Original Article

Study of Demographic and Obstetric Characteristics of Ectopic Pregnancy in A Tertiary Care Hospital

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ABSTRACT

Introduction*: Ectopic pregnancy (EP) presents a major health issue for women of childbearing age and is the important cause of pregnancy-related death in the first trimester. The appropriate method of treating an ectopic pregnancy depends on several factors, such as the location and size of the embryo, the health of the mother, and the presence of any complications.* ***Materials & Methods****: A descriptive type of cross-sectional study was conducted among 63 women participants, at a tertiary-level hospital in Bangladesh, from January 2022 to June 2023. Different investigations' results were collected and examinations were recorded. Subjects were selected by purposive sampling technique. A descriptive analysis was done in this study and data analysis was done by SPSS (Statistical Package for Social Sciences).* ***Results****: The respondents' ages ranged from 16 to 39 years, with having mean (SD) age is 29.29±4.35 years. One-third of participants had previous abortion (21, 33.3%). A majority had amenorrhea for 6 to 8 weeks (30, 47.6%). Total of 14 (22.2%) reported per vaginal (P/V) bleeding and 65.0% lower abdominal pain.*

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A statistically significant association had been found between history of ectopic pregnancy or history of abortion with mode of treatment (x2 = 7, p = 0.008) and different surgical procedures of patients.
***Conclusions**: The evidence of this study describes the issues related to obstetric conditions, general characteristics of different obstetric examinations, investigations, and different approaches for managing ectopic pregnancy.*

***Keywords:** Ectopic pregnancy, Amenorrhea, Laparotomy, Laparoscopy, Salpingectomy.*

INTRODUCTION

Ectopic pregnancy denotes the pregnancies that occur outside the uterine cavity. Ectopic pregnancy (EP) presents a major health issue for women of child-bearing age and is the important cause of death in the first trimester of pregnancy [1,2]. The known risk factors for ectopic pregnancy consists of age, previous ectopic pregnancy, previous pelvic surgery, use of intrauterine devices (IUDs), female sterilization, history of infertility, history of pelvic inflammatory diseases, and smoking at the time of conception [3-7]. The prevalence of ectopic pregnancy is about 1%-2% of all reported pregnancies and it is an important cause of maternal illness and mortality in ectopic pregnancy. Women having a history of ectopic pregnancy, tubal surgery, or tubal pathology are at higher risk, as are those who underwent tubal ligation or who have an intrauterine contraceptive device placed. Women who received treatment for ectopic pregnancy have suggestively lesser subsequent spontaneous intrauterine pregnancy rates and more ectopic pregnancy rates than the general population [8]. The most common location of ectopic pregnancies continues to be fallopian tubes, including ampullary 55%, isthmic 25%, fimbrial 17%, and interstitial 2% [9]. Other sites include cervical, ovarian, and abdominal. But most abdominal pregnancies arise from tubal abortion or rupture and successive implantation in the bowel, omentum, or mesentery (accounting for roughly 95% of all ectopic pregnancies) [10]. The classic clinical symptoms of EP are pelvic pain, amenorrhea, and vaginal bleeding, spotting (40-50%). However, only 50% of patients present typical symptomatology [11]. Ectopic pregnancy must be ruled out during investigations. Transvaginal ultrasounds (TVS) and serial β-hCG determinations are now the most common methods used for diagnosis, and serum β-hCG measurements can differentiate a normal intrauterine pregnancy (IUP) from a non-viable pregnancy [12,13,14]. Though, 40 to 50% of cases are primarily misdiagnosed [15]. Furthermore, pelvic sonography is the imaging test of choice to investigate early pregnancy complaints [11]. Transvaginal ultrasound has been anticipated as supportive only when intrauterine gestation or an adnexal mass is observed [16, 17]. The appropriate method of treating an ectopic pregnancy depends on several factors, such as the location and size of the embryo, the health of the mother, and the presence of any complications. Early diagnosis and therapy have helped to reduce maternal deaths due to ectopic pregnancy. Early diagnosis (even before rupture) with the use of TVS, serum b hCG, and laparoscopy have significantly improved the treatment of ectopic pregnancy. Because of the unfavorable environment, early

interruption of pregnancy is inevitable within 6–8 weeks. Earliest interruption occurs in the isthmal implantation whereas pregnancy may continue up to 3–4 months in interstitial implantation. However, genuine cases are on record of gestation continuing to term in the Fallopian tube. Over the past era, the managing of ectopic pregnancy (in uncommon locations) has evolved from a radical operative method (salpingectomy) to a more conservative surgical or medical treatment [18]. The management option of ectopic pregnancy includes surgical options by laparotomy or laparoscopy (a minimally invasive surgical procedure), medical treatment is typically systemic through the local route, or by expectant treatment [1]. However, the type of treatment must be individualized and depends more on clinical presentation [18].

