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A FIVE-YEAR REVIEW OF ECTOPIC PREGNANCY AT ABUBAKAR TAFAWA BALEWA UNIVERSITY TEACHING HOSPITAL: CLINICAL TRENDS AND OUTCOMES

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ABSTRACT

Ectopic pregnancy remains a serious and potentially fatal condition, defined by the implantation of a fertilized egg outside the uterine cavity—most commonly in the fallopian tube. In low-resource settings such as Nigeria, where access to prompt medical care may be limited, ectopic pregnancy often presents late and can result in life-threatening complications such as tubal rupture, internal bleeding, and significant maternal morbidity. Despite advancements in diagnostic and treatment modalities, the burden of ectopic pregnancy continues to rise in many developing countries.

This study aimed to determine the incidence, patterns of clinical presentation, and management outcomes of ectopic pregnancy at the Abubakar Tafawa Balewa University Teaching Hospital (ATBUTH) in Bauchi, Nigeria, over a five-year period. A retrospective review was carried out,

covering the period from January 2011 to December 2015. Data were obtained from case files and theatre records of 615 women who were diagnosed and managed for ectopic pregnancy during this time. Information extracted included patient demographics, known risk factors, presenting symptoms, site of implantation, and types of treatment offered. The data were analyzed using descriptive statistics to identify trends and highlight key findings.

The study found an average ectopic pregnancy incidence of 2.96%, with a noticeable rise from 1.9% in 2011 to 3.9% in 2015. Most of the affected women were in their late twenties, specifically aged 26 to 30 years, and the majority were married. Pelvic inflammatory disease and a history of multiple sexual partners were the most common predisposing factors. A significant concern was the delayed presentation, with approximately 72% of the cases arriving at the hospital with ruptured ectopic pregnancies. The ampullary region of the fallopian tube emerged as the most frequent site of implantation, accounting for 68.1% of cases. Due to the advanced stage at presentation, surgical intervention was often necessary, with total salpingectomy performed in 90.6% of cases.

In conclusion, the study underscores a growing burden of ectopic pregnancy at ATBUTH, primarily driven by delayed diagnosis and management. The high rate of ruptured ectopics and subsequent surgical intervention highlights the need for increased awareness and early health-seeking behavior among women of reproductive age. Public health interventions should prioritize reproductive health education, improved access to contraception, prompt treatment of pelvic infections, and stronger referral systems.

Keywords: Ectopic Pregnancy, Fallopian Tubes, Pelvic Inflammatory Disease, Salpingectomy, Tubal Diseases

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INTRODUCTION

Ectopic pregnancy is a potentially life-threatening condition in which a fertilized ovum implants outside the uterine cavity, most commonly in the fallopian tube, which accounts for over 90% of cases.[1]Less frequently, implantation may occur in the ovary, cervix, interstitial portion of the fallopian tube, or abdominal cavity.[2,3] These

ectopic sites lack the necessary support for a growing embryo, and as the gestation progresses, the risk of tubal rupture and internal hemorrhage increases significantly, posing a serious threat to maternal health.[4]

The condition typically arises due to disruption or damage to the fallopian tubes, often from pelvic inflammatory disease—most commonly secondary to *Chlamydia trachomatis* infection.[5,6] Other important risk factors include a prior ectopic pregnancy, tubal or pelvic surgery, endometriosis, assisted reproductive technologies, smoking, and increased maternal age. Congenital abnormalities of the fallopian tubes and the use of intrauterine contraceptive devices are also associated with a higher incidence.[2,7,8]

Clinically, ectopic pregnancy usually presents between the 6th and 10th weeks of gestation.[9]Common symptoms include lower abdominal pain, vaginal bleeding, and a missed period. In cases of rupture, women may present with signs of hypovolemic shock, such as hypotension, syncope, shoulder tip pain, and abdominal distension.[9,10] The absence of an intrauterine pregnancy on ultrasound when β-hCG levels are above the discriminatory zone strongly suggests an ectopic pregnancy.[11] Management depends on the clinical status and includes methotrexate therapy in stable patients and surgical intervention, often via laparoscopy, in those with rupture or contraindications to medical treatment.[9,10,12]

Globally, ectopic pregnancy affects approximately 6.7 million women annually, with a crude incidence of about 170 per 100,000 persons, according to the 2019 Global Burden of Disease study.[13] The incidence is notably higher in low- and middle-income regions, particularly in Sub-Saharan Africa, where rates can exceed 280 per 100,000, and the burden of disease, measured in disability-adjusted life years (DALYs), surpasses 60 per 100,000. Women aged 25–29 are most commonly affected,

although the peak age has shifted to 30–34 in higher-income settings due to delayed childbearing.[14]

In Nigeria, ectopic pregnancy remains a significant cause of maternal morbidity and mortality. Many women present late, often after tubal rupture, due to limited access to early diagnostic facilities and emergency care. It contributes substantially to emergency gynecological surgeries, blood transfusion needs, and maternal death.[15,16] Improving awareness, access to early pregnancy assessment, and reproductive health services is critical to reducing the burden and improving outcomes in affected populations.

