DOI: https://doi.org/10.53350/pjmhs2023174205

ORIGINAL ARTICLE

Manual Vacuum Aspiration vs Vaginal Misoprostol for the Management of First-Trimester Incomplete Miscarriage in term of complete abortion

SHAMS UN NISA[1], SADAF UN NISA[2], MAHNOOR ATHAR[3], NADIA ZULFIQAR[4], BILQEES AKHTAR MALIK[5], MAHJABEEN HIRA[6]
[1]*Assistant Professor of Obstetrics & Gynecology, Bahawal Victoria Hospital, Bahawalpur*
[2]*Senior Registrar, Department of Obstetrics & Gynecology, Bahawal Victoria Hospital, Bahawalpur*
[3]*Woman Medical Officer, Department of Obstetrics & Gynecology, Sheikh Zaid Hospital, Rahim Yar Khan*
[4]*Assistant Professor of Obstetrics and Gynecology, Aziz Fatimah Hospital Faisalabad*
[5]*Classified Gynecologist, Department of Obstetrics & Gynecology, PEMH Rawalpindi*
[6]*Woman Medical Officer, Department of Obstetrics and Gynecology, DHQ Kasur*
Correspondence TO Dr. Shams un Nisa, Email: drshamaamin73@gmail.com, Cell: 0301 7706383

ABSTRACT

Aim: To compare the complete abortion rate between manual vacuum aspiration and vaginal misoprostol for the management of First-Trimester Incomplete Miscarriage in term of complete abortion
Study design: Randomized Controlled Trial.
Study duration: April 2022 to October 2022.
Setting: Department of Obstetrics & Gynecology Bahawal Victoria Hospital Bahawalpur.
Methods: A total of 120 patients with First-Trimester Incomplete Miscarriage were chosen and equally divided into the MVA group and the MM group. The effectiveness of achieving a complete abortion was compared between the two groups.
Results: Total 120 patients were selected. In MVA group, mean age and mean gestational was 31.47±5.82 years and 6.92±3.39 weeks while in MM group was 30.87±6.86 years and 5.78±3.47 weeks. Complete abortion was noted in 53(88.33%) patients of MVA group while in 44(73.33%) patients of MM group. Significantly (P=0.036) higher Efficacy (Complete abortion) rate was noted in MVA group.
Practical Implication: It is a very good option in hospitals with low resources and in developing countries like Pakistan.
Conclusion: In this study, we found MVA had higher complete abortion rate as compared to misoprostol intra vaginally. So, MVA is better treatment option than misoprostol intra vaginally as it has no systemic effects and it is a very good option in hospitals with low resources and in developing countries like Pakistan.
Key words: Miscarriage, MVA, vaginal misoprostol, incomplete abortion, Gynecology, Pakistan

INTRODUCTION

First-trimester missed miscarriage is a common condition affecting approximately 10-20% of all pregnancies[1]. This condition occurs when the fetus has died but remains in the uterus, leading to the absence of clinical symptoms such as vaginal bleeding or cramping. The termination of a pregnancy within the initial 24 weeks is referred to as a miscarriage; however, the World Health Organization classifies a miscarriage as the loss of a pregnancy prior to 20 weeks or the loss of a fetus weighing 500 grams or less[2].

It is estimated that approximately 46 million induced abortions take place annually worldwide. A significant number of these procedures are carried out unlawfully in unsafe conditions, leading to roughly 78,000 annual fatalities across the globe. The primary causes of these deaths are septicemia and hemorrhaging.[4]The treatment of first-trimester missed miscarriages has been a topic of debate and discussion in the medical community. Patients have a variety of options, including expectant care, medicinal treatment, or surgical intervention[5].

In the management of first-trimester missed miscarriages, manual vacuum aspiration (MVA) and medical treatment are two commonly employed methods.[6]Managing generally-trimester missed miscarriage typically involves MVA or medical intervention[7].

The most popular technique is MVA, which is thought to be safe and economical in the hands of experts in a variety of setups. Unsafe abortion-related complications account for 10 to 13% of cases in developing nations, despite advances in medical knowledge[8].

