

# Ruptured Ectopic Pregnancy: Epidemiological Profiles and Prognostic in a Reference Hospital in Antananarivo Madagascar

**Bienvenue Solange Rasoanandriana<sup>1\*</sup>, Ratsaraniana Marina<sup>1</sup>, Rakotozanany Besaina<sup>1</sup>, Razafimampionona Idealy Manohisoa<sup>2</sup>, Joseph Anderson Randriambelomanana Ja<sup>3</sup>, Andrianampanalinarivo Hery Rakotovao<sup>3</sup>**

<sup>1</sup>Obstetrician Gynecologist, University Hospital of Gynecology and Obstetrics of Befelatanana (CHUGOB), Faculty of Medicine of Antananarivo, Madagascar.

<sup>2</sup>Former extern at CHUGOB, Madagascar.

<sup>3</sup>Obstetrician gynecologist, Professor of Universities, University Hospital of Gynecology and Obstetrics of Befelatanana (CHUGOB), Faculty of Medicine of Antananarivo, Madagascar.

\*Corresponding author: Bienvenue Solange Rasoanandriana.

## Abstract

**Introduction:** Ectopic pregnancy (EP) is a serious condition and the leading cause of maternal death in the first trimester of pregnancy. The objectives of this study were to identify the epidemiological profiles, clinicals ectopic pregnancy ruptured to prevent complications and ensure early and appropriate treatment.

**Methods:** We performed a prospective descriptive study over a period of two years from first January 2018 to December 2019.

**Results:** Among the 14968 deliveries during the study period, 269 cases of ruptured EP were compiled, giving a frequency of 2.80%. The average age of onset was 28 years. The risk factors the most identified was the pelvic infection. The spontaneous abortion was predominant. Most of the EP was in ampullary position in 72.49 %. Radical treatment dominated the management in 79.55 % of cases. The totality of the patients was a satisfiable issue.

**Conclusion:** The precocious detection of EP in all women who bleed in the first trimester of pregnancy is primordial. The decrease in frequency requires the sensibilization of the population on their health to avoid the many risk factors of ruptured EP and their complications.

**Keywords:**  $\beta$ -hCG; bleeding; ectopic; pain; pelvic; pregnancy; salpingectomy; ultrasound

## Introduction

Ectopic pregnancy (EP) is the implantation of the fertilized egg with development of the gestational sac outside the uterine cavity [1]. In the majority of cases, it is located in the fallopian tube. The egg, after fertilization, may nestle in the tubal ampulla in 47-70% of cases, but more rarely in the isthmus (14-20% of cases) or in the infundibulum (5% of cases) [2]. Globally, the incidence of EP is higher, reaching 2% in New York in 2016 [3]. According to geographical distribution, the South has a higher proportion of EPs at 0.77%, followed by the North Central with 0.59% and the North East with 0.56% while the West has a lower trend at about 0.48% [4]. In Madagascar, at the Centre Hospitalier Universitaire de Gynecology at Obstetrique Befelatanana (CHUGOB) Antananarivo, its incidence has remained relatively stable since

2005, at 2.95% in 2005 and 2.48% in 2011 [5]. EP remains an important public health problem because it is the main cause of mortality in women of childbearing age, and is especially urgent for surgery in case of rupture due to hemorrhagic shock [6]. We have thus carried out this study whose objectives are to determine the epidemiological and clinical profiles and the prognosis of a ruptured EP at the CHUGOB. This study was carried out at the GOB University Hospital, located in downtown Antananarivo. It is a 3rd level reference maternity hospital. In 2018, we recorded 12293 patients as admissions, of which 3209 patients were admitted to the gynecology department and 198 EP were recorded. This is a retrospective and descriptive study of patients admitted for ruptured EP. Our study was conducted over a period of two years, from January 1, 2018 to December 31, 2019.

The study population was represented by all women of reproductive age, admitted to the GOB Antananarivo University Hospital for ruptured EP. We included all patients of reproductive age, admitted to the GOB UHC for ruptured EP, diagnosed and treated as such. We did not include in our study all patients admitted for suspected unruptured EP. We excluded from our study all patients admitted for EP with incomplete records.