This study was undertaken to determine the incidence, the pattern of presentation and management of ectopic pregnancy at Abubakar Tafawa Balewa University Teaching Hospital Bauchi over a five-year period. It is hoped that the findings here well help in preventing recurrence of factors contributing to the morbidity and mortality associated with ectopic pregnancy

MATERIALS AND METHODS

Study Area

The study was conducted at the Department of Obstetrics and Gynaecology, Abubakar Tafawa Balewa University Teaching Hospital (ATBUTH), Bauchi, a tertiary healthcare facility located in Northeastern Nigeria. The hospital serves as a major referral centre for Bauchi State and neighbouring states, offering comprehensive obstetric and gynaecological services.

Study Population

The study population comprised all women who were managed for ectopic pregnancy at ATBUTH between January 2011 and December 2015. These patients were admitted through the gynaecological

emergency unit and managed either medically or surgically during the study period.

Study Design

This was a retrospective descriptive study. Data were collected through a review of case records of patients diagnosed with ectopic pregnancy over the five-year period. Additional data were retrieved from theatre logs to supplement any missing information in the patients' folders.

All patients who were diagnosed and managed for ectopic pregnancy at the facility during the study period with complete and retrievable records were included. Records with incomplete essential data or unclear diagnoses were excluded from the final analysis.

Data Collection and Management

Data were extracted using a structured format and included age, parity, marital status, risk factors, and clinical presentation. Additional variables obtained included the site of ectopic implantation, method of management, total number of deliveries in the hospital during the period, and total gynaecological surgeries performed. Data were checked for completeness and consistency before analysis.

Data Analysis

Analysis was conducted using Epi Info software. Descriptive statistics were used to summarize the data, and results were presented in tables and percentages to illustrate the frequency and distribution of variables.

Ethical Consideration

Approval for the study was obtained from the Research and Ethics Committee of Abubakar Tafawa Balewa University Teaching Hospital. Confidentiality of patient information was strictly maintained, and no identifying data were collected or disclosed in the course of the study.

RESULTS

Table 1: Socio-Demographic Characteristics

Variable	Number of Patients (n=615)	Percentage (%)
Age Range (years)		
16-20	25	4.1
21-25	160	26.0
26-30	264	42.9
31-35	104	16.9
36-40	49	8.0
41-45	13	2.1
Educational level		
None	369	60.0
Primary/Arabic School	123	20.0
Secondary	92	15.0
Tertiary	31	5.0
Occupation		
Housewife	430	69.9
Student	61	9.9
Trader	60	9.8
Tailor	64	10.4
Marital Status		
Married	467	75.9
Single	129	21.0
Divorced	19	3.1
Parity		
0	74	12.0
1	185	30.0
2	103	16.7
3	94	15.3
4	110	18.0
≥5	49	8.0

Table 1 shows that among the 615 patients, the majority were aged between 26 and 30 years, accounting for 264 (42.9%) cases. Those aged 21 to 25 years comprised 160 (26.0%), while 104 (16.9%) patients were between 31 and 35 years. Patients aged 36 to 40 years made up 49 (8.0%), those aged 16 to 20 years were 25 (4.1%), and the smallest group, aged 41 to 45 years, included 13 (2.1%). Regarding educational attainment, 369 (60.0%) had no formal education, 123 (20.0%) had primary or Arabic schooling, 92 (15.0%) completed secondary education, and 31 (5.0%) had tertiary education. In terms of occupation, 430 (69.9%) were housewives, 61 (9.9%) were students, 60 (9.8%) were traders, and 64 (10.4%) were involved in tailoring. Marital status indicated that 467 (75.9%) were married, 129 (21.0%) were single, and 19 (3.1%) were divorced. Parity distribution revealed that 74 (12.0%) were nulliparous, 185 (30.0%) had one previous delivery, 103 (16.7%) had two, 94 (15.3%) had three, 110 (18.0%) had four, and 49 (8.0%) had more than five previous deliveries.

