 71.1% of patients in our study required laparotomy of which 81.3% of patients underwent unilateral salpingectomy, in 30.5% contralateral tubal ligation was done. We did a comparison with other studies shown in Table No 8.

Table 8: Comparison of Treatment Modalities

Treatment Modality	Samal S *et al.*	Zuber I *et al.*	Shetty VH *et al.*	Bondada SC *et al.*	Bansal N *et al.*	Present Study
Unilateral salpingectomy	90.74	40.4	90	53.80	86.63	81.3
Salpingostomy	-	-	-	-	-	1.6
Tubal reanastomosis	7.41	-	-	-	-	1.6
Salpingo-opherectomy	-	-	8	11.10	3.46	1.6
Contralateral tubal ligation	-	-	-	15.5	-	30.5
Concurrent D and C	-	-	-	-	-	10.1
Cornual repair	-	4.7	-	-	9.9	3.3

In our study, one patient a grand multigravida presented 14 weeks pregnancy with acute pain abdomen with USG report of 14weeks viable cornual pregnancy with free fluid in pelvis. On laparotomy, it was broad ligament pregnancy with viable foetus of 14 weeks with placenta developing in right adnexa. Hysterectomy was done in this case because of catastrophic haemorrhage from placental attachments.

Postoperatively febrile morbidity was most commonly seen followed by paralytic ileus and urinary tract infection. Expectant management of ectopic pregnancy is another method of choice in management where patients are haemodynamically stable and β-hCG levels less than 1000 mIU/ml, adnexal mass <3.5cm with no free fluid in cul de sac and Morrison's pouch. In our study, we had six patients who were managed expectantly.

Medical management of ectopic pregnancy is one of the safe and effective alternatives to surgery in stable patients [7]. In our study of 83 patients, 59 were dealt surgically and 18 patients were managed medically because they were haemodynamically stable, had β-hCG <5000 mIU/ml with adnexal mass <3.5 cm with no hemoperitoneum.

55% responded to single dose of Injection methotrexate with minimum side effects and 38% responded to two doses but none required surgery. Hospital stay was shorter as compared to surgical management.

Some patients responded to two doses and some responded to 3rd dose, but none required surgery. Hospital stay was shorter less than 7 days. Megenthal MC *et al.* also reported comparable outcome for both single dose and double dose [13].

There was no mortality reported during the study but we had 7 cases of near miss mortality because we could save them although they reported late in emergency. Delayed reporting is explained by the fact that patients seek antenatal care after first trimester or late in the first trimester, so the damage has already been done. Therefore, need for early registration of pregnancy is to be stressed.

Ideally prenatal counselling should also gain importance to recognize patients at higher risk of ectopic pregnancy and it should be offered to all women in the reproductive age group. Stressing upon need for early medical intervention is the need of the hour.

The shift to ultrasonography from laparoscopy which was earlier gold standard for diagnosis is clear as USG being noninvasive, high resolution, advanced technology in diagnosing ectopic pregnancy. So to prevent delay anymore, USG should be available at the primary level of care.

Conclusion

- Timely diagnosis and management of early ectopic pregnancy can reduce the maternal mortality and morbidity. Transvaginal USG and β-hCG assays have almost eliminated the role of paracentesis/ culdocentesis and laparoscopy.
- Surgical management is still the appropriate intervention when it comes to haemodynamically unstable patients.
- There is need to reduce primary caesarean to prevent scar pregnancies which have a higher morbidity.

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