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CLINICAL ANATOMICAL PATTERNS AND ASSOCIATED EARLY MANAGEMENT OUTCOMES OF ECTOPIC PREGNANCY AMONG PREGNANT WOMEN AT IRINGA REGIONAL REFERRAL HOSPITAL

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ABSTRACT

Background: Ectopic pregnancy is a life threatening clinical condition which when not diagnosed and promptly managed early leads to maternal morbidity and mortality. Currently the exact prevalence, clinical anatomical patterns and associated early management outcomes in our setting is not well documented and also an associated morbidities put unknown resource burden to facilities during management of women with ectopic pregnancy at Iringa regional referral hospital in Tanzania. This study therefore is aimed at determining clinical anatomical patterns and associated management outcomes.

Methods: This was a prospective cross sectional study carried at Iringa Regional Referral Hospital from June to December 2020. Ectopic pregnancy was diagnosed based on history taking, physical examinations urinary pregnancy test, ultrasonography and incidental ectopic pregnancy findings at laparotomy. All findings at laparotomy, surgical procedures performed, postoperative early managements outcomes were all entered in the questionnaire and all patients were followed up till discharge. Filled questionnaires were entered in statistical program and were analyzed by using a IBM SPSS version 25. Results were summarized into frequencies and percentages while numerical variables were summarized into means, median and standard deviations.

Results: A total of 105 women with confirmed ectopic pregnancy were included. Tubal ectopic pregnancy was the predominant anatomical pattern (71.4%), with the ampulla being the most common site (45.6%), while 28.6% had non-tubal ectopic pregnancy. Salpingectomy was the most frequently performed surgical procedure (64.8%). Overall, 99.1% of women recovered and were discharged, although 76.0% experienced at least one early complication. Blood transfusion (71.4%) and intractable intraoperative bleeding (24.8%) were the most common early management outcomes. After adjustment for age, gravidity, and previous surgery, women with tubal ectopic pregnancy had significantly lower odds of intractable intraoperative bleeding (AOR=0.10, 95% CI: 0.03–0.32; p<0.001) and blood transfusion (AOR=0.20, 95% CI: 0.06–0.73; p=0.015) compared with those with non-tubal ectopic pregnancy.

Conclusion: The encouragement of early health seeking, early diagnosis and timely referral to hospital is needed to decrease the rate of tubal rupture and the resulting morbidity and mortality. During EP management much attention

should be given to patient with non-tubal ectopic pregnancies since they are associated with adverse early management outcomes.

Keywords: Ectopic pregnancy; Tubal pregnancy; Non-tubal ectopic pregnancy; Intraoperative haemorrhage; Blood transfusion; Tanzania.

1 INTRODUCTION

Ectopic pregnancy (EP) is a life-threatening obstetric emergency that occurs when a developing embryo implants outside the uterine endometrium and requires timely diagnosis and intervention (Negewo, 2019; Saeed, 2013). Globally, EP accounts for approximately 1–2% of all pregnancies and 10–20 cases per 1,000 live births and contributes approximately 10–15% of maternal deaths worldwide, particularly during the first trimester (Hamura et al., 2013).

Ectopic pregnancy can occur at different anatomical sites, with the fallopian tube accounting for approximately 95–98.7% of cases. Among tubal pregnancies, the ampulla is the most common site (55–93%), followed by the isthmus (8–22%), fimbrial end (6–8%), and cornual region (2.5–13.5%). Non-tubal ectopic pregnancies include ovarian (1–4%), abdominal (1–3%), broad-ligament, and cervical pregnancies (Adeyemo et al., 2020; Ayyuba, 2013; Kharat et al., 2017; Mbongo et al., 2019; Mooij et al., 2018; Sudha & Thangaraj, 2016). Rare sites include the cervix, myometrium, and cesarean-section scar, accounting for less than 1% of cases (Panelli et al., 2015; Sudha & Thangaraj, 2016).

The anatomical distribution of EP is generally similar between developed and developing countries, although non-tubal pregnancies may occur more frequently in developed settings partly because of increased use of assisted reproductive technology (ART). Studies from China and Italy have reported an increase in ovarian EP from approximately 3% to 6% following ART use (Stabile et al., 2020; Zhu et al., 2014). The anatomical site is clinically important because it influences diagnosis, treatment, and subsequent outcomes.