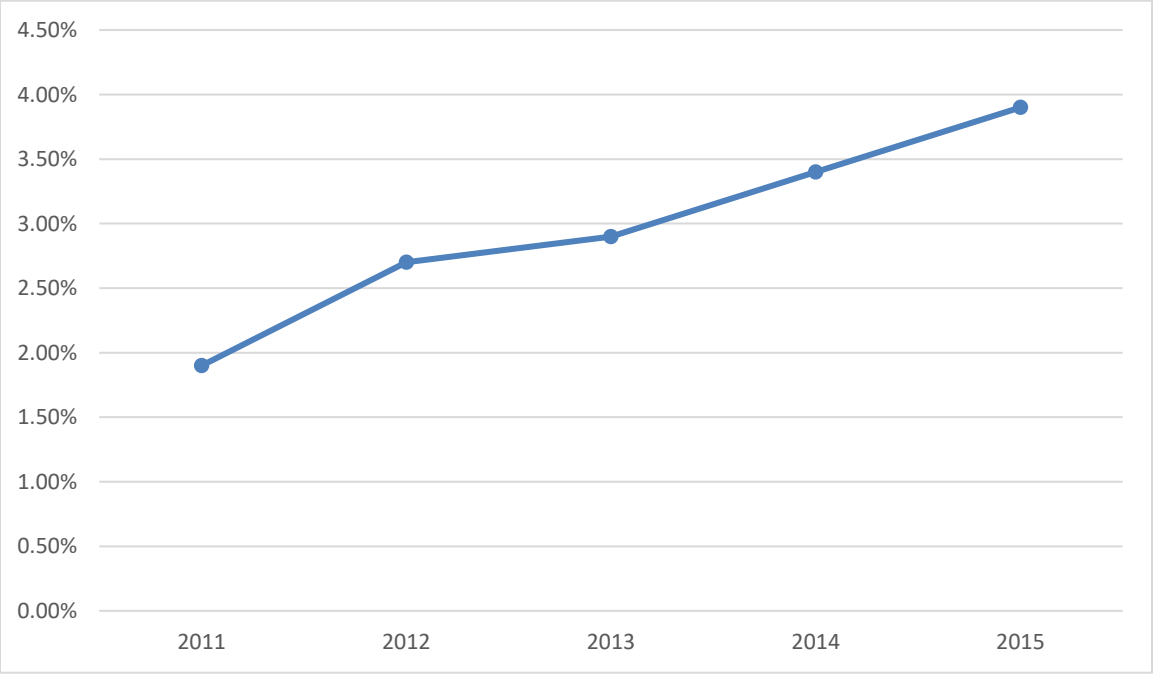

Figure 1: Line chart showing increased prevalence in ectopic pregnancies over the years

Figure 1 shows an increment in prevalence of cases of ectopic pregnancy over a 5 year period.

Table 2: Incidence of Ectopic Pregnancy Over the Study Period

Year	Number of deliveries n = (19,910)	Frequency of ectopic pregnancies (n =615)	Incidence (%)
2011	2,800	53	1.9
2012	3,409	92	2.7
2013	4,008	116	2.9
2014	4,793	163	3.4
2015	4,900	191	3.9

Table 2 shows that between 2011 and 2015, a total of 615 cases of ectopic pregnancy were managed at Abubakar Tafawa Balewa University Teaching Hospital, Bauchi, out of 19,910 deliveries, resulting in an overall incidence of 3.09%. In 2011, 53 cases (1.9%) were recorded among 2,800 deliveries. The following year saw 92 cases (2.7%) out of 3,409 deliveries. In 2013, 116 cases (2.9%) were documented from 4,008 deliveries. The incidence rose in 2014 to 163 cases (3.4%) among 4,793 deliveries. Finally, in 2015, 191 cases (3.9%) were reported from 4,900 deliveries. This data shows a steady increase in both the number and proportion of ectopic pregnancies relative to total deliveries over the five-year period.

