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OUTCOME OF MANUAL VACUUM ASPIRATION IN EARLY PREGNANCY LOSS

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ABSTRACT

Introduction: *Spontaneous abortion, affecting up to 20% of clinically recognized pregnancies, presents significant clinical challenges. Traditionally managed by uterine evacuation via curettage, recent studies advocate for alternatives like misoprostol, prompting a shift in treatment paradigms. This study investigates outcomes following Manual Vacuum Aspiration (MVA) for early pregnancy loss, contrasting traditional methods with newer approaches. It aims to quantify hospital stay duration, procedure efficacy, and complications such as retained products of conception (RPOC). By addressing gaps in local literature, the study seeks to inform obstetric practice and advance knowledge in managing early pregnancy loss effectively.*

Objective: *To evaluate the outcomes after manual vacuum aspiration in women with early pregnancy loss.*

Methods: *A descriptive case series was conducted at the Department of Obstetrics and Gynaecology, Lady Reading Hospital, Peshawar, from February 26, 2022, to August 26, 2022. A total of 222 patients with early pregnancy loss were observed using a non-probability consecutive sampling technique. Outcomes measured included duration of procedure, hospital stay, blood loss, and the incidence of RPOC as detected by ultrasound.*

Results: *The age distribution of the 222 patients showed that 28% were aged 15-20 years, 62% were 21-30 years, and 10% were 31-45 years, with a mean age of 30.6 ± 3.6 years. Weight distribution indicated that 43% weighed 61-70 kg, 45% weighed 71-80 kg, and 12% weighed 81-90 kg, with a mean weight of 70 ± 8.6 kg. Regarding the period of gestation, 61% were between 15-17 weeks and 39% between 18-20 weeks, with a mean gestational age of 18.2 ± 1.5 weeks. The procedure duration was less than 5 minutes in 66% of cases and more than 5 minutes in 34%. Hospital stay was under 24 hours for 72% of patients and over 24 hours for 28%. Blood loss was less than 40 ml in 67% and more than 40 ml in 33% of patients. Retained products of conception were detected in 5.5% of cases.*

Conclusion: *Manual vacuum aspiration is an effective option for managing first-trimester pregnancy losses, demonstrating high efficacy with minimal complications. Further comparisons with other treatment modalities are warranted to solidify its standing in obstetric practice.*

Keywords: *Manual vacuum aspiration, spontaneous abortion, early pregnancy loss, uterine evacuation, retained products of conception.*

INTRODUCTION

Spontaneous abortion, defined as the loss of pregnancy before 20 weeks of gestation, affects up to 20% of clinically recognized pregnancies [1]. This condition poses significant clinical challenges, traditionally managed through surgical means such as uterine evacuation via curettage. However, advancements in medical treatments, notably the use of misoprostol, have introduced alternatives that offer different efficacy and safety profiles [4].

A completed abortion is clinically diagnosed when all products of conception (POC) are expelled, the uterus is contracted, and the cervical os is closed [5]. Incomplete abortions, where POC remain, can lead to complications like infection and hemorrhage [1]. Accurate diagnosis, often requiring ultrasound, is crucial for appropriate management [6][7].

The World Health Organization (WHO) and the International Federation of Gynecology and Obstetrics (FIGO) advocate for the use of suction methods, including Manual Vacuum Aspiration (MVA), over traditional sharp curettage due to better safety profiles and lower risks of complications such as Asherman's syndrome [8]. MVA has gained prominence since the 1990s and is now widely used for various indications, including missed miscarriages and medical terminations [10][11].

In Pakistan, the adoption of MVA has been limited, with most uterine evacuations still performed using dilation and curettage (D&C). Given the high rate of unsafe abortions and related complications in developing countries, the introduction and evaluation of MVA could significantly impact maternal health outcomes [2][3]. This study aims to evaluate the outcomes of MVA in managing early pregnancy loss, providing valuable data for local obstetric practice.

Literature Review

Abortion and Its Management

Abortion refers to the termination of pregnancy before the fetus is capable of extrauterine life. It can be spontaneous (miscarriage) or induced, the latter being further categorized into therapeutic and elective abortions [11]. Therapeutic abortions are performed to preserve maternal health or due to fetal anomalies, while elective abortions are sought for non-medical reasons [15][16].

The methods of abortion have evolved significantly. Medical abortions using mifepristone and prostaglandins have become prevalent in the first trimester due to their effectiveness and non-invasiveness [28][38]. Surgical methods, particularly vacuum aspiration, remain standard in many settings, especially where medical abortion resources are limited [52][53].

Manual Vacuum Aspiration (MVA)

MVA involves the removal of POC using a manual syringe attached to a cannula, offering a safe and effective alternative to electric vacuum aspiration and D&C [10][11]. Studies have demonstrated high efficacy rates, often exceeding 95%, with low complication rates [13][17]. MVA's portability and minimal equipment requirements make it especially suitable for low-resource settings [25].