Numerous medications are utilized in medical abortion, includingmethotrexate, mifepristone and misoprostol. Mifepristone and misoprostol are frequently employed in medical abortion procedures. The use of vaginal misoprostol is a reliable, secure, and satisfactory approach to induce abortion, with an effectiveness rate of 88-94% as reported[9].

Received on 11-11-2022
Accepted on 03-04-2023

Several studies have examined the efficacy of these two management options, with varying results. Some studies have reported that medical treatment is a safe and effective option for the management of first-trimester missed miscarriage, with high success rates and minimal complications. However, other studies have shown that MVA is a more efficient and effective method for the management of this condition, with lower failure rates and fewer complications.

Factors such as patient preferences, medical history, and clinical presentation should be taken into account when deciding on the most appropriate management option.

This study aims to provide a detailed discussion of the effectiveness of MVA and medical treatment in managing first-trimester missed miscarriage, based on the latest clinical evidence and guidelines.

MATERIAL AND METHODS

Between April and October 2022, the Department of Obstetrics & Gynecology, Bahawal Victoria Hospital, Bahawalpur conducted a Randomized Controlled Trial to evaluate two methods of managing missed miscarriages in the first trimester. The study enrolled 120 participants aged 18 to 40 years, with less than 12 weeks gestation as confirmed by ultrasound and lacking fetal cardiac activity. Patients with misoprostol hypersensitivity, gestation of over 12 weeks, molar or ectopic pregnancy, septic abortion, or previous c-sections were excluded. The enrolled patients were randomly divided into two groups: MVA and MM. The MVA group underwent manual vacuum aspiration, while the MM group received misoprostol intravaginally.

The MVA group was given prophylactic antibiotics and oral analgesics one hour before the procedure, and local anesthesia was administered in the form of a paracervical block. The uterine cavity was cleaned using a manual vacuum aspiration, and the evacuation was considered complete when pink or red foam without RPOCs flowed through the cannula during surgery. If products of conception continued to pass after inserting the cannula more than four times, the uterus was considered not fully evacuated. Patients in the MM group received 2.5ml of

hydroxyethyl gel and 800g of misoprostol per vagina. Misoprostol was prepared by shredding a tablet into a white powder, which was combined with repacked sterile 2.5ml hydroxyethyl gel in a sterile 5ml disposable syringe without a needle.

Pelvic USG was conducted, and if RPOCs were present, 400 g of misoprostol was repeated after six hours for a total of two doses. The final evaluation was conducted after 18 hours. Both groups' effectiveness was reported in a pre-planned proforma, and patients' demographic information was also recorded. The data were entered into SPSS V17 for statistical analysis.

RESULTS

Total 120 patients were selected. In MVA group, mean age and mean gestational age was 31.47±5.82 years and 6.92±3.39 weeks while in MM group it was 30.87±6.86 years and 5.78±3.47 weeks (Table 1).

The enrolled patients were divided 20-30 years age group and 31-40 years age group. There were 28(46.67%) patients in the 20-30 years group and the 31-40 years group contained 32 (53.33%) patients in the MVA group.In the MM group, there were 26(43.33%) patients and 34(56.67%) patients in the age ranges of 20 to 30 years and 31 to 60 years respectively (Fig. 1).

Two gestational age groups were created i.e. 1-6-weeks group and 7-12 weeks group. In 1-6 weeks group, total 35(58.33%) patients and 38(63.33%) patients belonged to MVA group and MM group respectively. In 7-12 weeks group, total 25(41.67%) patients and 22(36.37%) patients belonged to study group MVA and MM (Fig. 2).