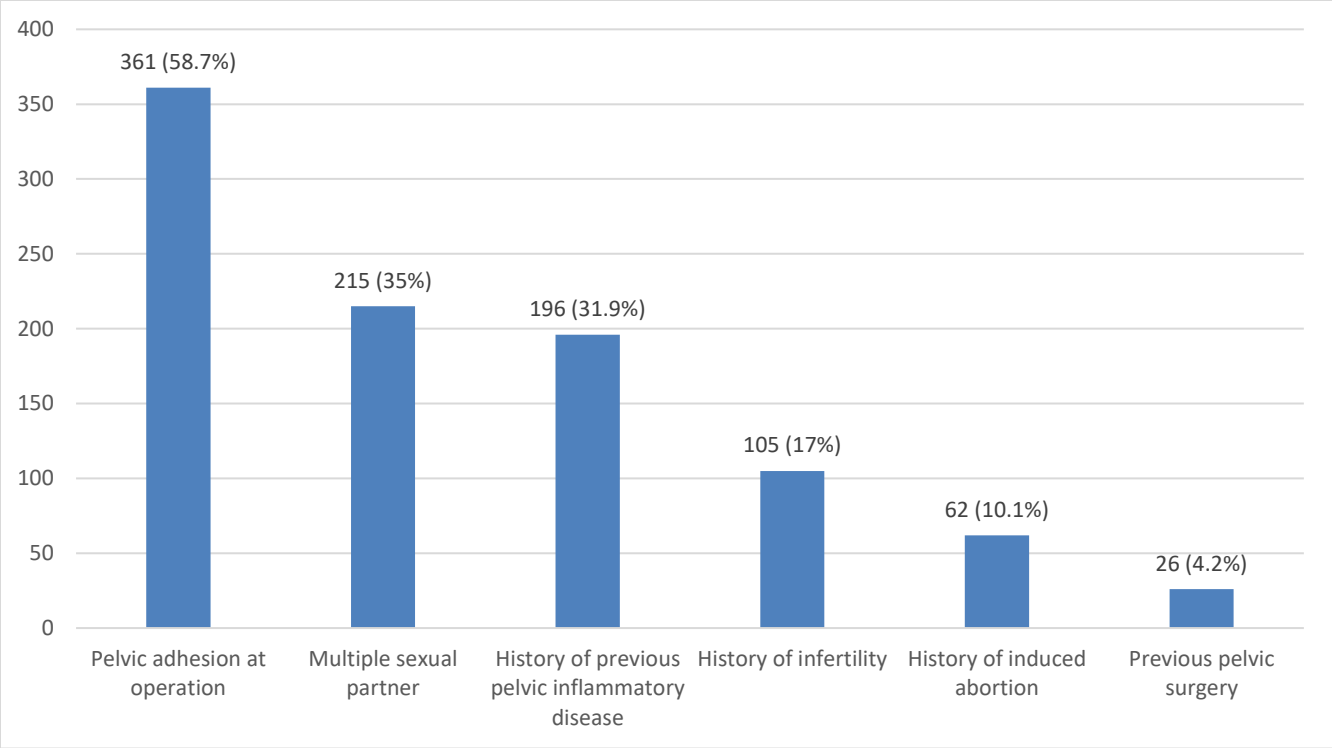

Figure 2: Most common risk factors among respondents

The most common risk factor for ectopic pregnancy was the presence of pelvic adhesions observed during surgery, which was found in 361 (58.7%) cases. A history of multiple sexual partners was reported by 215 (35.0%) patients, while 196 (31.9%) had a previous history of pelvic inflammatory disease. Infertility was documented in 105 (17.0%) patients, and 62 (10.0%) had a history of induced abortion. Previous ectopic pregnancy was noted in 20 (3.3%) cases, and 26 (4.3%) had undergone previous pelvic surgery. Notably, 135 (21.9%) patients had no documented risk factors.

Table 3: Clinical features of ectopic pregnancy

Variable	Frequency (n=615)	Percentage (%)
Symptoms		
Abdominal Pain	584	95.0
Amenorrhoea	523	85.0
Vaginal Bleeding	394	64.0
Dizziness or Fainting	246	40.0
Vomiting	215	35.0
Abdominal swelling	111	18.0
Fever	92	15.0
Physical Findings		
Abdominal tenderness	584	95.1
Cervical excitation tenderness	553	89.9
Adnexal tenderness	442	71.9
Pallor	430	69.9
Positive Paracentesis/ culdocentesis	215	35.0
Hypovolemic shock	185	30.1

Table 3 shows that abdominal pain was reported in 584 patients (95.0%), amenorrhea in 523 (85.0%), and vaginal bleeding in 394 (64.1%). Dizziness or fainting occurred in

246 patients (40.0%), abdominal swelling in 111 (18.0%), vomiting in 215 (35.0%), and fever in 92 (15.0%). Physical examination revealed abdominal tenderness in 584 patients (95.0%), cervical excitation tenderness in 553 (89.9%), adnexal tenderness in 442 (71.9%), and pallor in 430 (69.9%). Positive paracentesis or culdocentesis was found in 215 patients (35.0%), while 185 (30.1%) presented with hypovolemic shock.

