

Effectiveness of Manual Vacuum Aspiration in Missed Miscarriage of Less Than 12 Weeks Gestation

Afshan Ambreen, Ayesha Intsar

ABSTRACT

Objective: To determine the effectiveness of manual vacuum aspiration in missed miscarriage of less than 12 weeks gestation.

Place and duration of study: Department of Obstetric and gynecology, Fatima Memorial Hospital, Lahore for a period of 6 months from March 2012 to August 2012 and 87 patients with missed miscarriage were included in the study. In all patients evacuation was done by Manual Vacuum Aspiration (MVA). The data of each patient and outcome of procedure was recorded in a performa.

Results: In this study MVA was 96.5% effective to evacuate the uterus up to 12 weeks gestation while in 3.5% cases procedure failed and further procedure was required to evacuate the uterus. Highest frequency of effectiveness was found in age group of between 15 and 30 years. Primiparous women had highest frequency of effective evacuation. MVA was 100% effective at gestational age between 8 and 10 weeks. Increased BMI was associated with incomplete evacuation.

Conclusion: The present study shows that MVA is effective method to treat missed miscarriage of less than 12 weeks of gestation. In this study we concluded that there is an association between young patient age, low parity, early gestational age, low BMI and effectiveness of MVA.

Keywords: Manual vacuum aspiration, Missed abortion, Effectiveness.

How to cite this article: Ambreen A, Intsar A. Effectiveness of Manual Vacuum Aspiration in Missed Miscarriage of Less Than 12 Weeks Gestation. *J South Asian Feder Obst Gynae* 2013;5(3):154-157.

Source of support: Nil

Conflict of interest: None declared

INTRODUCTION

Early pregnancy failure is a major public health problem throughout the world. Approximately one in four women experience a miscarriage in their life and 15% pregnancies end in spontaneous miscarriage.¹ Similar figures have been quoted for Pakistan.² Missed miscarriage is a common gynecological condition requiring termination of pregnancy at different periods of gestation (21%³ of all miscarriages). The use of sensitive pregnancy tests and accessibility of ultrasound have led to an increase in the number of diagnosed abortion before spontaneous expulsion. This increases the need for evacuation of the uterus.⁴ WHO (World Health Organization) estimated that 2000 million pregnancies occurred each year, there are 53 million induced miscarriages each year out of which 20 million are unsafe abortion, 95% take place in developing

countries nearly half of these in Asia and 1/3 in South-East Asia.⁵ In Pakistan complications of abortion account for 10 to 20% of maternal deaths.⁶

The main methods of termination include vacuum aspiration, curettage and medical termination.⁷ Vacuum aspiration has been used as the method of choice for management of miscarriage where there is an intact intrauterine sac.⁸ WHO and International Federation of Gynecology and Obstetrics (FIGO) issued a joint statement in 1997 declaring 'Properly equipped hospitals should adopt the aspiration method of uterine evacuation'.

Despite the availability of evidences in favor of Manual vacuum aspiration (MVA) in international literature that it is 99.5% effective⁹ in terminating pregnancy through 12 weeks of gestation, its use in Pakistan has been limited so far because the MVA apparatus and skilled persons are not available to do MVA. This study is carried out to assess the effectiveness of MVA in missed miscarriage of less than 12 weeks so MVA technique can be popularized in developing world, such as Pakistan thereby decreasing maternal morbidity and mortality related to abortions.

Manual vacuum aspiration is a technique of suction curettage for first trimester abortion. It is performed using a hand held syringe attached to a uterine catheter. It has been used internationally for many years and been shown to be safe and effective for early miscarriage. It is a quicker and less painful method to evacuate uterus.^{10,11} MVA use is associated with an overall complication rate of 2%.¹²

The objective of this study was to determine the effectiveness of manual vacuum aspiration in missed miscarriage of less than 12 weeks.

MATERIALS AND METHODS

This study was conducted in the Department of Obstetric and Gynecology, Fatima Memorial Hospital, Lahore for a period of 6 months from March 2012 to August 2012 and 87 patients were included in the study. The study design was case series. The inclusion criteria were patients with missed miscarriage of less than 12 weeks gestation diagnosed by ultrasound showing gestational sac of less than 25 mm in diameter with no fetal cardiac activity. Patients having ectopic pregnancy, molar pregnancy, septic abortion and patients having gestational age more than 12 weeks were excluded from the study.

Detailed history was taken including age, parity, gestational age and any pre-existing medical illness. Gestational age was determined by ultrasound. Thorough general physical examination was done to assess the patient's general condition. Pervaginal examination was done to assess the size of the uterus, position of the uterus and to check the cervical os either open

or closed. Patient's height and weight were also done to calculate the body mass index (BMI). Investigations including CBC, urinalysis, random blood sugar and blood group and Rh factor were done. Informed consent was taken and proper counseling regarding the procedure was done. Prophylactic antibiotic (Doxycycline 100 mg) was given 1 hour before the procedure and oral analgesic (tab valium and tab brufen) was also given. If needed 2 tab of misoprostol were kept pervaginally for cervical ripening. Local analgesia in the form of paracervical block was given. Uterine cavity was evacuated with MVA. Effectiveness was measured in terms of complete evacuation, which was confirmed peroperatively when pink or red foam without RPOC's passed through the cannula. Incomplete evacuation was diagnosed when products of conception were passing continuously inspite of inserting cannula more than 4 times and another procedure was required to evacuate the uterus. All observations were recorded in the performa. The data was entered in SPSS version 10 and analyzed through its statistical package. Frequency of qualitative variables like complete evacuation was calculated. Frequency was calculated for age of patient, parity of patient, gestational age and BMI of patient.