Fig. 1: Age grouping

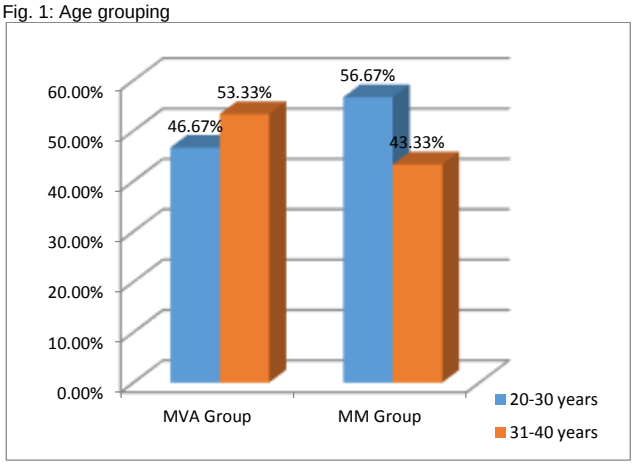
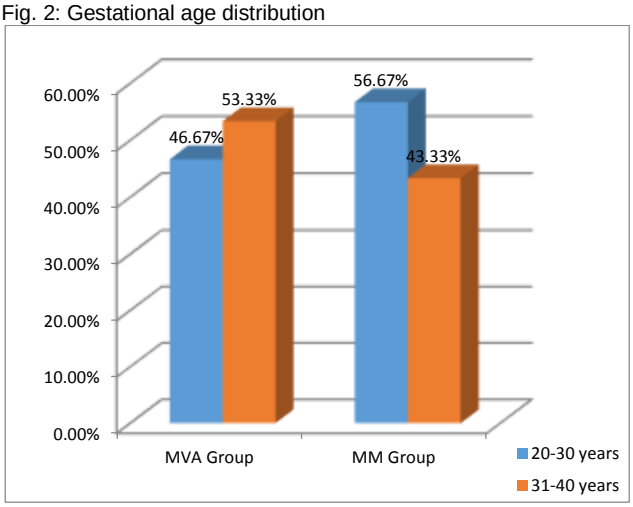


Fig. 2: Gestational age distribution

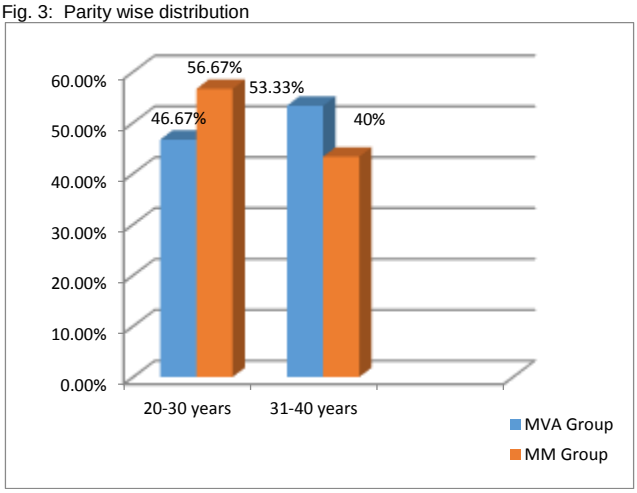


Complete abortion was noted in 53(88.33%) patients of MVA group while in 44(73.33%) patients of MM group. Significantly (P=0.036) higher Efficacy (Complete abortion) rate was noted in MVA group (Table 2).

Table 1: Mean of age and gestation

Groups	Age		Gestational Age (Weeks)	
	Mean	SD	Mean	SD
MVA	31.47	5.82	6.92	3.39
MM	30.87	6.71	5.48	3.32
Total	29.27	6.86	5.78	3.47