Table 4: Site of Ectopic Pregnancy.

Site	Frequency (n=615)	Percentage (%)
Ampullary	402	68.1
Isthmic	123	20.8
Fimbrial	41	6.9
Interstitial	25	4.2
Cornual	12	2.0
Ovarian	8	1.3
Abdominal	4	0.7

Table 4 shows that the site of ectopic pregnancy was predominantly tubal, occurring in 591 patients (96.1%). Within the tubal pregnancies, the ampullary region was the most common site with 402 cases (68.1%), followed by the isthmic region with 123 cases (20.0%), and the fimbrial region with 41 cases (7.0%). Interstitial pregnancies accounted for 25 cases (4.1%). Other sites included ovarian ectopic pregnancies in 8 patients (1.3%) and cornual pregnancies in 12

patients (2.0%). Abdominal pregnancies were rare, occurring in 4 patients (0.7%).

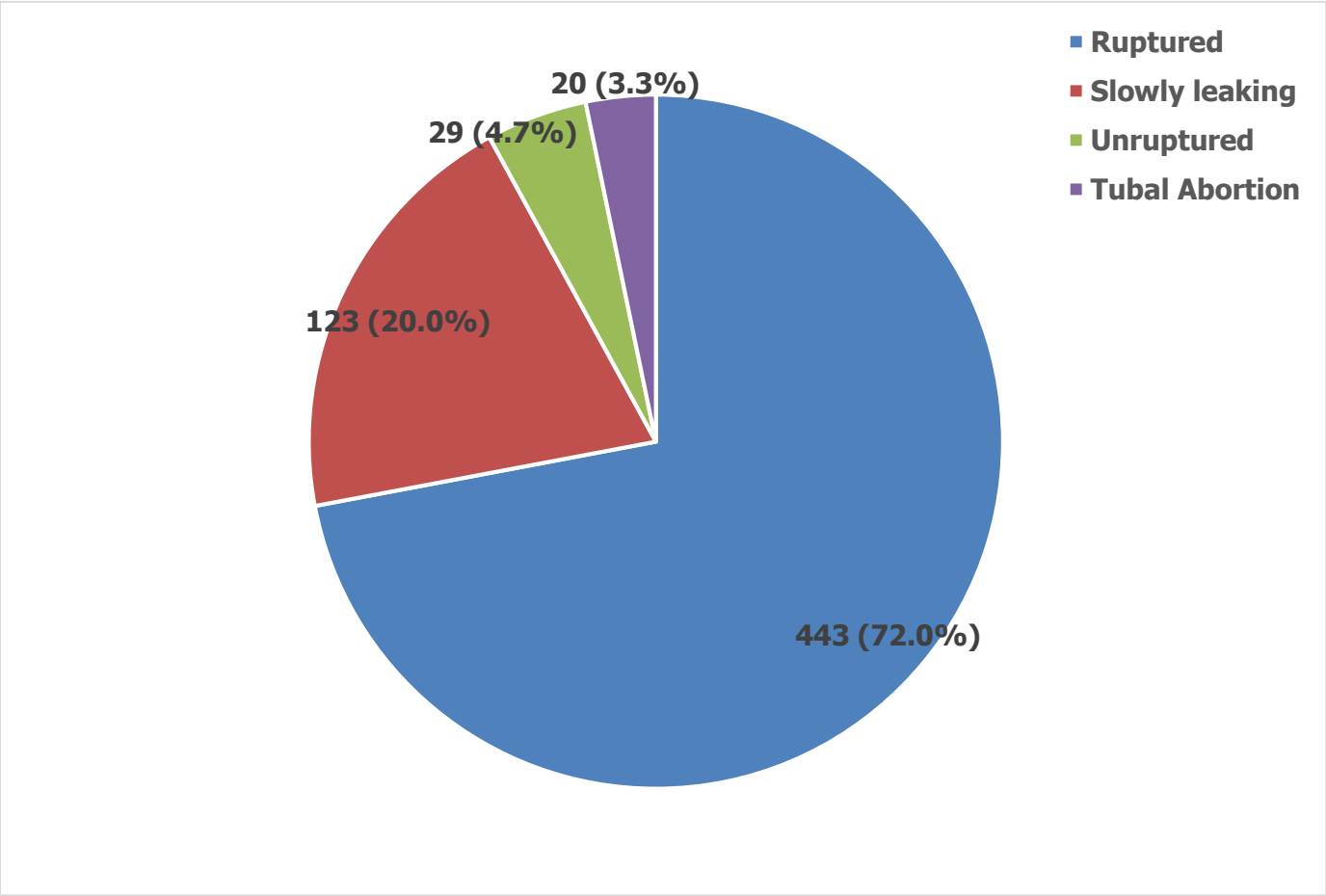

Figure 3: Image showing the states of ectopic pregnancies

Figure 3 shows the state of the gestational sac. At presentation, majority of cases, 443 (72.0%), were ruptured. Slowly leaking sacs were observed in 123 patients (20.0%), while tubal abortion occurred in 20 patients (3.3%). Only 29 patients (4.7%) presented with an unruptured gestational sac.

Table 5: Surgical Procedures Performed

Surgery	Frequency (n=615)	Percentage (%)
Partial salpingectomy	36	6.0
Total salpingectomy	557	90.6
Transfimbrial extraction	12	2.0
Unilateral oophorectomy	9	1.4

Table 5 showed that the surgical management of ectopic pregnancy cases predominantly involved total salpingectomy, performed in 557 patients (90.6%). Partial salpingectomy was carried out in 36 cases (6.0%), while transfimbrial extraction was done in 12 patients (2.0%). Unilateral oophorectomy was the least common procedure, performed in 9 patients (1.4%).

DISCUSSION

The overall incidence of ectopic pregnancy in this study was 2.96%, which is slightly lower than the initially stated 3.09%. This prevalence aligns closely with reports from Enugu[17], and Benin, Edo State[18], where incidences of 3.7% and 3.25% have been documented, respectively. However, it is significantly higher than the 0.31% reported in Zamfara[19]. The relatively high incidence observed in this study may be attributed to the rising prevalence of chronic pelvic inflammatory disease (PID), which results from sexually transmitted infections, unsafe abortions, and puerperal infections, contributing to tubal damage, predisposing women to ectopic pregnancies, while the gap in relation to certain studies may be due to underreporting in the Northern Region, as well as poor health seeking behaviour. From a public health perspective, the high incidence signals ongoing challenges in reproductive health services and emphasizes

the urgent need for effective prevention strategies. To reduce the burden, it is imperative to enhance sexual health education, improve access to contraception, and provide timely treatment for pelvic infections.

