

ORIGINAL ARTICLE

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Therapeutic management of incomplete spontaneous abortion in women at a hospital in Lima, Peru

Abordaje terapéutico del aborto espontáneo incompleto en mujeres de un hospital de Lima, Perú

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ABSTRACT

Introduction: In Peru, an estimated 350,000 abortions occur annually, with complications representing the fourth leading direct cause of maternal mortality. The majority are incomplete spontaneous abortions, associated with factors such as diabetes, hypertension, and thyroid disease. Three management approaches exist: expectant management, medical management, and surgical management. No national consensus exists for the management of this condition. **Objective:** To describe the characteristics of management for incomplete spontaneous abortion in women aged 18–45 at Hospital III Suárez Angamos. **Materials and Methods:** A retrospective, observational, descriptive study was conducted using electronic medical records of women aged 18–45 diagnosed with incomplete spontaneous abortion between June 1 and December 31, 2024. A total of 321 participants were included. **Results:** Most women were 18–34 years old (62.9%), 3.4% had complicated abortions, and 15.0% presented comorbidities. Medical management with misoprostol was most commonly used (53.9%), followed by surgical management (36.1%), which was more frequent in cases with endometrial thickness ≥ 30 mm and uterine size ≥ 12 cm. Some patients managed expectantly or with medical management required additional treatment, over 60% of which involved misoprostol. **Conclusions:** Medical management was the first-line approach for incomplete spontaneous abortion. However, limited evidence remains regarding clinical parameters, such as endometrial thickness, which are essential to guide treatment choice and confirm its success.

Keywords: Abortion, Incomplete; Watchful Waiting; Misoprostol; Vacuum Curettage; Dilatation and Curettage

RESUMEN

Introducción: En el Perú, se estiman 350 000 abortos cada año y sus complicaciones son la cuarta causa directa de mortalidad materna. La mayoría corresponden a abortos espontáneos incompletos, asociados a factores como diabetes, hipertensión y enfermedades tiroideas. Para el tratamiento existen 3 conductas (expectante, farmacológica y quirúrgica). En el país no existe un consenso para el abordaje de esta patología. **Objetivo:** Describir las características del tratamiento del aborto espontáneo incompleto en un grupo de mujeres de 18 a 45 años del Hospital III Suárez Angamos. **Material y Métodos:** Se realizó un estudio observacional retrospectivo y descriptivo, que utilizó como fuente de información las historias clínicas electrónicas de pacientes con diagnóstico de aborto espontáneo incompleto entre 18-45 años en el período del 1 junio al 31 de diciembre de 2024. Se incluyeron 321 participantes. **Resultados:** El 62,9% de mujeres tenían 18-34 años, 3,4% presentaron un aborto complicado y 15,0% tuvo comorbilidades. El tratamiento farmacológico con misoprostol fue el más indicado (53,9%), seguido del quirúrgico (36,1%). Este último se dio con mayor frecuencia ante un grosor endometrial ≥ 30 mm y tamaño uterino ≥ 12 cm. Algunas pacientes con tratamiento expectante y farmacológico requirieron de un tratamiento adicional, en más del 60% con misoprostol. **Conclusiones:** El tratamiento farmacológico fue la primera elección terapéutica para el aborto espontáneo incompleto, sin embargo, persiste una limitada evidencia sobre parámetros clínicos, como el grosor endometrial, que son esenciales para guiar la elección del tratamiento y confirmar su éxito.

Palabras claves: Aborto Incompleto; Espera Vigilante; Misoprostol; Legrado por aspiración; Dilatación y Legrado Uterino.



INTRODUCTION

In Peru, an estimated 350,000 abortions occurred among women of reproductive age (15–49 years) in 2022⁽¹⁾. The National Center for Epidemiology, Prevention, and Disease Control of the Ministry of Health reported that abortion and its complications were the fourth leading direct cause of maternal death between 2022 and 2024⁽²⁾.

In Peru, incomplete spontaneous abortion affected 95.1% of a group of women who experienced an abortion⁽³⁾. Among the risk factors for spontaneous abortion, chromosomal abnormalities, diabetes mellitus, hypertension, and thyroid disease stand out⁽⁴⁾. It is considered that every spontaneous abortion is potentially incomplete⁽⁵⁾, which underscores the need for timely treatment tailored to each patient's condition, in order to prevent complications and associated mortality.