This is an exhaustive sample.

We studied socio-demographic data, gynecological-obstetric and medical-surgical history, toxic habits, clinical and paraclinical data, location of ruptured EP, management methods and evolution. The manually collected data were recorded, entered, processed and analyzed on a computer, using SPSS 16, Word, Excel and STATA for cross-sectional descriptive analysis of the data. Our study is limited by the fact that it concerns only ruptured EP at the CHUGOB and cannot be representative of the data at the national level. The implementation of this study was approved by the Director of the establishment of the CHUGOB. The research was carried out with respect for the confidentiality of the data, and no information on the identity of the patients will be disclosed. Professional secrecy is respected. The files and research materials will be stored in places that only the researchers will have access to.

## Results

A total of 269 patients were included in our study sample. The mean age of the patients was 28 years, with extremes of 16 and 45 years. Regarding the socio-demographic data of the women. More than half of the patients were in the age range of 25 to 34 years. Only 1% of the patients were younger than 18 years (Table 1). Patients working in the primary sector predominated in our study population with a rate of 48.14% (Table 1) and they had a secondary education level in more than half of the cases with a rate of 71% (Table 1). Almost all women in our population had an urban residence with a rate of 88.8% (Table 1).

Regarding gynecological history, more than half of the patients had a history of spontaneous abortion and 5.95% had a history of EP. The average gestational age of the patients was 8.27 days' gestation, with extremes of 3- and 21-days' gestation. More than half of the ruptured EPs were diagnosed between the 6th and 12th wk. Only 6.32% were diagnosed after 12 weeks' gestation (Table I). Patients using oral contraception were present in 7.43% of our population followed by injectable contraception. IUD use was present in only two patients, giving a rate of 0.74% (Table 1). In terms of medical and surgical history, a history of tubal surgery and appendectomy was found in 4.09% of us of our population (Table 1).

**Table 1:** Characteristics epidemiological of patients

Age	n	%
< under 18	2	1
18 to 24 years	65	24
24 to 34 years	143	53
> 35 years	59	22
<b>Profession</b>		
Primary sector	129	48.14
Secondary sector	97	35.93
Tertiary sector	43	15.93
<b>Level of education</b>		
Primary	3	1.12
Secondary	191	71
University	75	27.88
<b>Provenance</b>		
Urban residence	240	88.89
Suburban residence	28	10.74
Rural residence	1	0.37
<b>Parity</b>		
nulliparous	95	35.32
Primiparous	81	30.11
Pauciparous	83	30.36
Multiparous	9	3.35
Large multiparous	1	0.37
<b>History</b>		
History of previous EP	16	5.95

Sexually transmitted disease	7	2.6
Induced abortion	25	9.29
Spontaneous abortion	193	71.75
Multiple history	9	3.35
No history	28	10.4
<b>Number of sexual partners</b>		
1	267	99.26
Greater than 1	2	0.74
<b>Type of contraception</b>		
Pill	20	7.43
Intrauterine device	2	0.74
Contraception Injectable	13	4.83
Implan	3	1.12
No contraception	231	85.87
<b>Medical and surgical history</b>		
Arterial hypertension	4	1.49
Appendicitis	11	4.09
Peritonitis	1	0.37
Tubal surgery	11	4.09
Appendectomy	11	4.09
Other surgery	16	5.95
No antecedent	215	79.92
<b>Toxic habits</b>		
Smoking	13	4.85
Ethylism	11	4.1
Decoction	3	1.12
Multiple toxic habits	2	0.74
Without toxic habits	242	89.96

The functional triad (pelvic pain, metrorrhagia, amenorrhoea) was the main reason for admission of patients in our study (table 2).