Non-tubal ectopic pregnancies, particularly abdominal, ovarian, broad-ligament, and cornual pregnancies, may be difficult to diagnose before rupture and can involve highly vascularized structures. Consequently, rupture may result in severe haemorrhage, anaemia, haemorrhagic shock, difficult intraoperative bleeding, blood transfusion, prolonged hospitalization, and occasionally hysterectomy. Other complications include wound sepsis, paralytic ileus, and peritonitis. Mortality associated with non-tubal EP has been reported to be approximately seven times higher than that associated with tubal EP (John & Alegbleye, 2016; Kumari et al., 2018; Negewo, 2019; Panelli et al., 2015).

Maternal morbidity and mortality from EP are strongly influenced by the condition at diagnosis. In developed countries, improved diagnostic services and access to minimally invasive surgery, medical treatment, and expectant management have enabled earlier diagnosis and reduced severe outcomes (Yvonne, 2011). Only approximately 18–34% of EPs in developed countries are diagnosed after rupture, compared with proportions as high as 75% in developing countries. Limited diagnostic resources and delayed recognition contribute to late presentation, rupture, haemorrhagic shock, and increased maternal morbidity and mortality (Basu et al., 2014; John & Alegbleye, 2016 ;Panti et al, 2012; Goyaux et al, 2013b).

In resource-limited settings, the high proportion of ruptured EP means that open laparotomy with salpingectomy remains a common life-saving procedure. Other procedures include cornual excision, abdominal or broad-ligament excision, and subtotal hysterectomy (Ganitha & Anuradha, 2017; Mbongo et al., 2019; Njingu et al., 2020; Papillon-Smith et al., 2014). These procedures may be associated with severe anaemia, haemorrhagic shock, blood transfusion, visceral injury, prolonged hospitalization, wound sepsis, wound dehiscence, and paralytic ileus (John & Alegbleye, 2016; Kumari et al., 2018; Negewo, 2019).

In developing countries, including Tanzania, the burden, clinical anatomical patterns, and early management outcomes of EP remain insufficiently documented. Maternal health programmes have traditionally focused more on complications occurring during late pregnancy, childbirth, and the puerperium, despite EP being an important cause of maternal mortality during early pregnancy (Maka & Nairobi, 2017). Furthermore, complicated EP may place considerable demands on health facilities through emergency surgery, hospital admission, blood transfusion, medicines, and other resources.

Although previous studies have described risk factors, management approaches, and general outcomes of EP, outcomes are commonly reported without considering specific anatomical sites. This limits understanding of whether different anatomical patterns are associated with differences in complications and early management outcomes. Evidence on these relationships is particularly limited in the Tanzanian setting. Therefore, this study aimed to determine the clinical anatomical patterns and associated early management outcomes of ectopic pregnancy among pregnant women managed at Iringa Regional Referral Hospital (IRRH) in the Southern Highlands of Tanzania.

2 METHODS

2.1 Study design and setting

A hospital-based prospective cross-sectional study was conducted from June to December 2020 at Iringa Regional Referral Hospital (IRRH), located in Iringa Region in the Southern Highlands of Tanzania. IRRH is a referral and teaching hospital that receives patients from Iringa Municipality, surrounding districts, and neighboring regions. The study was conducted in the Department of Obstetrics and Gynaecology, which provides emergency obstetric and gynaecological services, including diagnosis and surgical management of ectopic pregnancy. During the study period, the department recorded 1,507 deliveries and 673 gynaecological admissions.

2.2 Study population

The study population comprised women admitted to the Obstetrics and Gynaecology Department with suspected ectopic pregnancy during the study period. Women with ectopic pregnancy confirmed clinically and/or at laparotomy were eligible for inclusion. Women initially suspected of having ectopic pregnancy but found to have another diagnosis at laparotomy, as well as those who declined participation, were excluded.

2.3 Sample size and sampling

The sample size was estimated using Taro Yamane's formula (1967), based on an estimated population of 127 women with ectopic pregnancy expected during the seven-month study period and a 5% margin of error. The calculated minimum sample size was 96 participants. After adding 10%, the final target sample size was 105 participants. IRRH was purposively selected as the study site. Eligible women presenting with ectopic pregnancy during the study period were recruited using convenience sampling until the required sample size was reached.

2.4 Data collection and clinical assessment

Data were collected using a structured questionnaire, review of patients' clinical records, and direct clinical and intraoperative observations. Information collected included sociodemographic characteristics, obstetric and gynaecological history, clinical presentation, diagnostic findings, anatomical site of ectopic pregnancy, surgical procedures, intraoperative findings, and early postoperative outcomes. Participant interviews were conducted in Kiswahili, while information was recorded on questionnaires in English.