In current medical practice, three treatment approaches are recognized: expectant management (EM), medical management (MM), and surgical management (SM)⁽⁵⁾. However, due to significant variability among international and national guidelines, there is still no consensus on the criteria guiding the choice of therapeutic approach. In this context, the National Maternal-Perinatal Institute (2010) recommends surgical management via manual vacuum aspiration (MVA) when the uterine size is less than 12 cm or dilation and curettage if it is 12 cm or greater, without elaborating on expectant or pharmacological management⁽⁶⁾. For its part, the Hospital Nacional Madre-Niño San Bartolome in Peru (2018) incorporated all three types of management, basing the choice on the patient's gestational age (GA) and hemodynamic stability⁽⁷⁾.

Similarly, the use of post-treatment ultrasound measurement of endometrial thickness (ET) has been proposed as a parameter defining treatment success; although the reported cut-off points vary: an ET <30 mm in the absence of a gestational sac⁽⁸⁾, a thickness <15 mm after 8 days of misoprostol treatment⁽⁹⁾, or a stricter cutoff point <10 mm⁽¹⁰⁾.

Given the importance of spontaneous abortion to the health of women of childbearing age, and in light of clinical variability in treatment in Peru,

this study aims to describe the characteristics of treatment for incomplete spontaneous abortion in women aged 18 to 45 years treated at a hospital in Lima, Peru.

METHODS

STUDY SETTING AND DESIGN

A retrospective and descriptive observational study was conducted in the Obstetrics and Gynecology Department of Hospital III Suárez Angamos, a general care hospital (category II-2) located in the Miraflores district of Metropolitan Lima, which serves patients enrolled in Peru's Social Health Insurance system. The study used electronic medical records of patients diagnosed with incomplete spontaneous abortion between June 1 and December 31, 2024, as its source of information.

PARTICIPANTS

The selection criteria for this study were: a) women aged 18 to 45 years diagnosed with uncomplicated incomplete spontaneous abortion (ICD-10 code O03.4) or diagnosed with incomplete spontaneous abortion with other complications (ICD-10 code O03.39); b) patients with medical records registered in the EsSalud Intelligent Health Service (ESSI) system; c) medical records containing information on medical history and treatment received. Patients who requested voluntary discharge, those who were not diagnosed, or those with a diagnosis other than incomplete spontaneous abortion (induced, complete, retained, among others) were excluded.

All women who met the eligibility criteria during the study period were included; therefore, a sampling design was not applied.

Initially, a search was conducted in the ESSI system by age, time period, and ICD-10 code, identifying 487 records.

Subsequently, the three authors verified the eligibility criteria and reviewed each medical record, entering the information for 322 patients into an electronic data capture form implemented in REDCap. During the data cleaning process, one record was excluded, resulting in a final sample size of 321 participants.



VARIABLES

Regarding the variables collected, age was initially recorded in completed years and subsequently categorized into the 18–34 and 35–45 age groups. Maternal age greater than 35 years was defined as advanced maternal age⁽¹¹⁾. The presence of maternal comorbidities was recorded as a dichotomous variable (presence or absence), and the type of comorbidity was specified across four categories that included the conditions most frequently associated with incomplete spontaneous abortion: hypothyroidism, hyperthyroidism, diabetes mellitus, and hypertension⁽⁴⁾. A fifth category comprised other comorbidities. Gynecological history variables included the number of previous children [nulliparous, primiparous (one live birth), and multiparous (≥ 2 live births)], as well as a history of prior abortions [none, a single prior abortion, and multiple abortions (> 2 prior abortions, excluding the current event)]. The date of the last menstrual period (LMP) was used to estimate gestational age (GA), which was classified as < 13 weeks (early pregnancy loss)⁽⁸⁾ or ≥ 13 weeks.

