

## ORIGINAL ARTICLE

**Effectiveness of Manual Vacuum Aspiration in the Management of Miscarriage and Retained Products of Conception**IFAT BALOUCH<sup>1</sup>, HINA AKMAL<sup>2</sup>, FARYAL SARDAR<sup>3</sup>, ZAHIDA PARVEEN BROHI<sup>4</sup>, SABREENA TALPUR<sup>5</sup>, MARYAM PHULPOTO<sup>6</sup><sup>1,6</sup>Assistant Professor of gynaec and OBS, BMC for boys Jamshoro<sup>2,3</sup>Obstetrician and gynecologist at DHQ Hospital Kotri<sup>4</sup>Associate Professor, obstetrics and gynecology, BMC for boys, LUMHS/Jamshoro<sup>5</sup>Assistant Professor of gynaec and OBS, LUMHS/ Jamshoro

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**ABSTRACT****Objective:** To assess the efficacy of manual vacuum aspiration (MVA) in terms of complications and complete uterine evacuation of the product of conception.**Study design:** Descriptive cross-sectional study.**Place and duration:** Department of Obstetrics and Gynecology, Bilawal Medical College, DHQ Hospital Kotri and CDF Hospital Hyderabad, from April 2020 to March 2021.**Patient and method:** All the patients with gestational of <14 weeks, and the diagnosis of missed miscarriage, blighted ovum, partial miscarriage, or RPOCs, who were undergone MVA was carried out. Primary outcome measures were efficacy and secondary outcome measures were to assess prevalence of complications including pain and cramps, infection and bleeding. Effectiveness was considered in terms of complete or incomplete evacuation. All the information was documented via a self-made study proforma.**Results:** A total of 83 patients were scheduled to undergo MVA. Majority of the cases 41.0% were presented with gestation age of 9 to 12 weeks. Most of the cases 56.6% had incomplete miscarriage, 31.3% were with missed miscarriage and 12.0% women had RPOCs. Mild to moderate pain and cramps were present in 91.60% of the cases, while only 6.0% of the cases had bleeding, and infection developed in 2 cases. According to effectiveness, complete evacuation was achieved in 81.9% of the cases.**Conclusion:** MVA is effective in the complete emptying of the uterine cavity and has high rates of acceptability and satisfaction. It reduces the waiting time for surgery, hospital stays, and GA complications. It is gradually gaining acceptability as a standard surgical procedure for safe early pregnancy termination.**Keywords:** Efficacy, safety, MVA, uterine evacuation, conception**INTRODUCTION**

Early loss of pregnancy, commonly referred to as miscarriage or abortion, is a frequent occurrence for women and constitutes the majority of pregnancy losses.<sup>1</sup> It is estimated that one in four women may face a miscarriage in their lifetime, with a yearly rate of 29 per 1000 among females aged 15 to 49 years.<sup>2,3</sup> This high rate of miscarriages is particularly prevalent in developing nations, where unplanned pregnancies are more common and result in a higher rate of miscarriage due to inadequate prenatal care, malnutrition, or medical intervention.<sup>4</sup> Inadequate care following an abortion is a major primary contributor to maternal mortality, contributing for around 7.9 percent of all maternal mortality.<sup>4</sup> Although it is estimated that between 5.6% and 11% of all maternal deaths occur in Pakistan, caused by induced and spontaneous abortions.<sup>4,5</sup> The therapeutic interventions include either waiting it out, medical treatment, or surgical intervention, based on the clinical conditions and the preferences of the patients.<sup>6</sup> Although expecting management typically requires longer time, therefore most of the time, medical or surgical approaches are favored over expectant management in clinical practice, and this is due to greater psychological concerns in both the patient and her caretakers.<sup>6,7</sup> However, D&C is commonly used even though, it usually requires general anesthesia, must be performed in an operating room, and can cause patients to spend more time in the hospital, all at a higher cost.<sup>8</sup> Manual vacuum aspiration seems to be the procedure of choice in the early stages of pregnancy. However, some of these skilled midwives had worked out how to use MVA even in really difficult settings.<sup>9</sup> MVA provides an alternative to surgical therapy for miscarriage that has been shown to be safe and successful and can be done in an outpatient setting with the use of local anesthesia.<sup>9</sup> MVA decreases the amount of time patients have to wait for surgery, the expense of their stay in the hospital, and the risk of complications linked to general anesthesia, additionally, it more offers the range of options available to patients. For more than 30 years, MVA has been widely used to treat incomplete abortions, early pregnancy termination, and endometrium sampling.<sup>10</sup> The MVA approach