**Table 2:** Clinical and ectopic pregnancy parameters

<b>Reason for admission</b>		
Pelvic pain	58	21.56
Metrorrhagia	31	11.52
Functional triad	154	57.25
Associated sympathetic signs	18	6.69
Other associated signs	8	2.97
<b>Clinical signs</b>		
State of shock	59	21.93
Pelvic pain caused	253	94.05
Abdominal defense	128	47.58
Umbilical cry	120	44.61
Metrorrhagia	133	49.44
Uterus increased in volume	69	25.65
Pain at uterine mobilization	160	59.48
Lateral uterine mass	57	21.19
Douglas Cree	93	34.57
Leucorrhoea with speculum	33	12.27
Positive pregnancy test	269	100

Concerning the mode of admission, more than half of the patients in our population were referrals with a rate of 71.38%. On clinical examination, almost all patients had pelvic pain with a rate of 94.05% of our population and 21.93% were in shock. For

paraclinical examinations, on average, the  $\beta$ hCG level of the patients was 433 mIU/ml, i.e., 0.12% of our population, with extremes of 1000 mIU/ml and 12026 mIU/ml. The  $\beta$ hCG level was below 1000 mIU/ml in 7.06% of our population. The level was

above 3000 mIU/ml in 5.20% of patients. The  $\beta$ hCG level was not determined in 85.87% of patients in our study.

On pelvic ultrasound, the majority of patients had a peritoneal effusion with a rate of 83.27% in our population, an ectopic gestational sac with an embryo was found in 31.23% of our population, and an

embryo with cardiac activity was found in 9.29% of cases (Table III). A latero-uterine mass was present in 77.32% of cases. Ampullary location of ruptured EP was the most predominant with a rate of 72.49% of our population, followed by infundibular EP with a rate of 10.04% of the study population (Table 3).

**Table 3:** Parameters for Paraclinical Data

Effective Bhcg	Effective	Proportion
Less than 1000 mIU/ml	19	7.06
1000 to 1500 mIU/ml	5	1.86
1500 to 3000 mIU/ml	0	0.00
Greater than 3000 mIU/ml	14	5.20
Not determined	231	85.87
Hemoglobin Level		
Less than 70 g/l	19	7.06
70 to 90 g/l	37	13.75
91 to 110 g/l	60	22.30
Greater than 110 g/l	52	19.33
Not determined	101	37.55
Pelvic Ultrasound		
Uterine vacuity	269	100
Pseudo intrauterine sac	10	3,72
Extrauterine gestational sac with embryo	84	31.23
Embryo with positive cardiac activity	25	9.29
Other ultrasound images	2	0.74
Peritoneal effusion	224	83.27
Filling of the cul de sac of Douglas	197	73.23
Filling of Morrison's space	95	35.45
Lateral uterine mass	208	77.32

Regarding management, more than half of the patients had received radical surgical treatment, which is salpingectomy, representing 79.55% of our population. Conservative surgical treatment was performed in 14% of cases. On average, the amount of hemoperitoneum was 607 ml, with extremes of 100

ml and 2800 ml. The quantity of hemoperitoneum greater than 1000 ml was noted in 11.15% of cases (Table 4). The majority of our study population had received a blood transfusion with a rate of 89.59% (table 4). There were no cases of maternal death.

**Table 4:** Parameters for the management of EP

Location of EP	Effectif (N=269)	Proportion 100 (%)
Ampullary	195	72.49
Abdominal	4	1.49
Ovarian	5	1.86
Infundibular	27	10.04
Isthmic	8	2.97
Pavilion	5	1.86
Heterotopic	2	0.74
Bilateral	6	2.23
Cornual	16	5.95
Other	1	0.37
Surgery		
Radical surgical treatment (salpingectomy)	213	79.55%

conservative surgical treatment	37	14%
oophorectomy	16	6%
associated surgery (appendectomy, cystectomy)	2	1%
<b>Hemoperitoin</b>		
< 500 ml	130	48.33
500 to 1000 ml	109	40.51
> 1000 ml	30	11.15
<b>Blood transfusion</b>		
Yes	241	89.59%
No	28	10.41%
<b>Length of hospital stay</b>		
4 days	149	55.39
5 days	43	15.99
6 days	45	16.73
7 days	20	7.43
8 days	7	2,60
9 days	5	1,86