Clinical characteristics upon admission to the facility included vital signs: heart rate [normal (60–100 bpm) or elevated (> 100 bpm)]; blood pressure categorized as normal, elevated, or stage 1 and 2 hypertension (AH)⁽¹²⁾; and serum hemoglobin concentration, which allowed for the assessment of the presence and degree of anemia (mild, moderate, and severe). Two ultrasound parameters were also recorded, including endometrial thickness (ET) and uterine size.

Some of the cutoffs applied for ET are 15 mm⁽⁹⁾ and 30 mm⁽⁸⁾; conversely, a cutoff of 12 cm is used for uterine size to determine the need for surgical management⁽⁶⁾. For the purposes of this study, it was decided to categorize ET as < 15 mm, > 15 – < 30 mm, and > 30 mm; and uterine size as < 12 cm and > 12 cm.

Treatment was characterized by several variables, including the type of treatment, defined as the initial therapeutic approach and categorized as expectant management (EM), medical management (MM), or surgical management (SM). Information on the specific treatment was collected; for MM, the administered medication was reported. The standard dosage of mifepristone is 600 μ g orally, 400 μ g sublingually, or

400–800 μ g vaginally⁽⁷⁾, while mifepristone is administered at a dose of 200 mg orally⁽⁸⁾. For SM, the procedure performed was specified—manual vacuum aspiration (MVA) or uterine curettage—with prior use of a cervical ripening agent. The use of additional measures (rest, analgesia, and antibiotic therapy) was also documented. It should be noted that the administration of medications and the choice of surgical procedures were determined by the treating physician's clinical judgment and the availability of treatments.

Post-treatment follow-up included reevaluation (presence and timing). Additionally, the study assessed the need for additional treatment based on post-treatment endometrial thickness (ET) measurement; therefore, the variable “endometrial success assessment (ESA)” was constructed: a treatment was considered successful with a post-treatment ET cutoff of < 10 mm⁽¹⁰⁾. Additional treatment was characterized according to need and type (additional MM or ST and its specified drug or procedure).

DATA COLLECTION

First, an ad hoc data collection form was created in REDCap. Subsequently, using the ESSI platform, each author reviewed a number of cases distributed equally over a six-month data collection period. In cases of disagreement regarding a case's eligibility, the authors discussed the matter jointly until a consensus was reached regarding its inclusion.

DATA ANALYSIS

Once the data were collected, they were exported to a Microsoft Excel database, where data cleaning was performed. Descriptive analyses were then conducted using frequencies and percentages. The statistical software Stata 17 (StataCorp) was used for this purpose.

ETHICAL CONSIDERATIONS

The study protocol was approved by the Ethics and Research Committee of Hospital III Suárez-Angamos and the Universidad de Piura under file number T0624-17. Data confidentiality was protected; prior to analysis, alphanumeric anonymization was performed, and each record was assigned a unique identifier.



RESULTS

A total of 321 women were included in the analysis; the number of patients excluded during the medical record review process is shown in Figure 1.

PATIENT CHARACTERISTICS

The 18–34 age group comprised 202 (62.9%) participants; the mean and median age was 32 years, with a standard deviation of 6.58. Comorbidities were present in 48 (15.0%) patients, with hypothyroidism being the most common in 10