seems to be a workplace procedure that is performed manually. As part of the procedure, a plastic, flexible catheter is attached to a syringe with a capacity of 60 ml.<sup>10</sup> In spite of the reality that Pakistan is a developing nation with few available resources, the MVA approach is not utilized to the same extent there as it is in the USA, European and other Asian countries.<sup>2</sup> In comparison to the D&C procedure, which has the possibility of causing significant blood loss, infections of the pelvis, injuries of the cervix, and perforation of the uterus, data reveals that 93% of surgeries involving vacuum aspiration are successful. But we don't have complete access to it yet. However, this study aims to determine the effectiveness of MVA in preventing miscarriages and RPOCs and to raise awareness and increase acceptance of this method in managing first trimester pregnancy loss among clinicians.

**MATERIAL AND METHODS**

This descriptive cross-sectional study was done at the department of Obstetrics and Gynecology, Bilawal Medical College, DHQ Hospital Kotri and CDF Hospital Hyderabad. Study duration was one year from April 2020 to March 2021. All the patients with gestational of <14 weeks, and the diagnosis of missed miscarriage, blighted ovum, partial miscarriage, or RPOCs, who were undergone MVA was carried out. Data of the patients with septic abortion, hemodynamic instability, severe anemia, molar pregnancy, history of bleeding disorder and comorbidities and uterine anomalies was excluded. Primary outcome measures were efficacy and secondary outcome measures were to assess prevalence of complications including pain and cramps, infection and bleeding. Effectiveness was considered in terms of complete or incomplete evacuation. All the information was documented via a self-made study proforma. SPSS version 26 was used for the data analysis.

**RESULTS**

According to the data, 83 (2.84%) of the 2920 admissions were treated by MVA for early pregnancy loss, incomplete miscarriage, and retained products of conception. Out of 83 cases, 42.2% of

women were in the age range of 18–25 years, with an average age of 29.23+5.13 years. The majority of cases (41.0%) had a gestational age of 9 to 12 weeks. Out of all, 19.3% of women were primiparous, and the rest of the cases were multiparous. Most of the cases 56.6% had an incomplete miscarriage, 31.3% had a missed miscarriage, and 12.0% had RPOCs, as shown in Table 1.

According to the complications, mild to moderate pain and cramps occurred in 91.60% of the cases, while 6.0% cases had bleeding, and infection developed in 2 cases. Fig:1

According to the effectiveness, complete evacuation was achieved in 81.9% of the cases and incomplete evacuation was found in only 18.1% of the cases. Fig:2

Table 1: Demographic information of the patients n=83

Variables	Statistics
Age groups	18 – 25 years 35(42.2%)
	26 – 32 years 32(38.6%)
	>32 years 16(19.3%)
Gestational age	Up to 8 weeks 20(24.1%)
	9 – 12 weeks 34(41.0%)
	Post-partum 29(34.9%)
Parity	Primipara 16(19.3%)
	Multi (para 2-4) 33(40.8%)
	Multi (para >4) 34(41.0%)
Diagnosis	Missed miscarriage 26(31.3%)
	Incomplete miscarriage 47(56.6%)
	RPOCs 10(12.0%)