## Discussion

### Epidemic clinical aspect

During our study period, we recorded 420 cases of EP among 6945 admissions to the operating theatre and 14968 deliveries. This allowed us to find an incidence of 2.80% of EPs in relation to the total number of deliveries. Of the 420 cases of EP, 269 cases were ruptured, giving an incidence of 83.02%. A study by Marion L et al, in the USA in 2012 described the current incidence of EP as around 2% [1]. Another study in Africa showed a higher incidence of 3.45% of EP in 2012 due to the increase in STDs [7]. In Madagascar, at the CHUGOB Antananarivo, its incidence has remained relatively stable since 2005, at 2.95% in 2005 and 2.48% in 2011. Randriambololona DMA et al found that in 71.03% of cases, the EP was ruptured [5]. Our high frequency of ruptured forms is close to that of studies conducted in Africa. In the series by Dohbit et al, this form occupied 87.62% of cases, 84.97% of cases found by Iqraoun [8,9]. According to a study by Rempen A et al in Germany, the incidence of ruptured forms was 30% for the period 1990-1992, 18% for 1993-1995 and 21% for 1996-1997 [10], regressing with the appearance of new diagnostic and therapeutic techniques.

In our series, the incidence rate of EP is similar to those in the literature. However, it can be said that the increase in the frequency of EP is linked to several factors such as the resurgence of STDs. As for ruptured EP, its high frequency is largely explained by the delay in consultation and therefore delay in management. In our study, the mean age was 28 years +/- 5.85 with extremes of 16 years and 45 years. The

study by Nkilly GE et al in 2020 also found a mean age of 28.41 +/- 6.17 years for 54 ruptured EPs [11]. These results are superposable to those of Priso EB et al in 2010 who examined 122 medical records of Cameroonian patients with a mean age of 28.81 years ± 6 [12]. According to the literature, the incidence of EP increases with age due to the longer period of exposure to different risk factors. However, appropriate statistics have shown that it is age, and not the accumulation of risk factor exposures with age, that explains the increased risk of EP [13].

Our study observed that almost all the patients had urban residence, 88.89% of the cases. These results are comparable to a study by Nayama M et al in Niger in 2006 with 82.5% of women with EP also coming from the urban community [14]. These studies seem to be explained by the difficulty of rural populations to consult a specialized hospital for the management of EP. This difficulty may be due to the lack of means of travel at a distance or the lack of knowledge on the part of patients of the need for an early consultation, which may further aggravate the pathology by reaching the ruptured stage and delaying management. Nulliparous women are the most affected by ruptured EP with a rate of 35.32% of cases. The study by Bouyer J et al found also that 39% of nulliparous women had experienced an EP in France in 2013 [15]. As for the history, EP is a multifactorial condition. The risk factors commonly accepted in the literature were found in our study but in a different proportion. We found 16 patients with a history of previous EP, including 5.95% of cases. This is higher than the result found by Bangambe JB et al in 2016 in Congo which was 4.8% of cases [16]. Poncelet E et

al in France in 2009 suggested that a history of EP in itself increases the risk of recurrence [17]. According to the literature, EP may occur because of the factors responsible for the first episode, the difference in treatment modalities adopted during the previous EP could explain it [18].

The rate of pelvic infections and STDs found in the history was only 2.60% of cases. STDs and their complications, salpingitis and pelviperitonitis, are the main risk factors for EP. The most common germ is *Chlamydia trachomatis*. These infections and the subsequent alterations to the tubal anatomy are thought to be responsible for 50% of EPs [19]. In our case, thirty-six patients, i.e., 13.38% of the cases, had a history of contraceptive use; of which 7.43% of the women were on oestroprogestin pills; 0.74% on IUDs; 4.83% on injectable contraceptives and 7.12% on implants. According to the literature, contraceptive methods are used to reversibly and temporarily prevent fertilization. However, progestins and intrauterine devices (IUDs) are associated with an increased risk of EP in case of contraceptive failure [20], they prevent intrauterine pregnancy better than EP. In our study, more than half of the patients had a history of spontaneous abortion (71.75% of cases). Induced abortions or voluntary termination of pregnancy (IVP) accounted for 9.27% of cases. As they are illegal in Madagascar, they are often performed clandestinely outside health centers, probably in unhygienic conditions, which favors the occurrence of infections.