Complications of Abortion Procedures

Complications from abortion can range from minor to severe, including hemorrhage, infection (septic abortion), and uterine perforation [63][64]. The risk of complications increases with gestational age and the invasiveness of the procedure [1][73]. Safe abortion practices, as recommended by WHO, significantly reduce maternal mortality and morbidity [60][61].

Post-Abortion Care and Contraception

Post-abortion care (PAC) is critical in preventing repeat unintended pregnancies and subsequent unsafe abortions. Effective PAC includes comprehensive family planning services, counseling, and access to contraceptive methods [5][7]. Studies indicate that improved PAC can substantially reduce the incidence of unsafe abortions and related complications [8][17].

Gaps in Literature
While numerous studies have assessed MVA's efficacy and safety, there is a paucity of data specific to the local context in Pakistan. This study aims to fill this gap by providing region-specific insights into MVA outcomes in early pregnancy loss.

Objective
To evaluate the outcomes after manual vacuum aspiration in women with early pregnancy loss.

Materials and Methods

Study Setting and Design
This descriptive case series was conducted at the Department of Obstetrics and Gynaecology, Lady Reading Hospital, Peshawar, over a six-month period from February 26, 2022, to August 26, 2022.

Sample Size and Sampling Technique
A total of 222 patients were included, determined based on a 5.5% incidence of RPOC post-MVA with a 95% confidence level and 3% absolute precision. A non-probability consecutive sampling method was employed to select participants.

Inclusion and Exclusion Criteria
Inclusion criteria encompassed all women aged 15-45 years presenting with early pregnancy loss (up to 12 weeks gestation). Exclusion criteria included women with a history of trauma during pregnancy or those with known bleeding disorders.

Data Collection Procedure
Following ethical approval and informed consent, women meeting the selection criteria were enrolled through the outpatient or emergency departments. Detailed histories and clinical examinations were conducted, followed by the MVA procedure performed by an expert obstetrician fellow of CPSP. Outcomes measured included procedure duration, hospital stay, blood loss, and RPOC, monitored until discharge.

Outcome Definitions
- **Duration of Procedure:** Time from induction of anesthesia to reported completion, categorized as <5 minutes or >5 minutes.
- **Hospital Stay:** Time from procedure completion to discharge, categorized as <24 hours or >24 hours.
- **Blood Loss:** Estimated using pre-weighted sanitary pads, with 1.06 g equating to 1 ml of blood, categorized as <40 ml or >40 ml.
- **RPOC on Ultrasound:** Detected by two of the following after 10 days post-MVA: endometrial thickness >10 mm, irregular endometrial-myometrial interface, hyperechoic/hypoechoic uterine contents, or presence of an endometrial mass.

Data Analysis
Data were analyzed using SPSS 20.0. Quantitative variables were presented as mean ± standard deviation, while categorical variables were expressed as frequencies and percentages. Chi-square tests were used to assess associations, with a p-value <0.05 considered significant.

Results

Demographics and Clinical Characteristics

Among the 222 patients, 28% were aged 15-20 years, 62% were 21-30 years, and 10% were 31-45 years, with a mean age of 30.6 ± 3.6 years. Weight distribution revealed 43% weighed 61-70 kg, 45% weighed 71-80 kg, and 12% weighed 81-90 kg, with a mean weight of 70 ± 8.6 kg. Regarding gestational age, 61% were between 15-17 weeks, and 39% were between 18-20 weeks, with a mean gestational age of 18.2 ± 1.5 weeks as shown in **TABLE 1.** The majority (66%) had procedures lasting less than 5 minutes, while 34% exceeded 5 minutes as shown in **TABLE 2**. Hospital stays were under 24 hours for 72% and over 24 hours for 28% as shown in **TABLE 3**. Blood loss was less than 40 ml in 67% and more than 40 ml in 33%. RPOC was detected in 5.5% of cases.

Associations and Stratifications

- **Duration of Procedure:** There was a significant association between age, gestational period, residency, and procedure duration (p=0.003). Younger patients (15-20 years) and those in the earlier gestational period (15-17 weeks) were more likely to have shorter procedures.
- **Hospital Stay:** Significant associations were found with age, gestational period, and residency (p=0.035). Younger age groups and those from urban areas tended to have shorter hospital stays.
- **Blood Loss:** Age, gestational period, and residency were significantly associated with blood loss (p=0.001). Higher blood loss was more common in older age groups and higher gestational periods.

FIGURE 1 : pie chart shows age distribution among 222 patients.