Fig. 3: Parity wise distribution



Comparison of first trimester abortion as cited 22,23,24,25

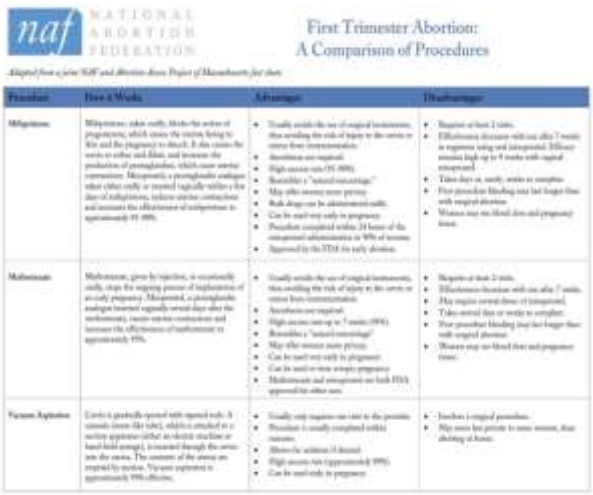


Table 2: Comparison of complete abortion

Group	Efficacy (Complete abortion)		Total	P value
	Yes	No		
MVA	53(88.33%)	7(11.67%)	60	0.036
MM	44(73.33%)	16(26.67%)	60	

DISCUSSION

Miscarriage refers to the end of a pregnancy before the fetus reaches a viable stage[10]. First-trimester spontaneous miscarriages occur in approximately 11–15% of pregnancies. Therefore, it is believed that safe and legal abortion is a crucial intervention for enhancing the health and quality of life of women[11]. Tailoring the treatment choices to suit the patient's preferences and gestational

age can be achieved by inquiring about the last menstrual period or assessing the size of the products of conception. In South Asian countries such as India, Pakistan, Nepal, and Bangladesh, as well as in Africa, both Manual Vacuum Aspiration and Misoprostol have been found to be effective techniques for terminating pregnancies[12].

In present study, Total 120 patients were recruited and two equal groups (MVA and MM) were created. MVA group was managed with Manual Vacuum Aspiration while MM group was managed with Misoprostol intra vaginally. Complete abortion was noted in 53 (88.33%) patients of MVA group while in 44 (73.33%) patients of MM group. Significantly (P=0.036) higher Efficacy (Complete abortion) rate was noted in MVA group.Manual Vacuum Aspiration (MVA) is a medical procedure used for the evacuation of the uterine contents, typically in cases of incomplete abortion or early pregnancy loss. It involves the use of a manual vacuum syringe to create gentle suction, which removes the contents of the uterus.

In the case of managing a group with MVA, it is likely that a group of patients or individuals who require uterine evacuation for various reasons, such as incomplete abortion, were treated using MVA as the method of choice. MVA is a commonly used method for managing incomplete abortion or early pregnancy loss, as it is a safe and effective procedure that can be performed in an outpatient setting.

Managing a group with MVA would typically involve a systematic approach, including patient assessment, obtaining informed consent, administering anesthesia or analgesia as needed, performing the MVA procedure, and providing appropriate post-procedure care and follow-up. The specific details of managing a group with MVA would depend on various factors, including the medical condition of the patients, the expertise of the healthcare provider performing the procedure, and the available resources and facilities. It is important to follow established clinical guidelines and protocols for performing MVA and to ensure that patients receive appropriate care and support throughout the process[8,13,15,21].

In one study by Shaheen H et al,[13] 104 patients with 1sttrimester missed abortion was selected and in one group MVA was performed while in other group, MM was done. At the end of treatment, complete abortion was noted in MVA group (92.3% vs 76.9%). Mean age in MVA and MM group was 30.23 ± 6.72 years and 29.02±6.65 years. In another study by Kubra K et al[14] complete abortion was noted in 95.6% vs 85.5% patients which is in agreement with our study. In another investigation conducted by Tasnim N and colleagues[15], it was found that 89.6% of patients who underwent manual vacuum aspiration achieved full evacuation.

Similarly,Arif N et al[16] also evaluate 200 patients with first trimester miscarriage, in one group MVA was done while in another group misoprostol was administered.

In the context of managing first-trimester miscarriage, there are different approaches that can be taken, including Manual Vacuum Aspiration (MVA) and the use of misoprostol, which is a medication used to induce uterine contractions and facilitate the expulsion of the uterine contents.

In one group, MVA was done: This would mean that patients in this group underwent the MVA procedure to evacuate the uterus after a first-trimester miscarriage. MVA involves the use of a manual vacuum syringe to gently suction out the contents of the uterus and is typically performed in an outpatient setting under local anesthesia or conscious sedation.