According to the literature, there is a relationship between the occurrence of ruptured EP and a history of pelvic surgery due to the peritoneal and peri-tubal adhesions that it can cause [21]. A history of tubal surgery and appendectomy were found in the same percentage in our study population, each in 4.09% of cases. The gestational age of discovery of the EP was 8.27 +/- 3.21 on average. These results are similar to a study done by Randriambololona DMA et al in 2012 in Madagascar where the mean gestational age was 8.43 SA with extremes of 5 SA and 20 SA [5]. According to a study in 2011 at Haseki Education Research Hospital, Goksedef et al found that the gestational age at diagnosis was on average 7.8 SA ± 1.09 [22]. The classic picture of an EP combines amenorrhea, pelvic pain and metrorrhagia. The triad amenorrhea-pelvic pain-metrorrhagia was encountered in 57.25% of patients in our study. Other associated signs such as syncope, scapulargia and transit disorder were present in 2.97% of cases.

According to the literature, these other associated signs were present in 5 to 22% of cases [21]. The study conducted by Randriambololona DMA et al at the CHUGOB Antananarivo in 2012 found a higher figure for this triad with a rate of 78.50% of cases; the majority of patients presented with pelvic pain in 91% of cases, metrorrhagia in 86% of patients, and vertigo in 78% of their study population [5].

In industrialized countries, the hemodynamic status of patients at the time of diagnosis is usually satisfactory as most EPs are diagnosed before tubal rupture. Shock is due to acute anemia following peritoneal flooding after rupture of the EP [23].

Clinical examination often reveals suprapubic tenderness or pain on palpation. According to the literature, the physical signs of tubal rupture are mainly moderate to syncopal spontaneous pain, pain on uterine mobilisation, and abdominal guarding. These three signs also have an excellent negative predictive value for the diagnosis of ruptured EP [24]. In the case of peritoneal irritation syndrome, abdominal guarding associated with an "umbilical cry" may be present. In this study, provoked pelvic pain was present in almost all patients with a rate of 94.05% of cases; abdominal defence in 47.58% of patients and umbilical cry in 44.61%. All our study population had pelvic ultrasound. Concerning direct signs, more than half of the patients presented a latero-uterine mass, of which 77.32% of the cases and 83.27% of the patients had a peritoneal effusion.

### Therapeutic management

As these are the ruptured forms in our current practice, the management of EP involves intensive medical resuscitation in parallel with surgical treatment. More than half of the patients received radical surgical treatment (salpingectomy), i.e., 79.55% of cases. Conservative treatment (salpingotomy) was performed in 14% of patients. Bangambe BJ et al in Congo in 2016 also reported that 78.90% of patients underwent radical surgery; salpingotomy in 68.30% of cases and adnexectomy performed in 10.60% of cases [16]. The study by Garbin O et al in 2010 showed different figures were out of 202 EPs managed, only 26% of the cases were treated surgically upfront [25]. According to Duggal et al, more than 80% of EPs in developed countries are treated laparoscopy [26]. Despite the high cost of setting up an endoscopy unit, the laparoscopic approach is currently the gold standard for the treatment of EP [26]. In developing countries, medical treatment with methotrexate may also have a place,

provided that early diagnosis and close monitoring is carried out. And close monitoring.