OBJECTIVE

General Objective

- To evaluate different management techniques of ectopic pregnancy.

Specific Objectives

- To observe the distribution of demographic characteristics among the respondents.
- To assess different obstetric histories.
- To analyze obstetric features of ectopic pregnancy.

METHODS & MATERIALS

This descriptive cross-sectional study was conducted between January 2022 and June 2023, at Square Hospitals (a tertiary-level hospital) in, Dhaka. Data was collected from the voluntary participants, who reported to the hospital and were diagnosed with EP and received treatment. A total of 63 patients were selected as study subjects by purposive sampling technique as per inclusion and exclusion criteria.

Inclusion Criteria

- Admitted women who were confirmed cases of EP in the inpatient department.
- Patients who were willing to give consent.

Exclusion Criteria

- Patients attended in OPD (Out Patient Department)
- Patients who did not give consent to partake in the study.

Participants were subjected to face-to-face interviews by the attending physicians to know their demographic characteristics and pregnancy-related histories. Different investigations' results were collected and examinations were performed. Gathered data were entered, compiled, and analyzed in SPSS (Statistical Package for Social Sciences) version 25.0 for Windows. A descriptive analysis was done in this study. Analysis was conducted to determine the several approaches to managing ectopic pregnancy in a tertiary-level hospital. Ethical clearance was taken from the ethical committee of Square Hospitals. Informed written consent was obtained from the participants.

RESULTS

Table I: Frequency and distribution of demographic characteristics (N= 63)

Variables		n (%)	Range	Mean ± SD
Age	Up to 30 years	44 (69.8)	16 – 39 years	29.29 ± 4.35
	Above 30 years	19 (30.2)		
Religion	Muslim	58 (92.1)		
	Hindu	05 (7.9)		
Economic Status	Medium	50 (79.4)		
	Higher	13 (20.6)		

The sample comprised 63 participants, who had developed ectopic pregnancy and were treated at Square Hospitals, Dhaka. The respondents' ages ranged from 16 to 39 years, with having Mean (SD) age is 29.29 (4.35). Regarding their religion, 58 (92.1%) were Muslim and the rest were Hindu. Considering the economic status, all were from either medium or higher class. ***[Table I]***

Table II: Frequency and distribution of different obstetric histories (N=63)

Variables		n	%
History of Abortion	Present	21	33.3
	Absent	42	66.7
History of Ectopic pregnancy	Present	21	33.3
	Absent	42	66.7
History of LSCS	Present	30	47.6
	Absent	33	52.4
Contraceptive history	No method	38	60.3
	Injection	13	20.7
	IUCD	8	12.7
	Other methods	4	6.3

Regarding different Obstetric histories, one-third of participants had a history of Abortion (21, 33.3%). Similarly, the history of Ectopic pregnancy was one-third. 30 persons (47.6%) had previous cesarean section. Concerning Contraceptive use, 60.3% did not use any contraceptive method. Among the rest participants used IUCD, Injection, and other methods. ***[Table II]***

Table III: Frequency and distribution of obstetric symptoms (N=63)

Variables	n	%

Amenorrhea	No Amenorrhea	03	4.8
	Less than 6 weeks	12	19
	6-8 weeks	30	47.6
	More than 8 weeks	18	26.6
P/V Bleeding	Present	14	22.2
	Absent	49	77.8
Lower abdominal pain	Present	41	65.0
	Absent	22	34.9
Para	Null	31	48.4
	Primi	13	20.3
	Second	08	12.5
	Third or more	11	17.4

While considering the issues related to the Obstetric conditions, the majority had amenorrhea for 6 to 8 weeks (30, 47.6%) and only 4.8% did not report amenorrhea. Total of 14 (22.2%) reported per vaginal (P/V) bleeding and 77.9% complaints with lower abdominal pain. Para ranged from nulliparous to 5. Among them, a majority (31, 48.4%) were nulliparous, followed by primi (13, 20.3%), and second (8, 12.5%). More so, one was unmarried. ***[Table III]***

Table IV: Frequency and distribution of different obstetric examinations (N=63)

Variables		**n**	**%**
Presence of Anaemia	Present	19	30.2
	Absent	44	69.8
Blood Pressure	Low	11	17.5
	Normal	48	76.2
	High	4	6.3
Tenderness in Abdomen	Present	41	65.1
	Absent	22	34.9
P/V Bleeding on Vaginal exam	Present	14	22.2
	Absent	49	77.8