Women suspected of having ectopic pregnancy underwent clinical assessment, urinary pregnancy testing and, where indicated, bedside abdominopelvic ultrasonography. Preoperative investigations included haemoglobin measurement, blood grouping, and cross-matching. Haemodynamic status was assessed using blood pressure and pulse rate, and women presenting with haemodynamic instability were resuscitated and managed according to their clinical condition.

2.5 Assessment of anatomical patterns and management

The anatomical site of ectopic pregnancy was determined from intraoperative findings. Anatomical sites assessed included tubal and non-tubal ectopic pregnancies. Intraoperative information included the anatomical site involved, condition of the contralateral adnexa, presence and estimated amount of haemoperitoneum, intraoperative bleeding, duration of surgery, and surgical procedure performed. Surgical procedures included salpingectomy, salpingostomy, cornual excision, broad-ligament excision, oophorectomy, salpingo-oophorectomy, abdominal pregnancy excision, and hysterectomy, as clinically indicated.

2.6 Assessment of early management outcomes

Participants were followed during the early postoperative period and reviewed on postoperative day three and, for those who remained hospitalized, on day five. Early management outcomes assessed included postoperative pyrexia, paralytic ileus, wound complications, intraoperative bleeding, accidental visceral injury, and requirement for blood transfusion. Postoperative pyrexia was defined as body temperature greater than 38°C after 48 hours, while paralytic ileus was assessed based on failure to pass flatus or stool, absence of bowel sounds, abdominal distension, nausea, and/or vomiting. Wound complications included wound separation and clinical evidence of wound sepsis.

2.7 Data quality assurance

Completed questionnaires were reviewed daily for completeness and consistency before data entry. The researcher and research assistants jointly conducted selected clinical and intraoperative assessments, including vital signs, anatomical site, haemoperitoneum, intraoperative bleeding, surgical procedures, postoperative abdominal examination, temperature assessment, and wound inspection. Findings were cross-checked for consistency and compared with those documented by the senior operating surgeon.

2.8 Data analysis

Data were analysed using SPSS for Windows version 25.0 (IBM Corporation, Armonk, NY, USA). Categorical variables were summarized using frequencies and percentages, while numerical variables were summarized using appropriate measures of central tendency and dispersion, including means, medians, and standard deviations. Binary logistic regression was used to assess associations between anatomical patterns and early management outcomes. Associations were reported using odds ratios (ORs), and statistical significance was determined at the 5% level.

3 RESULTS

3.1 Sociodemographic and clinical characteristics

A total of 105 women with confirmed ectopic pregnancy were included in the study. Most participants were aged 25–34 years (64.8%), lived in urban areas (74.3%), were married (76.2%), and were unemployed (84.8%). Slightly more than half (51.4%) had secondary education or above. Clinically, 73 (69.5%) presented with a shock index >0.9. Most were multigravida (69.5%), while 8 (7.6%) had a history of previous abdominal or pelvic surgery.

Table 1: Sociodemographic and clinical characteristics of women with ectopic pregnancy at IRRH (N=105)

Characteristic	n	%
Age (years)		
15–24	25	23.8
25–34	68	64.8
>34	12	11.4
Residence		
Urban	78	74.3
Rural	27	25.7
Marital status		
Single	25	23.8
Married	80	76.2
Occupation		
Employed	16	15.2
Unemployed	89	84.8
Education		
Primary and below	51	48.6
Secondary and above	54	51.4
Shock index		
≤0.9	32	30.5
>0.9	73	69.5
Gravidity		
Primigravida	13	12.4
Multigravida	73	69.5
Grand multigravida	19	18.1
Previous abdominal/pelvic surgery		
Yes	8	7.6
No	97	92.4

3.2 Clinical anatomical patterns of ectopic pregnancy

Tubal ectopic pregnancy was the predominant anatomical pattern, occurring in 75 (71.4%) women, while 30 (28.6%) had non-tubal ectopic pregnancy. The ampulla was the most frequently affected specific site, accounting for 48 (45.6%) cases, followed by the cornual region in 18 (17.1%) and isthmus in 17 (16.2%). Abdominal pregnancy was the least frequent pattern, occurring in 2 (1.9%) women.