In 27.10% of the cases, the operated patients presented a hemoperitoneum between 500 and 1000 ml in 40.51% and exceeding 1000 ml in 11.15% of the cases, bleeding threatening the vital prognosis. A blood transfusion was necessary in 27.10% of cases. In the absence of hemodynamic instability, management should not be delayed under any circumstances. Assessment of the extent of the hemoperitoneum helps in the choice of the approach. Good experience of surgeons and anesthesia teams is therefore necessary so that even significant hemoperitoneum is not a formal contraindication to laparoscopic surgery. In our study, all patients were successfully treated, no maternal deaths were recorded. The postoperative course was simple in most of these women. These results are similar to those of the study by Nkilly GE et al in 2020 where there were no deaths in patients diagnosed with ruptured EP; as well as the study by Randriambololona DMA et al at CHUGOB in 2012 [5,31]. Laparotomy associated with close resuscitation still dominates management in Madagascar. Laparoscopic surgery is beginning to be introduced in Madagascar, but for EP, much remains to be done because the majority of patients arrive with ruptured forms.

## Conclusion

EP is a gynecological emergency. It is serious in case of rupture and can be life threatening due to hypovolemic shock. Tubal location is the most common type representing ruptured EP, predominantly at the ampullary level. Most of our patients come from urban areas. The functional triad of pelvic pain, metrorrhagia and amenorrhea was the main reason for admission of patients in our study. EP is still a real public health problem, especially with the increase in smoking among young people and the emergence of genital infections with unhealthy sexual behavior. Awareness raising and patient education, with improved skills of health personnel, as well as health materials are necessary to contribute to the reduction of the incidence of this pathology.

## References

1. Marion LL, Meeks GR. (2012). Ectopic Pregnancy: History, incidence, epidemiology, and risk factors. *Clin Obstet Gynecol*, 55:376-386.
2. Lehner R, Kucera E, Jirecek S, Egarter C, Husslein P. (2000). Ectopic pregnancy. *Arch Gynecol Obstet*, 263:87-92.
3. Sivalingam VN, Duncan WC, Kirk E, Shephard LA, Horne AW. (2011). Diagnosis and management of ectopic pregnancy. *J Fam Plann Reprod Health Care*, 37:231-240.
4. Cagnacci A, Landi S, Volpe A. (1999). Rhythmic variation in the rate of ectopic pregnancy throughout the year. *Am J Obstet Gynecol*, 180:1067-1071.
5. Randriambololona DMA, Anjaharisoaniaina NT, Harioly MOJ, Rekoronirina EB, Randriambelomanana JA, Andrianampanalinarivo RH. (2012). In charge of ectopic pregnancy at the University Hospital of Gynecology and Obstetrics in Befelatanana, Antananarivo, Madagascar. *Rev Anesth Réanim Med Urg*, 4(1):16-19.
6. Szadok P, Kubiacyk F, Bajorek A, Suchocki S. (2019). Ovarian ectopic pregnancy. *Ginekol Pol*, 90(12):728.
7. Nikodijevic K, Bricou A, Benbara A, Moreaux G, Nguyen C, Carbillon L et al. (2015). Cornual ectopic pregnancy: management, subsequent fertility and obstetric outcome. *Gynecol Obstet Fertil*, 44(1):11-16.
8. Dohbit JS, Foumane P, Kapche MD, Mboudou ET, Doumbe M, Doha S. (2010). Ectopic pregnancy at the regional hospital of Bafoussam: Epidemiological, clinical and therapeutic aspects. *Clin Mother Child Health*, 7(1):1189-1193.
9. Iqraoun S. (2016). Ectopic pregnancy in the obstetrics gynecology department II, about 161 cases. *Human Medicine: Morocco*, 154.
10. Rempen A, Dietl J. (1999). Complication rates after surgical treatment of ectopic pregnancy. *Hum Repr*, 14:1401-1403.
11. Nkilly GE, Ondo OR, Matsanga A, Sougou E, Manli D, Tchantchou TD et al. (2020). Management of ruptured ectopic pregnancies: laparoscopic surgery versus laparotomy. *Health SciDisease*, 21:6.
12. Priso EB, Njamen TN, Mboudou E, Obenchemti TE, Doh AS. (2010). Place of laparoscopy for adhesiolysis and prognosis after medical treatment of ectopic pregnancies in Cameroonian women. *Health SciDisease*, 11:2.
13. Meyé JF, Sima-Zue A, Olé BS, Kendjo E, Engongah-béka T. (2002). Current aspects of