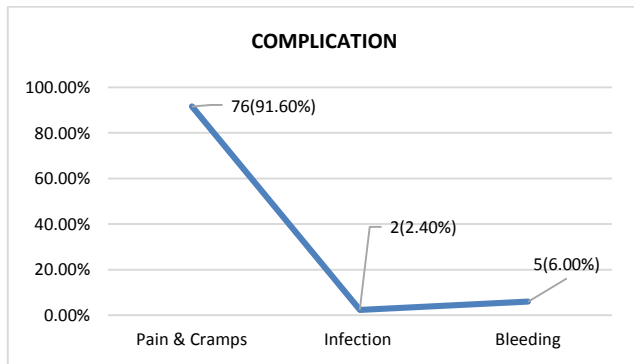


Figure 1: Complications in patients underwent MVA n=83

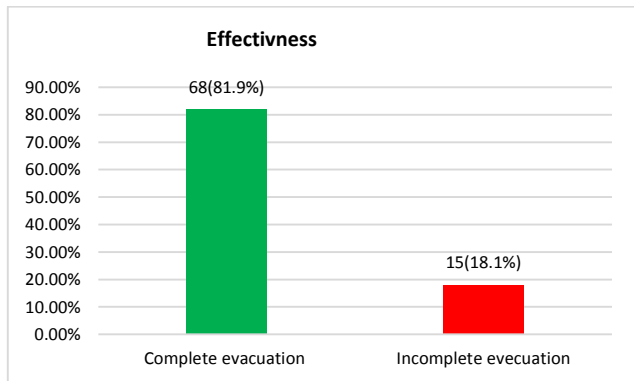


Figure 2L Effectiveness in patients underwent MVA n=83

**DISCUSSION**

The miscarriage seems to be an occurrence in a woman's life that is beyond their influence, and it requires specific care to manage the consequences of the event. The present study has been conducted to evaluate the effectiveness of manual vacuum aspiration (MVA) in terms of complications and complete uterine evacuation of the product of conception, and a total of 83 patients were scheduled to undergo MVA; their mean age was 29.23+5.13

years. According to Khalil S et al., the average age of women who underwent MVA treatment was 28.55 + 5.22 years. In another study, Karavani G et al<sup>10</sup> also reported that the patients' average age was 29.6+ 5.5 years. In this study, 19.3% of women were primiparous, and the rest of the cases were multiparous. These findings were almost similar to the study by Tasnim N et al<sup>1</sup> as the multiparous women were the majority. These findings were also supported by Akmal F et al<sup>6</sup>, as in their study (in the MVA group), nulliparous women were 26%, while multiparous (para 1-3) women were 52%, and 22% of women were para 4 or above. Although Kishwar N et al<sup>12</sup> also found comparable findings regarding parity.

The majority of cases in this study had an incomplete miscarriage, 31.3% had a missed miscarriage, and 12.0% had RPOCs. In the comparison of these findings, Kishwar N et al<sup>12</sup> also reported that 42.50% of the women had an incomplete miscarriage, 26.25% of the women had missed a miscarriage, while in 31.25% of the women they found a blighted ovum. In the line of this series the Tasnim N et al<sup>2</sup>, consistently reported that the incomplete miscarriage was seen in 37 (47.4) of the women, missed miscarriage was in 28 (35.8%) of the study subjects, while they found 16.6% of the women had anembryonic pregnancy in outdoor group. However, Akmal F et al<sup>6</sup> also demonstrated that the incomplete miscarriage was 54%, missed miscarriage was 30% and blighted ovum was 4%, while RPOCs events were in the 12% of the women in MVA group. However, it is not accurate to say that one type of miscarriage is more frequent than another. The frequency of each type of pregnancy loss can vary depending on several factors, such as age, lifestyle, and medical history.

In this study, in accordance to the complications, mild to moderate pain and cramps were present in 91.60% of the cases, while only 6.0% of the cases had bleeding, and infection developed in 2 cases. Chowdhury M et al.<sup>13</sup>, on the other hand, reported that 66% of the women had lower abdominal pain, 14% of the patients had fleshy mass passage, and 18% of the women were hemodynamically unstable. In another study, Ibiyemi KF et al<sup>14</sup> reported that 5.2% of the women had abdominal pain and 11.5% of the women had vaginal bleeding in the MVA group. In this study, in accordance to the effectiveness of MVA, complete evacuation was achieved in 81.9% of the cases, and only in 18.1% of the cases the evacuation was incomplete. These findings were supported by Kishwar N et al<sup>12</sup> as they reported that 93.75 percent of women were comfortable with the MVA and only 91.25% required anesthesia or analgesics. According to Akmal F et al. (2006), the MVA is equivalent to surgical evacuation in terms of safety, effectiveness, fewer complications, and better patient satisfaction, as well as superior in terms of shorter hospital stays, no need for anesthesia, and access to the operating room. <sup>6</sup> MVA was conducted in the operative room, and after the procedures, the patients were discharged within a few hours as a routine hospital policy; those who were clinically stable, while those who complained of severe pain or experienced excessive vaginal bleeding were admitted to the hospital's inpatient unit until they reached a stable condition. There were several limitations to the study, specifically the limited sample size, not compared with any other technique. It is important to keep in mind that the effectiveness of MVA may vary depending on individual factors such as the gestational age of the pregnancy, the amount and type of pregnancy tissue present, and the patient's medical history. Although the MVA requires a trained and experienced practitioner to perform the procedure effectively and safely.