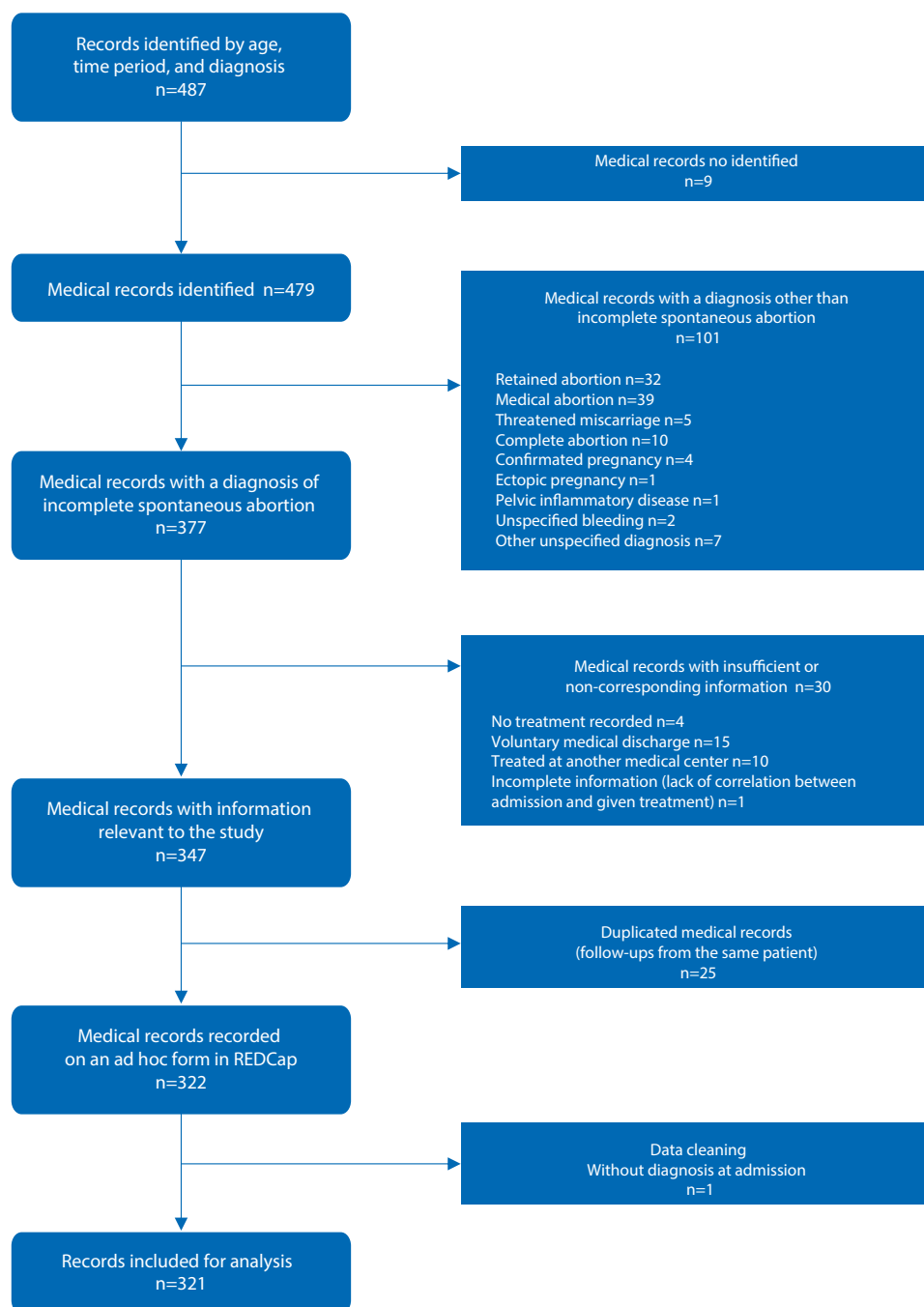


FIGURE 1. RECORD SELECTION FLOWCHART.



patients (3.1%). 105 (32.7%) patients were primiparous; 148 (46.1%) reported no history of previous miscarriages; and 106 (33%) women indicated they had had a single miscarriage (Table 1).

PATIENT CHARACTERISTICS AT ADMISSION

A total of 310 (96.6%) women had uncomplicated incomplete spontaneous abortions. Among the 11 women with complications (45.5%), 5 experienced excessive or delayed bleeding, and 4 had genital and pelvic infections. 76.9% of incomplete spontaneous abortions occurred in women with a gestational age of less than 13 weeks. Upon admission to the facility, 74.5% had normal blood pressure, 64.5% were not anemic, and 72.3% had a normal heart rate; however, 6.9% of the women had moderate anemia, and 19.3% had stage 2 arterial hypertension.

Regarding ultrasound measurements, 178 (55.5%) patients had a gestational age (GA) measurement > 15 and < 30 mm; and 279 (86.5%) patients had a uterine size < 12 cm. The preferred treatment was pharmacological; 173 (53.9%) patients received misoprostol, which was the only drug used. Among the 116 women treated surgically, uterine curettage and MVA were used in similar proportions (50%) (Table 2).