On examination, a few persons (30.2%) were found anemic. A majority had normal blood pressure (BP), but 17.5% were low and 6.3% were diagnosed as high BP. During abdominal examinations, 65.1% developed tenderness in the abdomen. Per vaginal examination revealed 14 (22.2%) persons with active P/V bleeding. ***[Table IV]***

Table V: Characteristics and distribution of investigations

Variables		n (%)	Range	Mean ± SD
BHCG test	Upto 2000 Above 2000	26 (59%) 26 (59%)	56 to 40345	4.696 ± 7825
USG or TVS	Fibroid	2 (3.2%)		

Regarding the BHCG (Beta Human Chorionic Gonadotropin) test, the range was from 56 to 40345, the Mean was 4.696, and SD was 7825. 50% were below and 50% were above 2000 mlU/mL. The USG (Ultrasonogram) or TVS (Transvaginal Scan) report shows 2 (3.2%) had fibroid. ***[Table V]***

Table VI: Frequency and distribution of location and treatment methods (N=63)

Variables		n	%
Side of Tube	Right Left	37 26	58.7 41.3
Site (location) of Tube	Ampullary Infundibulum	37 26	58.7 413
Condition of Tube	Ruptured Unruptured	38 25	60.31 39.7
Mode of Treatment	Observation Conservative Laparotomy Laparoscopy	1 18 40 4	1.6 28.6 63.4 6.3
Surgical Procedure	Laparotomy followed by Salpingectomy	39	62.0
	Laparoscopic Salpingectomy	4	6.3
	Laparotomy followed by Salpingostomy	1	1.6

Comparing the location of ectopic pregnancies, 58.7% are on the right side and 41.3% are on the left side. In most pregnancies, the site was within the

ampullary region. A majority (77.9%) had to be treated with surgery, followed by Conservative (20.6%). Among the conservative treatment, 12 patients received single dose of methotrexate, and the rest 6 patients received double dose of methotrexate. Among the surgical procedures, the highest percentage had to be treated by laparotomy followed by Salpingectomy (39, 62.0%). 4 patients (6.3%) were treated by laparoscopic salpingectomy, and only 1.6% with laparotomy followed by salpingostomy. ***[Table VI]***

Table VII: Association between demographic and obstetric characteristics with treatment methods (N=63)

Domain		Mode of Treatment		Different Surgical Procedures	
		f /x^2	**p**	**f/x^2**	**p**
Age		1.155 Mean ±SD 19.73± 5.2	p=0.335	0.592 Mean ±SD 12.56± 58.2	p=0.623
History of Abortion	Present Absent	7.00	p=0.008 (Significant)	7.00	p= 0.001 (Significant)
History of Ectopic pregnancy	Present Absent	7.00	p=0.008 (Significant)	62.308	p< 0.001 (Significant)
History of LSCS	Present Absent	73.889	p< 0.001 (Significant)	0.143	p=0.705
Contraceptive history	Present Absent	42.898	p< 0.001 (Significant)	62.308	p< 0.001 (Significant)

Age of the respondents: One-way ANOVA was done to see whether Age has any association with the Mode of treatment and Different surgical procedures. No statistically significant difference was found between groups as determined by one-way ANOVA. Mode of treatment (F = 1.115, p = 0.335) and Different surgical procedures (F = 0.592, p = 0.623). History of Abortion: The study revealed a statistically significant association between History of abortion and Mode of treatment (x^2 = 7, p = 0.008) and Different surgical procedures of patients (x^2 = 7, p = 0.001). History of Ectopic pregnancy: A statistically significant association between History of ectopic pregnancy and Mode of treatment (x^2 = 7, p = 0.008) and Different surgical procedures of patients (x^2 = 62.308, p< 0.001). History of LSCS: A statistically significant association between the History of LSCS and Mode of treatment (x^2 = 73.889, p< 0.001) and Different surgical procedures of patients (x^2 = 0.143, p = 0.705). Contraceptive history: Similarly, statistically significant association between Contraceptive history and Mode of treatment (x^2 = 42.898, p<

0.001) and Different surgical procedures of patients (x^2 = 62.308, p< 0.001). The proportion of Modes of treatment and Different surgical procedures increases with the use of Contraceptive methods and it is highest (60.3%) in respondents with the use of no method. ***[Table VII]***

DISCUSSION

The respondents' age ranged from 16 to 39 years and the average was 29.29 years. In a study to define abdominal ectopic pregnancy outcomes, Poole A found that the mean maternal age was 29.7 years with a range of 13–46 years [19]. A study in Bangladesh by Jahan S found mean age was 28.7 years [20].