In another group, misoprostol was used: This would mean that patients in this group were given misoprostol, which is a medication that can be taken orally or inserted vaginally to induce contractions of the uterus and promote the passage of the miscarried tissue. Misoprostol is an alternative non-surgical option for managing first-trimester miscarriage and is typically used when MVA or other surgical options are not readily available, or when the patient prefers a non-invasive approach.

The choice between MVA and misoprostol for managing first-trimester miscarriage would depend on various factors, including the patient's clinical condition, gestational age, available resources and facilities, and patient preferences. Both MVA and misoprostol are generally safe and effective methods for managing first-trimester miscarriage, and the decision on which approach to use should be made based on careful evaluation and individualized patient care. It is important to follow established clinical guidelines and protocols for managing first-trimester miscarriage and to provide appropriate care, support, and counseling to patients during this challenging time[222,23,24].

They found complete abortion in 88% patients and 65% patients respectively in MVA group and misoprostol group.In study of Kishwar N et al,[17] higher (97.5%) efficacy rate was observed in MVA group.

Bique and colleagues[18] conducted a study to compare the efficacy of misoprostol and MVA in the management of incomplete abortion. After a seven-day follow-up period, MVA was found to have a 100% success rate, whereas misoprostol had a 91% success rate.Mohamed SA et al[19] reported complete abortion in 82.9% patients and 94.3% patients respectively in misoprostol and MVA group. Saeed SH et al[20] found MVA group with higher efficacy rate as 94.55% patients. In the investigation carried out by Hemlin and colleagues,[21] manual aspiration achieved a success rate of 95.2%.Edwards Set al[22]reporteda 98% success rate with manual aspiration.

CONCLUSION

In this study, we found MVA had higher complete abortion rate as compared to misoprostol intra vaginally. So, MVA is better treatment option than misoprostol intra vaginally as it has no systemic effectsand it is a very good option in hospitals with low resources and in developing countries like Pakistan.

Ethical permission: This study was approved by the Institutional Ethical Review Board.

Conflict of interest: Nil

REFERENCES

1. Khan FM, Amina A, Ahmed FL, Naeem NK. Medical termination of first trimester miscarriages. Annals 2007;13:154-7.
2. Azmat SK, T SHAIKH BA, Mustafa G, Hameed W, Bilgrami M. Delivering post-abortion care through a community-based reproductive health volunteer programme in Pakistan. Journal of biosocial science. 2012 Nov;44(6):719-31.
3. Niinimäki M, Jouppila P, Martikainen H, Talvensaari-Mattila A. A randomized study comparing efficacy and patient satisfaction in medical or surgical treatment of miscarriage. Fertility and sterility. 2006 Aug 1;86(2):367-72.
4. Nwafor JI, Agwu UM, Egbuji CC, Ekwedigwe KC. Misoprostol versus manual vacuum aspiration for treatment of first-trimester incomplete miscarriage in a low-resource setting: A randomized controlled trial. Nigerian Journal of Clinical Practice. 2020 May 18;23(5):638-46.
5. Musik T, Grimm J, Juhasz-Böss I, Bäz E. Treatment Options After a Diagnosis of Early Miscarriage: Expectant, Medical, and Surgical. DeutschesÄrzteblatt International. 2021 Nov;118(46):789.
6. Gazvani R, Honey E, MacLennan FM, Templeton A. Manual vacuum aspiration (MVA) in the management of first trimester pregnancy loss. European Journal of Obstetrics & Gynecology and Reproductive Biology. 2004 Feb 10;112(2):197-200.
7. Odland, M.L., Membe-Gadama, G., Kafulafula, U., Jacobsen, G.W., Kumwenda, J. and Darj, E., 2018. The use of manual vacuum aspiration in the treatment of incomplete abortions: a descriptive study from three public hospitals in Malawi. *International Journal of Environmental Research and Public Health*, *15*(2), p.370.
8. Buckett W, Regan L. Sporadic and recurrent miscarriage. In: Shaw RW, Soutter WP, Stanton SL, editors. Gynaecology. 3rd ed. United Kingdom: Elsevier Science; 2003; 343-59.
9. Kallue UR, Sultana N. Vaginal misoprostol- the revolutionary starter switch in induction of labor. Pak Armed Forces Med J 2004;54:202-4.
10. Kailash T, Parbati T. Use of mifepristone and misoprostol combination on abortion in first trimester pregnancy at government hospital in chitwan district in Nepal. Int. Res. J. Pharm. 2015;6(6):359-64.