CHARACTERISTICS OF INITIAL TREATMENT

Among patients with an ET < 15 mm, medical management (MM) was preferentially selected (71.8%), whereas in those with an ET ≥ 15 to < 30 mm, MM and surgical management (SM) were used with equal frequency; measurements ≥ 30 mm were managed exclusively with SM.

According to uterine size, when it was < 12 cm, 55.6% of patients received MM; in contrast, among those with a uterine size ≥ 12 cm, 5 of 8 women (62.5%) underwent SM.

Across all treatment modalities, analgesia was the most frequently provided adjunctive measure. Antibiotic therapy was indicated in 92.2% of women undergoing SM. Overall, analgesia, antibiotics, and rest were the adjunctive measures most commonly associated with SM (Table 3).

TABLE 1. GENERAL CHARACTERISTICS AT ADMISSION OF PATIENTS WITH INCOMPLETE SPONTANEOUS ABORTION TREATED AT HOSPITAL III-SUÁREZ ANGAMOS.

Variables	Frequency	Percentage (%)
Sociodemographic		
Age		
18-34 years	202	62.9
35-45 years	119	37.1
Clinical-pathological		
Presence of comorbidities		
No	273	85.0
Yes	48	15.0
Type of comorbidity		
Hypothyroidism	10	3.1
Hyperthyroidism	3	0.9
Diabetes mellitus	1	0.3
Arterial hypertension	2	0.6
Other comorbidity	33	10.3
Gyneco-obstetric history		
Parity		
Nulliparous	97	30.2
Primiparous	105	32.7
Multiparous	92	28.7
No information	27	8.4
Previous abortions		
None	148	46.1
Single previous abortion	106	33.0
Multiple previous abortions	40	12.5
No information	27	8.4
Total	321	100

POST-TREATMENT FOLLOW-UP

Re-evaluation was more common in the group of patients treated surgically, observed in 69 (59.5%) women. Most re-evaluations took place during the first week after treatment, involving 84 (52.2%) patients. Control endometrial measurement was performed most frequently in patients with MM, in 65 (81.3%) women, and this was the group with the highest number of patients with a successful endometrial assessment (30 patients); however, in percentage terms, it represented 46.2%, whereas SM had a higher ESA with 2 (66.7%) patients. Additional treatment was required only in the EM and MM groups; misoprostol was the additional treatment of choice, with 4 (66.4%) women who had an initial EM and 18 (62.1%) in the MM group receiving it (Table 3).



ADDITIONAL TREATMENT BASED ON ENDOMETRIAL ASSESSMENT OF SUCCESS

Endometrial thickness was measured after EM in 5 patients, of whom 2 cases were considered successful according to the VEE cutoff; despite this, 1 patient received additional treatment. On the other hand, 65 patients who underwent MM had their endometrial thickness measured at reevaluation; according to the ESA, treatment was considered successful in 30 patients, and 4 women received additional treatment (Table 4).

DISCUSSION

In our study, MM with misoprostol was the preferred therapeutic approach, as it was administered to more than half of the women with incomplete spontaneous abortion. On the other hand, among those who required surgical intervention, MVA was the most commonly used procedure. The need for additional treatment varied depending on the initial treatment, being more frequent in patients who received EM, followed by MM; in this group, the preferred additional therapeutic option was pharmacological treatment with misoprostol.

Misoprostol is a frequently used treatment for spontaneous abortion, consistent with a meta-analysis that reported it as the most common intervention, used in 33% of 158 arms across 78 randomized trials⁽¹³⁾. Internationally, mifepristone is also part of the pharmacological treatment; however, a report investigating its registration and availability in Latin American countries, including Peru, found that only Uruguay authorizes its use, limited to voluntary termination of pregnancy⁽¹⁴⁾. Despite this, misoprostol stands as an attractive alternative; a systematic review concluded that misoprostol is a safe and effective option for treating incomplete abortion, as it is associated with lower pain rates and greater patient acceptability compared to the SM with MVA⁽¹⁵⁾. Because it is less invasive and performed on an outpatient basis, the choice of MM may influence the physician and patient receptivity, as reflected in its frequency of use in our study.