One-third of the cases had a previous history of abortion and there were statistically significant associations between the history of abortion mode of treatment and different surgical procedures of patients. Another study by Gerema et al. found that 15.5% of ectopic pregnancy cases had experience with abortion, which is more than this study [21]. This study showed that a good number (47.6%) of participants presented with a previous history of cesarean section; which is greater than the studies by Ben Nagi (19%) [22]. While considering the contraceptive history, the proportion of the Mode of treatment and different surgical procedures increases with the practice of contraceptive methods and it is highest (60.3%) in respondents with the use of no method. Study by Li C et al, among contraceptive methods, the use of an intrauterine device (IUD) was associated with an greater risk of EP compared with those who used no birth control [23].

Regarding the issues related to obstetric conditions, most patients had amenorrhoea for 6 to 8 weeks, followed by more than 8 weeks. The findings from a study on unruptured tubal pregnancy found that early diagnoses were made among patients with fewer days of amenorrhea (6.81 ± 1.88 weeks) [24]. In this study, lower abdominal pain was found in 77.8% of cases, per vaginal bleeding in 22.2% of cases. These findings are very similar to a study in a tertiary care center in India, by Parmar, where 80.9% of pain in the abdomen was presenting complaints followed by 60% with bleeding per vaginum [25]. This study found a majority (48.4%) were nulliparous, followed by primi (20.3%), and second (12.5%). Much the same was observed by Parmar, where nulliparous (31.5%) women had maximum incidence followed by second para (30.1%) and primi para (27.4%) [25].

General Characteristics of different Obstetric examinations of the patients included the presence of anemia (30.2%), low blood pressure (17.5%), tenderness in the abdomen (65.1%), abdominal muscle guard (16.1%), p/v bleeding on vaginal examination (22.2%). Parmar has done the clinical evaluation of ectopic pregnancy by examining the presence of anemia, shock, blood pressure, and vaginal bleeding [25]. While detecting ectopic pregnancy by investigations, in the present study, the range of Beta Human Chorionic Gonadotropin (BHCG) was from 56 to 40345 and 50% were above 2000 mlU/mL. A study by J.L.V. Shaw found that women with ectopic pregnancies may simply be the result of lower maternal serum beta-human chorionic gonadotropin (hCG) levels than normal intrauterine pregnancies [26].

In this current study, the ampullary region of the fallopian tube was the most common

site for ectopic pregnancy. Parmar S and Ranji G revealed in their studies that, the commonest site of Ectopic Pregnancy was ampullary in 31.5% of patients, followed by infundibulum in 26% of patients [25, 27]. The right side was more commonly affected (58.7%) than the left side (41.3%). A similar finding was observed by Ranji G. in his study [27]. The majority of the patients had ruptured tubal gestation (55.6%), in comparison to unruptured; which is the same as Parmar S [25].

Comparing the location of ectopic pregnancies, 58.7% are on the right side and 41.3% are on the left side. In most pregnancies, the site was within the ampullary region. A majority (77.9%) had to be treated with surgery, followed by Conservative (20.6%). Among the conservative treatment, 12 patients received single dose of methotrexate, and the rest 6 patients received double dose of methotrexate. Among the surgical procedures, the highest percentage had to be treated by laparotomy followed by Salpingectomy (39, 62.0%). 4 patients (6.3%) were treated by laparoscopic salpingectomy, and only 1.6% with laparotomy followed by salpingostomy. Parmar S expressed that laparoscopy was the chosen route in 64.4% of patients, laparotomy in 20.5% of patients with no surgical intervention in 15.1% of patients (treated with medical management) alone [25].

LIMITATIONS OF THE STUDY

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

The evidence of this study describes the issues related to obstetric conditions, general characteristics of different obstetric examinations, investigations, and different approaches to management for ectopic pregnancy. As severe detrimental outcomes might be due to delayed diagnosis and the effect of the risk factors; so proper follow-up by skilled health care professionals is required for proper managing ectopic pregnancy.

RECOMMENDATION

Development of improved preventative measures, the patient's understanding of her condition and her compliance, diagnostic screening methods, and continuous monitoring should be addressed to provide safe outcomes in ectopic pregnancy. Hospitals should give preeminence to timely detection of risks of ectopic pregnancy and develop awareness thus reducing the burden of ectopic pregnancy. Moreover, further studies should be conducted involving a large sample size and multiple centers to get robust data.

FUNDING

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CONFLICT OF INTEREST

None declared

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee

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