Table 2: Clinical anatomical patterns of ectopic pregnancy among women at IRRH (N=105)

Anatomical site	n	%
Tubal EP	75	71.4
Ampulla	48	45.6
Isthmus	17	16.2
Fimbria	10	9.4
Non-tubal EP	30	28.6
Cornua	18	17.1
Broad ligament	7	6.9
Ovary	3	2.9
Abdominal	2	1.9
Total	105	100.0

3.3 Surgical management of ectopic pregnancy

All participants underwent open laparotomy. Salpingectomy was the most frequently performed procedure, accounting for 68 (64.8%) cases, followed by cornual excision in 15 (14.3%) and hysterectomy in 7 (6.6%). Salpingostomy and abdominal pregnancy excision were the least frequently performed procedures, each accounting for 2 (1.9%) cases.

Table 3: Surgical management of ectopic pregnancy among women at IRRH (N=105)

Surgical management	n	%
Salpingectomy	68	64.8
Cornual excision	15	14.3
Salpingo-oophorectomy	6	5.7
Hysterectomy	7	6.6
Broad ligament excision	5	4.8
Salpingostomy	2	1.9
Abdominal excision	2	1.9
Total	105	100.0

3.4 Early management outcomes

Overall, 104 (99.1%) women recovered and were discharged, while one (0.9%) died. Among those who recovered, 25 (24.0%) recovered without complications, whereas 79 (76.0%) experienced one or more complications. Blood transfusion was the most frequently reported early management outcome, required by 75 (71.4%) women, followed by intractable intraoperative bleeding in 26 (24.8%) and hospital stay >7 days in 14 (13.3%).

Table 4: Early management outcomes of ectopic pregnancy among women at IRRH (N=105)

Early management outcome	Yes, n (%)	No, n (%)
Visceral injury	3 (2.8)	102 (97.1)

Wound complication	9 (8.6)	96 (91.4)
Fever/pyrexia	12 (11.4)	93 (88.6)
Paralytic ileus	8 (7.6)	97 (92.4)
Intractable intraoperative bleeding	26 (24.8)	79 (75.2)
Blood transfusion	75 (71.4)	30 (28.6)
Hospital stay >7 days	14 (13.3)	91 (86.7)

3.5 Association between clinical anatomical patterns and early management outcomes

Women with non-tubal EP experienced a greater burden of some early management outcomes than those with tubal EP. Intractable intraoperative bleeding occurred in 17 (56.7%) women with non-tubal EP compared with 9 (12.0%) with tubal EP (p<0.0001). Similarly, blood transfusion was required in 28 (90.3%) women with non-tubal EP compared with 47 (63.5%) with tubal EP (p=0.0192). The distribution of units of blood transfused also differed significantly between anatomical groups (p=0.0218). No statistically significant differences were observed for visceral injury, wound complications, or hospital stay >7 days. (Table 5)

After adjustment for age, gravidity, and previous surgery, anatomical pattern remained significantly associated with intractable intraoperative bleeding and blood transfusion. Compared with women with non-tubal EP, those with tubal EP had 90% lower odds of experiencing intractable intraoperative bleeding (AOR=0.10, 95% CI: 0.03–0.32; p<0.0001) and 80% lower odds of requiring blood transfusion (AOR=0.20, 95% CI: 0.06–0.73; p=0.0146). No statistically significant adjusted associations were observed for visceral injury, wound complications, or hospital stay >7 days. (Table 6)

Table 5: Association between clinical anatomical patterns and early management outcomes (N=105)

Management outcome	Tubal EP n (%)	Non-tubal EP n (%)	p-value
Visceral injury			0.1957*
Yes	1 (1.3)	2 (6.7)	
No	74 (98.7)	28 (93.3)	
Wound complication			0.2210*
Yes	4 (5.3)	4 (13.3)	
No	71 (94.7)	26 (86.7)	
Intractable intraoperative bleeding			<0.0001
Yes	9 (12.0)	17 (56.7)	
No	66 (88.0)	13 (43.3)	
Blood transfusion			0.0192
Yes	47 (63.5)	28 (90.3)	
No	27 (36.5)	3 (9.7)	
Units transfused			0.0218
None	27 (36.0)	3 (10.0)	
1 unit	19 (25.3)	5 (16.7)	
2 units	15 (20.0)	10 (33.3)	
≥3 units	14 (18.7)	12 (40.0)	
Hospital stay >7 days			0.1075*
Yes	7 (9.3)	7 (23.3)	
No	68 (90.7)	23 (76.7)	

*Fisher's exact test.