With regard to SM, we did not identify a clear preference among treating physicians between

TABLE 2. CLINICAL CHARACTERISTICS AT ADMISSION OF PATIENTS WITH INCOMPLETE SPONTANEOUS ABORTION TREATED AT HOSPITAL III-SUÁREZ ANGAMOS.

Variables	Frequency	Percentage (%)
Abortion Condition		
Without complications	310	96.6
With complications	11	3.4
Excessive or delayed bleeding	5	45.5
Genital and pelvic infection	4	36.4
Embolism	1	9.1
Other/unspecified	1	9.1
Gestational age (weeks)		
<13	247	76.9
>13	20	6.2
No information	54	16.8
Anemia at admission		
Without anemia	207	64.5
Mild anemia	28	8.7
Moderate anemia	22	6.9
Severe anemia	2	0.6
No information	62	19.3
Heart rate		
Normal heart rate (60-100 bpm)	232	72.3
Tachycardia (>100 bpm)	18	5.6
No information	71	22.1
Blood pressure		
Normal (<120/80 mmHg)	239	74.5
Elevated (120 a 129/<80 mmHg)	9	2.8
Stage 1 hypertension (130-139/80-89 mmHg)	2	0.6
Stage 2 hypertension (≥140/90 mmHg)	62	19.3
No information	9	2.8
Endometrial Thickness (mm)		
<15	103	32.1
≥15 - <30	178	55.5
≥30	11	3.4
No information	29	9.0
Uterine size (cm)		
<12	279	86.9
≥12	8	2.5
No information	34	10.6
Indicated management		
Expectant	32	10.0
Medical	173	53.9
Misoprostol	173	100.0
Mifepristone	0	0.0
Surgical	116	36.1
Uterine Curettage	57	49.1
Manual Vacuum Aspiration (MVA)	59	50.9
Pre-surgical dilator drug*		
No	75	66.4
Yes	41	36.3
Total	321	100

*Only for patients with an indication for surgical management (n=116)



TABLE 3. PRE-TREATMENT ULTRASOUND PARAMETERS AND POST-TREATMENT MEASUREMENTS ACCORDING TO THE THERAPEUTIC APPROACH IN WOMEN WITH INCOMPLETE SPONTANEOUS ABORTION.

Variables	Expectant Management (N = 32)		Medical Management (N = 173)		Surgical Management (N = 116)	
	n	%	n	%	n	%
Ultrasound parameter						
Pre-treatment endometrial thickness (mm)						
< 15	21	20.4	74	71.8	8	7.8
≥ 15 - < 30	6	3.4	85	47.7	87	48.9
≥ 30	0	0.0	0	0.0	11	100.0
No information	5	17.2	14	48.3	10	34.5
Pre-treatment uterine size (cm)						
< 12	25	8.9	155	55.6	99	35.5
≥ 12	2	25.0	1	12.5	5	62.5
No information	5	14.7	17	50.0	12	35.3
Clinical Care Characteristics						
Additional Interventions						
Rest	2	6.3	41	23.7	73	62.9
Analgesic	20	62.5	164	94.8	113	97.4
Antibiotic	3	9.4	18	10.4	107	92.2
Reassessment						
No	20	62.5	93	53.8	47	40.5
Yes	12	37.5	80	46.2	69	59.5
Time to reassessment						
Within the first week	10	83.3	40	50.0	34	49.3
Within the second week	0	0.0	26	32.5	28	40.6
Between the third and fourth week	2	16.7	10	12.5	6	8.7
After the fourth week	0	0.0	4	5.0	1	1.5
Additional Management						
No	6	50.0	51	63.8	69	100.0
Yes	6	50.0	29	36.3	0	0.0
Medical	4	66.7	18	62.1	*	*
Misoprostol	4	100.0	18	100.0	*	*
Mifepristone	0	0.0	0	0.0	0	0.0
Surgical	2	33.3	11	37.9	*	*
Uterine curettage	2	100.0	8	72.7	*	*
Manual vacuum aspiration (MVA)	0	0.0	3	27.3	*	*
Pre-surgical dilator drug**						
No	1	50.0	6	54.5	*	*
Yes	1	100.0	5	45.5	*	*
Follow-up endometrial measurement						
No	7	58.3	15	18.8	66	95.7
Yes	5	41.7	65	81.3	3	4.4
Endometrial Successful Assessment						
No	3	60.0	35	53.9	1	33.3
Yes	2	40.0	30	46.2	2	66.7

*Does not apply to the type of treatment, **Applies only to patients indicated for surgical management. For ultrasound parameters, percentages were calculated for the row, while percentages for care characteristics were calculated for the column. In the case of the "additional measures" variable, its categories were not mutually exclusive; that is, there are patients who received more than one measure or all three.