Over the five-year period from 2011 to 2015, the study documented a steady increase in ectopic pregnancy incidence, rising from 1.9% to 3.9%. This upward trend mirrors findings from a similar study, where the incidence of ruptured ectopic pregnancy increased notably over 4 years. [20] The reasons behind this rise likely include the increased incidence of PID, higher use of assisted reproductive technologies, and more frequent tubal sterilization procedures, all of which can predispose to tubal damage and ectopic implantation. This is important, as it reflects worsening reproductive health outcomes and increased demands on healthcare resources. Consequently, continuous surveillance, early detection, and targeted interventions aimed at minimizing risk factors are essential to curb this increasing burden.

In terms of sociodemographic characteristics, the majority of ectopic pregnancies occurred in women aged 26 to 30 years, accounting for 42.9% of cases, followed by those aged 21 to 25 years (26%). This distribution is consistent with findings from a Nigerian study, where majority of respondents were within the 25 – 29 years age bracket, reflecting the high fertility and sexual activity within this reproductive age group. [21] The elevated frequency in this age bracket likely results from greater exposure to reproductive health risks, including sexually transmitted infections and unsafe sexual practices. Addressing the needs of women in this age group through comprehensive reproductive health services and education could play a crucial role in reducing the incidence of ectopic pregnancies.

Most of the patients in this study were married (75.9%), a finding consistent with previous Nigerian studies[19,21,22]. The high proportion of married women affected may relate to cultural factors such as polygamy, prevalent in northern Nigeria, which increases exposure to multiple sexual partners and consequently the risk of pelvic infections. Additionally, 60% of patients had no formal education, which may contribute to lower awareness and poor health-seeking behavior. These socio-cultural and educational factors significantly influence reproductive health outcomes, underlining the need for targeted interventions that promote female education and culturally sensitive health messaging.

Regarding parity, 30% of the patients were primiparous, with only 12% being nulliparous. This finding differs somewhat from other studies that reported more cases among nulliparous individuals, with a study conducted in China showing a 12-fold risk of repeat ectopic pregnancies in nulliparous women[23]. The concentration of ectopic pregnancies among women with low parity suggests that many patients are in the early stages of their reproductive lives, highlighting the potential impact of ectopic pregnancy on future fertility. This highlights the importance of early reproductive health screening and counseling to preserve fertility and address the long-term social and psychological consequences of tubal loss.