**CONCLUSION**

MVA has been observed to be an effective management tool in completely emptying the uterine cavity and has high rates of acceptability and satisfaction among patients. The procedure reduces the waiting time for surgery, hospital stay, and the risk of complications associated with general anesthesia. As a result, MVA is gradually gaining acceptance as a standard surgical procedure for safe early pregnancy termination.

## REFERENCES

- 1 Tasnim N, Mahmud G, Fatima S, Sultana M. Manual vacuum aspiration: a safe and cost-effective substitute of electric vacuum aspiration for the surgical management of early pregnancy loss. *Hypertension*. 2011;1(2):149-53
- 2 Tasnim N, Fatima S, Mahmud G. Manual vacuum aspirator: a safe and effective tool for decentralization of post miscarriage care. *J Coll Physicians Surg Pak*. 2014 Nov 1;24(11):815-9.
- 3 Sattar ZA, Singh S, Fikree FF. Estimating the incidence of abortion in Pakistan. *Stud Fam Plann* 2007; 38:11-22
- 4 Khalil S, Shaheen N. Misoprostol Versus Outpatient Manual Vacuum Aspiration (MVA) for Termination of Pregnancy: A Quasi Experimental Study. *Journal of Islamic International Medical College (JIIMC)*. 2019 Mar 1;14(1):3-7.
- 5 Zaidi S, Begum F, Tank J, Chaudhury P, Yasmin H, Dissanayake M. Achievements of the FIGO Initiative for the Prevention of Unsafe Abortion and its Consequences in South-South east Asia. *Int J Gynaecol Obstet*. 2014;126 Suppl 1:20-3.
- 6 Akmal F, Suboohi S, Pario S, Abbasi S, Siddiqui SH. Outcome Of Manual Vacuum Aspiration Vs Surgical Evacuation. *Journal of Bahria University Medical and Dental College*. 2019 Dec 31;9(4):303-7.
- 7 Kumar P, Malhotra N. *Jeffcoate's principles of gynaecology*. Jaypee Brothers Medical Pub.; 2008.
- 8 Bourret KM, Larocque S, Hien A, Hogue C, Muray K, Lukusa AT, Ngabo AM. Midwives' integration of post abortion manual vacuum aspiration in the Democratic Republic of Congo: a mixed methods case study & positive deviance assessment. *BMC Health Services Research*. 2020 Dec;20(1):1-6.
- 9 Sharma M. Manual vacuum aspiration: an outpatient alternative for surgical management of miscarriage. *The Obstetrician & Gynaecologist*. 2015 Jul;17(3):157-61.
- 10 Karavani G, Bahar R, Herzberg S, Yanai N. A "see and treat" office procedure for retained products of conception removal after normal vaginal delivery using manual vacuum aspiration: preliminary efficacy and reproductive outcomes. *Journal of Minimally Invasive Gynecology*. 2017 Sep 1;24(6):1007-13.
- 11 Ahmad B, Utman N, Inayat K, Safdar S, Afridi S, Saleh H. Early Pregnancy Loss: Manual Vacuum Aspiration (MVA) Vs. Conventional Evacuation and Curettage. *Pakistan Journal of Medical & Health Sciences*. 2022 Aug 18;16(06):696-.
- 12 Fatima Y, Firdos S, Sajid M. Comparison of Manual Vacuum Aspiration Versus DNC in First Trimmer Pregnancy Failures in Terms of Efficacy and Safety at Peripheral Hospital Settings of Balochistan. *Journal of The Society of Obstetricians and Gynaecologists of Pakistan*. 2020 Aug 13;10(2):106-9.
- 12 Kishwar N, Ali S, Sadaf R, Karim R, Azeem T, Parveen Z. Efficacy of Manual Vacuum Aspiration Vs Conventional Evacuation and Curettage. *J Gandhara Med Dent Sci*. 2022;9(3): 75-81
- 13 Chowdhury M, Rahman D. Surgical Management of Incomplete Abortion by Manual Vacuum Aspiration (MVA). *Mymensingh medical journal: MMJ*. 2019;1;28(4):900-5.
- 14 Ibiyemi KF, Munir'deen AI, Adesina KT. Randomized trial of oral misoprostol versus manual vacuum aspiration for the treatment of incomplete abortion at a Nigerian Tertiary Hospital. *Sultan Qaboos University Medical Journal*. 2019 Feb;19(1):e38.