TABLE 4. NEED FOR ADDITIONAL TREATMENT BASED ON ENDOMETRIAL ASSESSMENT OF THE SUCCESS OF THE INITIAL THERAPEUTIC APPROACH.

Variables	ESA-EM n=5		ESA-MM n=65	
	No n (%)	Yes n (%)	No n (%)	Yes n (%)
Additional Management				
No	1 (33.3)	1 (50.0)	14 (40.0)	26 (86.7)
Yes	2 (66.7)	1 (50.0)	21 (60.0)	4 (13.3)
Subtotal	3	2	35	30

ESA: Endometrial Successful Assessment, EM: Expectant Management, MM: Medical Management
The cut-off used to define ESA was ≤ 10 mm (10).

MVA and uterine curettage. This finding may be due to the fact that both procedures have similar efficacy, as reported in a study that compared MVA with uterine curettage in 192 patients with incomplete or missed abortion, finding similar results regarding the amount of fetal tissue remaining after evacuation, pain during the procedure, and associated complications, such as retained products of conception, perforations, or infections⁽¹⁶⁾.

ET is typically used as an ultrasound follow-up measure; however, in our study, it was also analyzed as a criterion to guide treatment. It was observed that SM was performed in all patients with $ET \geq 30$ mm and in most with uterine dimensions ≥ 12 cm, suggesting a tendency to escalate treatment complexity with larger uterine dimensions. The Ipas organization supports this approach, prioritizing uterine size over gestational age to determine treatment for incomplete abortion⁽¹⁷⁾; in contrast to the Hospital San Bartolomé guidelines, which consider the latter to be the primary criterion⁽⁷⁾. Although ET has not been evaluated as a therapeutic parameter, it has been described as a predictor for indicating a SM in cases of retained products of conception following failed abortion treatment, along with serum hemoglobin and ultrasound vascularization⁽¹⁸⁾. Given that incomplete spontaneous abortion involves partial retention of fetal tissue, the diagnostic similarity suggests exploring the use of ET prior to treatment to determine whether it plays a role similar to that of uterine size as the primary criterion⁽⁷⁾.

SM required more analgesic support and post-treatment follow-up, which may be due to the complexity of the procedure. A meta-analysis showed that women treated with oral misoprostol were 15% less likely to require analgesia compared to those who underwent surgery,

while those who received vaginal misoprostol were 75% more likely to require additional analgesia than those who underwent SM⁽⁵⁾, highlighting the importance of the route of administration in MM.

Reevaluation frequently occurred during the first week following treatment, a timeframe that coincides with the range of ultrasound and clinical assessment of abortion resolution (between 3 days and 8 weeks) reported in clinical trials from a systematic review⁽⁵⁾. Variability in follow-up time could be related to the type of treatment, medical recommendations, and the responsibility assumed by the patient.

During reevaluation, it was found that women initially treated with EM or MM required an additional intervention, unlike patients treated surgically, for whom this was not necessary. In a retrospective cohort study in Innsbruck, Austria, a success rate of nearly 89% was reported for MM⁽¹⁹⁾. However, another retrospective study reported that 5.6% of patients undergoing MM required additional hysteroscopy, whereas none of the patients undergoing SM did⁽²⁰⁾, highlighting the effectiveness of this approach.

In more than 60% of cases for each group (EM and MM), the adjunctive treatment was pharmacological therapy with misoprostol. This is consistent with a study in Canada, in which, following the administration of mifepristone followed by two oral doses of misoprostol, 29 of the 169 women who achieved expulsion of the gestational sac required additional treatment due to retained products of conception. Of these, 19 received a third dose of misoprostol. In total, two doses were effective in 82.4% (140 of 169) of the women, which could explain both the observed efficacy and the preference for administering an additional dose of the same drug rather than opting for an alternative treatment⁽²¹⁾.