Table 6: Logistic regression analysis of clinical anatomical patterns and early management outcomes (N=105)

Management outcome	Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Visceral injury	0.19 (0.02–2.17)	0.1810	6.21 (0.48–79.50)	0.1604
Wound complication	0.37 (0.09–1.57)	0.1765	0.32 (0.10–11.44)	0.1729
Intractable intraoperative bleeding	0.10 (0.01–0.30)	<0.0001	0.10 (0.03–0.32)	<0.0001
Blood transfusion	0.19 (0.05–0.67)	0.0102	0.20 (0.06–0.73)	0.0146
Hospital stay >7 days	0.34 (0.11–1.10)	0.0645	0.37 (0.12–1.20)	0.0945

Adjusted for age, gravidity, and previous surgery. Non-tubal ectopic pregnancy was the reference anatomical pattern.

4 DISCUSSION

This study demonstrates that the anatomical location of ectopic pregnancy has important implications for its surgical management and early outcomes. Tubal ectopic pregnancy, particularly ampullary pregnancy, was the predominant anatomical pattern. However, the clinically important finding was that women with non-tubal ectopic pregnancy experienced greater perioperative morbidity, particularly intraoperative bleeding and the need for blood transfusion. The predominance of emergency surgical management and the high burden of complications also indicate that ectopic pregnancy continues to present as a serious obstetric emergency in this setting.

4.1 Clinical anatomical patterns of ectopic pregnancy

The predominance of tubal and particularly ampullary ectopic pregnancy observed in this study is consistent with findings from India, Bangladesh, and Yemen (Dasari, 2018; Pradhan et al., 2016; Yeasmin, 2014; Saeed, 2013). This consistency across different settings supports the established understanding that the fallopian tube is the principal site of ectopic implantation. The predominance of the ampullary region may be related to its physiological role as the usual site of fertilization and the subsequent transportation of the fertilized ovum towards the uterine cavity. Damage to the tubal epithelium and cilia following infection or inflammation may interfere with embryo transport and facilitate implantation within the tube. Ovarian and abdominal ectopic pregnancies were comparatively uncommon, which is also consistent with previous studies reporting low frequencies of these anatomical patterns (Dasari, 2018; Saeed, 2013; Adeyemo et al., 2020). Despite their relative rarity, these forms of ectopic pregnancy remain clinically important because implantation outside the fallopian tube may occur in highly vascular or anatomically complex locations, potentially making diagnosis and surgical management more difficult.

4.2 Surgical management of ectopic pregnancy

Salpingectomy was the predominant surgical procedure, consistent with findings from Ethiopia, rural Tanzania, and India (Negewo, 2019; Mooij et al., 2018; Malik et al., 2017; Wakankar & Kedar, 2015). Similarly, the use of salpingo-oophorectomy was comparable with previous reports from Tanzania and India (Mooij et al., 2018; Kharat et al., 2017; Sudha & Thangaraj, 2016). The predominance of laparotomy and salpingectomy likely reflects the severity of disease at presentation. A substantial proportion of women presented with haemodynamic instability, limiting opportunities for conservative or fertility-preserving procedures. Similar reliance on emergency surgery in resource-limited settings has been associated with late presentation, delayed referral, and diagnosis after rupture (Mooij et al., 2018). Consequently, strengthening early recognition and referral of women with suspected ectopic pregnancy could potentially increase opportunities for less extensive treatment.

This pattern differs from developed settings, where medical, expectant, and minimally invasive surgical approaches are more frequently used. For example, an Italian study reported the use of surgical, medical, and expectant management (Baggio et al., 2021). Such differences may reflect earlier diagnosis and greater availability of ultrasonography, serial β-HCG monitoring, and laparoscopic services, which allow stable women with unruptured ectopic pregnancy to be managed without emergency laparotomy.

4.3 Early management outcomes

Although survival following treatment was high, considerable morbidity was observed, particularly from haemorrhage and the resulting need for blood transfusion. The substantial transfusion requirement is consistent with reports from South Africa, Congo Brazzaville, Bangladesh, and India (Nzaumvila et al., 2018; Mbongo et al., 2019; Yeasmin, 2014; Wakankar & Kedar, 2015; Sudha & Thangaraj, 2016). Likewise, haemodynamic instability at presentation has been

frequently reported in other resource-limited settings (Belquis AJ & Dikrayat, 2017; Sudha & Thangaraj, 2016). These findings probably reflect presentation after substantial intra-abdominal bleeding or rupture. Delayed presentation and referral can allow continued haemorrhage before definitive treatment, increasing the likelihood of shock, severe anaemia, emergency surgery, and transfusion. In contrast, substantially lower levels of shock and blood transfusion have been reported in the USA (Papillon-Smith et al., 2014), potentially reflecting earlier diagnosis and greater availability of less invasive management.