- ectopic pregnancy in Libreville, Gabon: about 153 cases. *BDSP*, 12(4):405-408.
14. Nayama M, Gallais A, Ousmane N, Idi N, Tahirou A, Garba M et al. (2006). Management of ectopic pregnancy in developing countries: example of a referral maternity clinic in Niger. *EMC Gynecology Obstetrics & Fertility*, 34(1):14-18.
  15. Bouyer J, Coste J, Shojaei T, Pouly JL, Fernandez H, Gerbaud L. (2003). Risk factors for ectopic pregnancy: a comprehensive analysis based on a large case-control population-based study In France. *Am J Epidemiol*, 157:185-194.
  16. Bangambe BJ, Kangundia MJ, Mbanzulu PN, Yanga JJ, Monzango G, Kabango R et al. (2016). Epidemiological profile and management of ectopic pregnancy at the Sino-Congolese Friendship Hospital in N'djili, Kinshasa-DRC. *KisMed*, 7(1):255-258.
  17. Poncelet E, Leconte C, Martinez EF, Laurent N, Lernout M, Bigot J et al. (2009). Ultrasound and MRI appearance of ectopic pregnancy. *Imagery of women*, 19(3):171-178.
  18. Shayesteh P, Samayeh M, Mahnaz A. (2014). Main risk factors for Ectopic Pregnancy: a case-control study in a sample of Iranian Women. *Fertil Sterile*, 8(2):147-154.
  19. Weström L. (1980). Incidence, prevalence, and trends of actual pelvic inflammatory disease and its consequences in industrialized countries. *Am J Obstet Gynecol*, 138:880-892.
  20. Audebert AJM, Cohen J. (1985). Enduterine contraception: practical data. Update in *Gynecol Obstet. Coll. Nat. Gynecol Obstet*, 9:331-381.
  21. Fernandez H. (2000). Ectopic pregnancy: etiology, diagnosis, course, treatment. *Rev Prat*, 50:23
  22. Goksedef BP, Kef S, Akca A, Bayik RN, Cetin A. (2011). Risk factors for rupture in tubal ectopic pregnancy: definition of the clinical findings. *Eur J Obstet Gynecol Reprod Biol*, 154(1):96-99.
  23. Monnier JC, Vantygghen A, Vantygghen-Haudiquet MC, Lanciau B, Vinatier B. (1988). Ectopic pregnancy: Epidemiological, diagnostic, therapeutic and prognostic aspects. Apropos of 117 observations recorded from April 1976 to September 1983. *J Gynecol Obstet Biol Reprod*, 14:67-75.
  24. Fauconnier A, Mabrouk A, Heitz D, Ville Y. (2003). Ectopic pregnancy: Interest and value of the clinical examination in the management strategy. *J Gynecol Obstet Biol Reprod*, 32:18-27.
  25. Garbin O, Helmlinger C, Meyer N, David-Montefiore E, Vayssiere C. (2010). Can 74% of ectopic pregnancies be treated with medical treatment? Apropos of a series of 202 patients. *J Gynecol Obstet Biol Reprod*, 39(1):30-36.
  26. Duggal BS, Tarneja P, Sharma RK, Rath SK, Wadhwa RD. (2004). Laparoscopic management of ectopic pregnancies. *MJAFI*, 60:220-223.

**Cite this article:** Bienvenue S Rasoanandriana, Marina R, Besaina R, Razafimampionona I Manohisoa, J. A. R Ja, et al. (2023). Ruptured Ectopic Pregnancy: Epidemiological Profiles and Prognostic in a Reference Hospital in Antananarivo Madagascar, *Journal of Women Health Care and Gynecology*, BioRes Scientia Publishers. 2(2):1-8. DOI: 10.59657/2993-0871.brs.23.011

**Copyright:** © 2023 Bienvenue Solange Rasoanandriana, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

**Article History:** Received: July 31, 2023 | Accepted: August 25, 2023 | Published: August 28, 2023