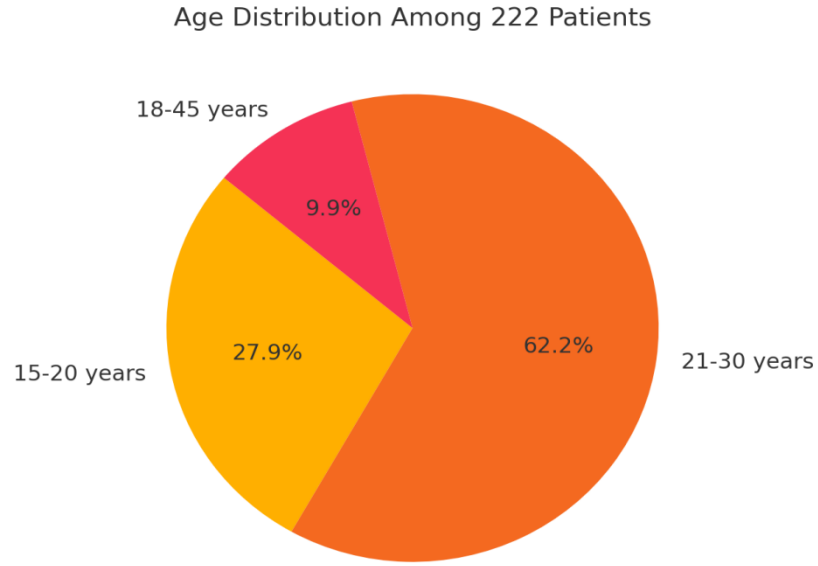

TABLE NO 1. PERIOD OF GESTATION (n=222)

Period of Gestation (POG)	Number of Patients	Percentage
POG Range: 15-17 weeks	135	61%
POG Range: 18-20 weeks	87	39%
Mean POG	18.2 weeks	-
Standard Deviation (SD)	± 1.5	-

TABLE 2 : DURATION OF PROCEDURE (n=222)

Duration of Procedure	Number of Patients	Percentage
< 5 minutes	147	66%
> 5 minutes	75	34%

TABLE 3 : HOSPITAL STAY (n=222)

Hospital Stay Duration	Percentage
Under 24 hours	72%
Over 24 hours	28%

Stratification Tables:
Significant associations were noted between demographic factors and outcomes across procedure duration, hospital stay, and blood loss, indicating that younger age, lower gestational age, and urban residency correlated with more favorable outcomes.

Discussion
Missed miscarriage is a prevalent gynecological condition necessitating effective termination methods. Traditionally managed by D&C, the introduction of MVA in Pakistan offers a safer and more efficient alternative. This study evaluated the efficacy and safety of MVA in 222 women with early pregnancy loss.
The mean age of participants was consistent with global demographics, predominantly affecting women in their reproductive prime (21-30 years). The high efficacy rate of MVA (94.5%) aligns with existing literature, which reports success rates between 96-98% [13][17]. The procedure duration being less than 5

minutes in two-thirds of cases reflects MVA's efficiency, corroborating studies that highlight its swift execution [14][15].

Hospital stay durations under 24 hours in 72% of patients indicate MVA's suitability for outpatient settings, reducing healthcare costs and resource utilization. Blood loss was minimal in the majority, with only 33% experiencing more than 40 ml, underscoring MVA's safety profile compared to more invasive methods like D&C [16][17].

The incidence of RPOC at 5.5% falls within the range reported in other studies (4.4-5.5%) [13][18], suggesting consistent effectiveness. Factors such as higher age, increased gestational age, and rural residency were associated with longer procedures, extended hospital stays, and greater blood loss. These findings may reflect anatomical variations, delayed presentation, or differing levels of healthcare access in rural areas.

Compared to other studies, this research supports WHO's recommendation of MVA as a safe and effective method for managing early pregnancy loss [8]. The study's strengths include its sizable sample and real-world setting, providing valuable local data. However, limitations include its descriptive nature and potential selection bias due to the non-probability sampling method.

Future research should involve comparative studies between MVA and other methods like misoprostol to evaluate relative efficacy, patient satisfaction, and long-term outcomes. Additionally, training programs to enhance MVA proficiency among healthcare providers in Pakistan could further optimize outcomes.

Conclusion

Manual vacuum aspiration is a highly effective and safe method for managing first-trimester pregnancy losses, demonstrating high success rates with minimal complications. Its efficiency and suitability for outpatient settings make it a viable alternative to traditional surgical methods. Further comparative studies are recommended to establish its advantages over other treatment options definitively.

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Appendix

Outcome of Manual Vacuum Aspiration in Early Pregnancy Loss

PRO-FORMA Case No: _____

Date: _____

*Hospital Reg. No:*_____

Patient Information:

- **Name:** _____
- **Spouse:** _____
- **Age:**_____ (years)
- **Address:** _____
- **Height:** _____
- **Weight:** _____
- **BMI:** _____ kg/m²
- **Residence:**
  - Urban
  - Rural

Period of Gestation at Presentation: _____ weeks

Outcome:

- **Duration of Procedure:** _____ minutes
  - < 5 minutes
  - > 5 minutes
- **Hospital Stay:** _____ hours
  - < 24 hours
  - > 24 hours
- **Blood Loss:** _____ ml
  - < 40 ml
  - > 40 ml
- **Cost of Procedure:** _____ PKR
- **Retained Products of Conception (RPOC):**
  - Yes
    No