Postoperative wound complications were broadly comparable with findings from India and Congo Brazzaville (Wakankar & Kedar, 2015; Tahmina et al., 2016; Mbongo et al., 2019), although lower rates have been reported elsewhere (Negewo, 2019; Sudha & Thangaraj, 2016; Yeasmin, 2014; Malik et al., 2017). Differences between studies may reflect variations in severity at presentation, surgical approach, duration and complexity of surgery, and postoperative care. Open emergency procedures involving substantial blood loss and extensive tissue manipulation may increase the risk of postoperative complications.

Prolonged hospitalization was also observed in some women and is comparable with reports from Nigeria and West Bengal (John & Alegbleye, 2016; Basu et al., 2014). Longer hospitalization may reflect the need to manage postoperative complications, anaemia, and transfusion requirements before discharge. Visceral injury was relatively uncommon, consistent with reports from India and South Africa (Tahmina et al., 2016; Nzaumvila et al., 2018). Nevertheless, its occurrence highlights the potential complexity of emergency surgery, particularly in women with previous pelvic surgery, adhesions, extensive haemorrhage, or ectopic pregnancies located close to other pelvic or abdominal structures. Maternal mortality was uncommon and was comparable with findings reported in Nigeria (John & Alegbleye, 2016). Nevertheless, the occurrence of a death associated with haemorrhagic shock and inability to obtain compatible blood emphasizes that survival from ruptured ectopic pregnancy depends not only on timely surgery but also on adequate emergency resuscitation and reliable access to blood and blood products.

4.4 Anatomical patterns and early management outcomes

The most clinically important finding was that anatomical pattern was independently associated with intraoperative bleeding and blood transfusion. Women with tubal ectopic pregnancy had substantially lower odds of these adverse outcomes than those with non-tubal ectopic pregnancy, even after accounting for age, gravidity, and previous surgery. This association is biologically and clinically plausible because non-tubal ectopic pregnancies may involve highly vascular anatomical locations such as the cornual region, ovary, broad ligament, and abdominal cavity. Surgical intervention at these sites may therefore be technically more difficult, with greater potential for severe haemorrhage and difficulty achieving hemostasis. In some cases, controlling bleeding may require more extensive procedures, including hysterectomy. These findings demonstrate that anatomical location should be considered not only as a description of ectopic pregnancy but also as an indicator of potential management complexity. Identification or suspicion of a non-tubal ectopic pregnancy should therefore prompt adequate preoperative preparation, availability of experienced surgical personnel, and preparation of blood and blood products. Strengthening early diagnosis and referral may be particularly important for reducing severe haemorrhagic complications associated with these anatomically complex ectopic pregnancies.

4.5 Strength, limitation and recommendation

The prospective design enabled direct collection and verification of clinical, intraoperative, and early postoperative data, with follow-up throughout hospitalization. However, the single-center design and relatively small sample size may limit the generalizability and precision of findings for rare outcomes, while follow-up limited to hospitalization prevented assessment of long-term outcomes. Given the high occurrence of hemodynamic instability and blood transfusion, early diagnosis and timely referral of women with suspected ectopic pregnancy should be strengthened to reduce severe hemorrhage. Since non-tubal ectopic pregnancy was associated with increased intraoperative bleeding and blood transfusion, referral facilities should ensure adequate blood availability and preparedness for complex emergency surgery when managing these cases.

5 CONCLUSION

The encouragement of early health seeking, early diagnosis and timely referral to hospital is needed to decrease the rate of tubal rupture and the resulting morbidity and mortality. During EP management much attention should be given to patient with non-tubal ectopic pregnancies since they are associated with adverse early management outcomes.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Disclosure of conflict of interest

None conflict of interest to be declared.

Statement of ethical approval

Ethical clearance was obtained from the Research and Publications Committee of the University of Dodoma (Ref. No. MA.84/261/02), and permission to conduct the study was obtained from the Director of Iringa Regional Referral Hospital.

Statement of informed consent

Participation was voluntary, and informed consent was obtained from participants. For women requiring immediate emergency intervention because of pain or haemodynamic instability, consent for study participation was obtained after surgery and clinical stabilization. Confidentiality was maintained by conducting interviews privately and excluding participants' names from study records. Participants who declined study participation continued to receive standard clinical care without discrimination

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