Furthermore, there is no parameter defining treatment success in Peru, nor are there institutional guidelines at the hospital where the study was conducted. Although various cutoff points are described in the literature, a cutoff of ≤ 10 mm was used. This value, although it has varied over time, was considered appropriate as it offers a narrower margin for evaluating therapeutic efficacy⁽¹⁰⁾. Half of the patients with measured ET who received MM achieved success;



however, some of them, despite meeting this criterion, received additional treatment. The same was observed in women with EM, which raises the possibility that the cutoff point used may not be the most appropriate, considering that other authors propose success with an ET ≤ 15 mm⁽²²⁾.

However, a higher cutoff point would simply increase the number of patients classified as successful, without ruling out the possibility that some of them may have required additional treatment, thereby increasing this discrepancy. This aspect still needs to be clarified in national clinical practice guidelines, especially considering that the American College of Obstetricians and Gynecologists use the ET to determine treatment success with a ET <30 mm in the absence of a gestational sac⁽⁸⁾. In turn, attention should be paid to other ultrasound findings, particularly in the evaluation of persistent gestational remnants following failed treatment, which includes the assessment of hyperechoic or echogenic material and color Doppler⁽²³⁾.

The most common age group was 18–34 years, with an overall average age of 32 years, similar to that reported in Spain, where the average age was 33.3 years⁽⁹⁾. A study conducted in Norway showed that among women under 20 years of age, the prevalence of spontaneous abortion was 16.7%, while among women over 45, the prevalence reached 56.9%, demonstrating a higher risk of abortion with increasing age⁽²⁴⁾. One-third of the patients were primiparous; these are associated with a higher risk of miscarriage and preterm birth compared to multiparous women with no history⁽²⁵⁾. Likewise, one-third reported previous miscarriages, a factor associated with a progressive increase in the risk of recurrence, with a 54%, 121%, and 291% higher risk after 1, 2, and 3 consecutive miscarriages, respectively⁽²⁴⁾. This could reflect greater biological vulnerability during early pregnancies, justifying the need for close monitoring.

Hypothyroidism was the most common comorbidity, a condition that increases the risk of spontaneous abortion by 2 to 4 times⁽²⁶⁾, underscoring the importance of thyroid screening in prenatal care. Since most miscarriages occur before 14 weeks⁽¹³⁾, our results are consistent with this, showing a predominance of early pregnancy losses. These are associated with a higher risk of heavy bleeding⁽²⁷⁾, consistent with the most

prevalent complication in the study: excessive bleeding. In addition, moderate anemia was identified in some patients, possibly pre-existing, as there is a higher risk of threatened miscarriage in anemic pregnant women (13.8% vs. 5.3% in non-anemic women)⁽²⁸⁾. Hypertension in the first trimester doubles the probability of spontaneous abortion⁽²⁹⁾, with nearly 20% of patients having stage 2 hypertension at admission.

Finally, the main limitation of our study was the lack of recorded information in the medical records. This situation could indicate probable underreporting, particularly in the calculation of gestational age, due to the absence of ultrasound reports. Furthermore, since we included patients up to December 31, in some cases it was not possible to assess the phenomenon of re-evaluation, and therefore neither additional treatment nor ESA. Therefore, future research should establish a minimum post-treatment follow-up period to address this aspect in detail. Finally, psychological counseling was not evaluated as part of the treatment, a key element for a comprehensive approach that considers both the physical and mental health of patients experiencing an incomplete spontaneous abortion.

CONCLUSIONS

In this study, MM was established as the first-line treatment for incomplete spontaneous abortions. Our findings show that endometrial thickness and uterine size are useful parameters for guiding treatment decisions in routine care; however, there remains limited national evidence supporting the use of these clinical parameters and their cutoff points. Furthermore, the absence of a cutoff point confirming treatment success widens the knowledge gap; therefore, prospective studies should be conducted to help guide clinical decisions and serve as a basis for developing future clinical practice guidelines that strengthen care for incomplete spontaneous abortion in women of childbearing age.

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