11. Shokry M, Fathalla M, Hussien M, Eissa AA. Vaginal misoprostol versus vaginal surgical evacuation of first trimester incomplete abortion: Comparative study. Middle East Fertility Society Journal. 2014 Jun 1;19(2):96-101.
12. Arif N, Zafar B, Ahmed RQ, Shehzad F. Comparison of Feasibility, Efficacy and Patient Acceptability of Manual Vacuum Aspiration Vs Sublingual Misoprostol in Early Pregnancy Loss. Pakistan Armed Forces Medical Journal. 2022 Jun 25;72(3):854-57.
13. Shaheen H, Khosa MS, Hanif HI. Comparison of efficacy of manual vacuum aspiration (MVA) and medical treatment in the management of first trimester missed miscarriage. Pak J Med Health Sci. 2017 Jan 1;11(1):270-3.
14. Kubra K. Comparison of Manual Vacuum Aspiration With Dilatation and Evacuation. Journal of Surgery Pakistan. 2020 Nov 19;25(2):55-9.
15. 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. J Pak Med Assoc. 2011;61(2):149.
16. Arif N, Zafar B, Ahmed RQ, Shehzad F. Comparison of Feasibility, Efficacy and Patient Acceptability of Manual Vacuum Aspiration Vs Sublingual Misoprostol in Early Pregnancy Loss. Pakistan Armed Forces Medical Journal. 2022 Jun 25;72(3):854-57.
17. Kishwar N, Ali S, Sadaf R, Karim R, Azeem T, Parveen Z. Efficacy of Manual Vacuum Aspiration Vs Conventional Evacuation and Curettage. Journal of Gandhara Medical and Dental Science. 2022 Jul 1;9(3):75-81.
18. Bique C, Ustá M, Debora B, Chong E. Comparison of misoprostol and manual vacuum aspiration for the treatment of incomplete abortion. Int J Gynaecol Obstet. 2007;98:222-6.
19. Mohamed SA, omlsaed MA, nasser MA, mohamed E. Misoprostol Versus Manual Vacuum Aspiration in Treatment of Missed Miscarriage in First Trimester. The Medical Journal of Cairo University. 2021 Jun 1;89(June):1195-200.
20. Saeed SH, Manzoor B, Akram S. Comparison of Efficacy of Manual Vacuum Aspiration versus D&C in Patients with Incomplete and Missed Miscarriage. Pak J Med Health Sci. 2019;13(3):582-85.
21. Hemlin J, Möller B. Manual vacuum aspiration, a safe and effective alternative in early pregnancy termination. Acta Obstet Gynecol Scand. 2001 Jun;80(6):563–7.
22. Edwards S, Tureck R, Fredrick M, Huang X, Zhang J, Barnhart K. Patient acceptability of manual versus electric vacuum aspiration for early pregnancy loss. J Women Health (Larchmt). 2007 Dec;16(10):1429–36.
23. Weitz TA, Foster A, Ellertson C, Grossman D, and Stewart, FH, "Medical" and "surgical" abortion: rethinking the modifiers, *Contraception*, 2014, 69(1):77-78.
24. Jatlaoui TC, Ewing A, Mandel, MG, et al., Abortion surveillance – United States, 2013, *CDC Surveillance Summaries,* 2016, 65(12):1-44.
25. ACOG, Medical Management of first-trimester abortion, *Practice Bulletin,* 2014, Reaffirmed 2016, 143.