Pelvic adhesions emerged as the most common risk factor, observed in 58.7% of cases, followed by multiple sexual partners (35%) and previous pelvic inflammatory disease (31.9%). These findings are consistent with earlier reports emphasizing the role of pelvic infections in tubal damage leading to ectopic pregnancy[18,24]. Additionally, infertility (17%) and induced abortion (10%) were notable risk factors, highlighting ongoing reproductive health challenges. The presence of these risk factors

likely stems from poor sexual health practices, low contraceptive use, and unsafe abortion practices. The prevention and effective management of PID and unsafe abortion are critical to reducing ectopic pregnancy rates. Strengthening STI prevention programs, increasing access to safe abortion services, and promoting family planning remain vital priorities.

The high prevalence of abdominal tenderness (95%) and hypovolemic shock (30.1%) indicates that most patients presented late, with 72% of respondents presenting with ruptured ectopic pregnancies, similar to findings in Enugu, Nigeria, where 86% of respondents presented with already ruptured ectopic pregnancies[17]. Such late presentations significantly increase the risk of morbidity and mortality. This finding points to a crucial public health need to enhance community awareness, encourage early healthcare seeking, and improve diagnostic capacities at peripheral health facilities to facilitate prompt management.

The site of ectopic pregnancy was overwhelmingly tubal, occurring in 96.1% of patients, with the ampullary region being the most frequent location (68.1%). This distribution corroborates previous studies and supports the hypothesis that ectopic pregnancy results from impaired embryo transport within the fallopian tube combined with changes in the tubal environment that favor early implantation.[7,25]

Surgical management was dominated by total salpingectomy, performed in 90.6% of cases. This preference for radical surgery aligns with international guidelines and reflects the clinical reality that most patients present with ruptured ectopic pregnancies[9,10]. Although total salpingectomy effectively resolves the immediate emergency, it adversely impacts future fertility and can cause psychological distress. Early detection and conservative management options should be expanded

where feasible, and patient counseling regarding reproductive options must be strengthened to mitigate these effects.

CONCLUSION

In summary, this study highlights a rising incidence of ectopic pregnancy, averaging 2.96% over five years, with the majority presenting as ruptured cases requiring total salpingectomy. Key risk factors such as pelvic inflammatory disease and multiple sexual partners reflect ongoing challenges in reproductive health and contribute to significant morbidity, including loss of fertility. Clinically, the predominance of advanced presentations underscores the urgent need for improved early diagnosis and timely intervention to prevent complications. Public health efforts should focus on enhancing sexual health education, expanding access to contraception, and strengthening diagnostic and referral systems to facilitate early detection and conservative management. These measures are vital to reducing ectopic pregnancy rates, preserving fertility, and improving maternal outcomes in this setting.

REFERENCES

1. Vadakekut ES, Gnugnoli DM. *Ectopic Pregnancy*. 2025.
2. Panelli DM, Phillips CH, Brady PC. Incidence, diagnosis and management of tubal and nontubal ectopic pregnancies: a review. *Fertil Res Pract*. 2015;1(1):15. doi:10.1186/s40738-015-0008-z
3. Sokalska A, Rambhatla A, Dudley C, Bhagavath B. Nontubal ectopic pregnancies: overview of diagnosis and treatment. *Fertil Steril*. 2023;120(3):553–62. doi:10.1016/j.fertnstert.2023.07.014
4. Jeffers K, Koyfman A, Long B. Updates in emergency medicine: Ectopic pregnancy. *Am J Emerg Med*. 2024;85:90–7. doi:10.1016/j.ajem.2024.09.005
5. Ambildhuke K, Pajai S, Chimegave A, Mundhada R, Kabra P. A review of tubal factors affecting fertility and its management. *Cureus*. 2022 Nov 1. doi:10.7759/cureus.30990
6. Xia Q, Wang T, Xian J, et al. Relation of *Chlamydia trachomatis* infections to ectopic pregnancy. *Medicine*. 2020;99(1):e18489. doi:10.1097/MD.0000000000018489
7. Flanagan HC, Duncan WC, Lin CJ, Spears N, Horne AW. Recent advances

in the understanding of tubal ectopic pregnancy. *Fac Rev*. 2023;12. doi:10.12703/r/12-26

8. Parashi S, Moukhah S, Ashrafi M. Main risk factors for ectopic pregnancy: a case-control study in a sample of Iranian women. *Int J Fertil Steril*. 2014;8(2):147–54.

9. Sivalingam VN, Duncan WC, Kirk E, Shephard LA, Horne AW. Diagnosis and management of ectopic pregnancy. *J Fam Plann Reprod Health Care*. 2011;37(4):231–40. doi:10.1136/jfprhc-2011-0073

10. Mullany K, Minneci M, Monjazeb R, Coiado OC. Overview of ectopic pregnancy diagnosis, management, and innovation. *Womens Health (Lond)*. 2023;19:17455057231160349. doi:10.1177/17455057231160349

11. Shwayder JM. Threshold, discriminatory zone, and "The New Rules." In: *First-Trimester Ultrasound*. Springer International Publishing; 2023. p.151–6. doi:10.1007/978-3-031-24133-8_10

12. Joseph RJ, Irvine LM. Ovarian ectopic pregnancy: aetiology, diagnosis, and challenges in surgical management. *J Obstet Gynaecol*. 2012;32(5):472–4. doi:10.3109/01443615.2012.673039

13. Zhang S, Liu J, Yang L, Li H, Tang J, Hong L. Global burden and trends of ectopic pregnancy: an observational trend study from 1990 to 2019. *PLoS One*. 2023;18(10):e0291316. doi:10.1371/journal.pone.0291316

14. Bo W, Qianyu Z, Mo L. Global, regional, and national burden of ectopic pregnancy: a 30-year observational database study. *Int J Clin Pract*. 2023;2023:3927337. doi:10.1155/2023/3927337

15. Lawani OL, Anozie OB, Ezeonu PO. Ectopic pregnancy: a life-threatening gynecological emergency. *Int J Womens Health*. 2013;5:515–21. doi:10.2147/IJWH.S49672

16. Igwegbe AO, Eleje GU, Okpala BC. An appraisal of the management of ectopic pregnancy in a Nigerian tertiary hospital. *Ann Med Health Sci Res*. 2013;3(2):166–70. doi:10.4103/2141-9248.113655

17. Nevo CO, Onyekpa IJ, Odugu BU. Prevalence and presentation of ectopic pregnancy in a tertiary hospital in Enugu South-East Nigeria: a 10-year retrospective study. *World J Adv Res Rev*. 2023;20(1):1114–22. doi:10.30574/wjarr.2023.20.1.2173

18. Okoror C, Uhunmwangbo B, Idemudia O. Ectopic pregnancy at a teaching hospital, Nigeria: an analysis of presentation and risk factors. *Menoufia Med J*. 2020;33(1):415–8.

19. Shittu M, Olaoye SO, Aremu-Kasamu YB, Fasanu O. Ectopic pregnancy: a review of prevalence, clinical presentation and outcome in Gusau, Northwest, Nigeria. *Ibom Med J*. 2025;8(1):40–4.

20. Odunvbun WO. Ectopic pregnancy: a 5-year review of cases in a secondary health facility in Delta State, Nigeria. *Port Harcourt Med J*. 2019;13(2):53–7.

21. Olamijulo JA, Okusanya BO, Adenekan MA, et al. Ectopic pregnancy at the Lagos University Teaching Hospital, Lagos, South-Western Nigeria: temporal

trends, clinical presentation and management outcomes from 2005 to 2014. *Niger Postgrad Med J*. 2020;27(3):177–81. doi:10.4103/npmj.npmj_35_20

22. Chukwu JA, Agulanna AE, Okafor IA, et al. A decade study of the incidence and clinical analysis of ectopic pregnancy at a tertiary hospital in Eastern Nigeria. *Int J Reprod Contracept Obstet Gynecol*. 2022;11(2):315–20. doi:10.18203/2320-1770.ijrcog20220154

23. Wang X, Huang L, Yu Y, Xu S, Lai Y, Zeng W. Risk factors and clinical characteristics of recurrent ectopic pregnancy: a case–control study. *J Obstet Gynaecol Res*. 2020;46(7):1098–103. doi:10.1111/jog.14253

24. Ahmad SF, Brown JK, Campbell LL, et al. Pelvic chlamydial infection predisposes to ectopic pregnancy by upregulating integrin β1 to promote embryo-tubal attachment. *EBioMedicine*. 2018;29:159–65. doi:10.1016/j.ebiom.2018.02.020

25. Kumar V, Gupta J. Tubal ectopic pregnancy. *BMJ Clin Evid*. 2015;2015:1406.