RESULTS

Total 87 patients of missed abortion of less than 12 weeks in which evacuation was done by MVA were selected for the study. Out of the 87 patients MVA was found to be effective in 84 (96.55%) patients as shown in Table 1.

Table 2 shows frequency of effective evacuation in different age groups. Highest effectiveness was found in age group between 15 and 30 years followed by 95% in age group between 36 and 40 years. Ninety-one percent effectiveness found between the ages 31 and 35 years.

Table 1: Effectiveness of MVA

No. of patients	Effectiveness	Percentage
84	Effective	(96.55%)
3	Not effective	(3.45%)

Table 2: Frequency of effective evacuation according to age of patient

Age of patients	No. of patients with missed miscarriage	No. of patients with effective evacuation	Percentage
15-20 years	12	12	100
21-25 years	14	14	100
26-30 years	18	18	100
31-35 years	23	21	91.30
36-40 years	20	19	95

Table 3: Frequency of effective evacuation according to parity of patient

Age of patients	No. of patients with missed miscarriage	No. of patients with effective evacuation	Percentage
Primigravida	20	20	100
Gravida 2-4	39	38	97.4
Gravida 5 onwards	28	26	92.85

Table 3 shows frequency of effective evacuation according to parity of the patient. Highest effectiveness was found in primigravida followed by 97% effectiveness in multiparous while 92.85% effectiveness in grand multiparous women.

Table 4 shows frequency of effective evacuation according to the gestational age of the patient. Highest percentage, i.e. 100% was found in women between 8 and 10 weeks followed by 93% in women of 11 and 12 weeks while 92% was found between 5 and 7 weeks gestation. Table 5 shows frequency of effective evacuation in relation to BMI of patient. Highest effectiveness was found in women having BMI less than 24.9.

In this study, MVA is 96.55% effective for terminating pregnancy through 12 weeks of gestation while in 3.45% of cases, procedure failed and further procedure to evacuate the uterus was required. Highest frequency of effective evacuation (100%) found in age group between 15 and 30 years, primigravida had highest frequency of effective evacuation and 100% effectiveness of MVA was in women of gestation age between 8 and 10 weeks. Increased BMI was also found to be associated with incomplete evacuation.

DISCUSSION

Missed miscarriage is a common gynecological condition requiring termination of pregnancy at different periods of gestation. Dilatation and evacuation is the most popular method. Now with the introduction of MVA kit in Pakistan, MVA has become a new option for termination of pregnancy in our setting.

Once the diagnosis of missed miscarriage is confirmed the patient should be counselled about further management that may be expectant, medical or surgical. Eighty percent of patients with missed miscarriage expel spontaneously within 2 weeks of diagnosis and only 10% of patients remain undelivered beyond 3 weeks.¹³

Surgical management includes dilatation and evacuation which is by far the commonest performed gynecological operation for evacuating uterus. Surgical evacuation is associated with 1% risk of cervical laceration,¹⁴ 1 to 4/1000 chances of uterine perforation¹⁵ with damage to structures like

Table 4: Frequency of effective evacuation according to gestational age of patient

Gestational age	No. of patients with missed miscarriage	No. of patients with effective evacuation	Percentage
5-7 weeks	13	12	92.30
8-10 weeks	43	43	100
11-12 weeks	29	27	93.10

Table 5: Frequency of effective evacuation according to BMI of patient

BMI of patients	No. of patients with missed miscarriage	No. of patients with effective evacuation	Percentage
<18.5	09	09	100
18.5-24.9	28	28	100
25-29.9	34	32	94.11
30 and above	16	15	93.75

gut, bladder, etc.¹⁶ peritonitis, occasional maternal death and also associated with complication of general anesthesia. Surgical termination is performed either in a hospital setting or dedicated facility in a designated clinic. General anesthesia is standard practice although use of local anesthesia, paracervical block with or without sedation is increasingly being offered.

The technology of MVA is particularly suitable in our settings because it does not depend upon availability of electricity or anesthesia. Furthermore with proper supervision and training, healthcare providers below the level of physician, e.g. LHV (lady health worker) and midwives can provide this procedure safely.

Although many studies on MVA are going on in different setups but results are still awaited. No local references are available on MVA. The main aim of this study was to determine the efficacy of this method for evacuation of products of conception in missed miscarriage of less than 12 weeks. In this study total 87 patients of missed miscarriage diagnosed by ultrasound were subjected to MVA to terminate the pregnancy.

Failure of complete evacuation is a recognized complication of vacuum aspiration and quoted failure rate is around 2.3 in 1000. The rate is increased for multiparous women, for abortion undertaken for less than 7 weeks of gestation where small canullae are used and where the procedure is carried out by inexperienced operator.¹⁷

In this study MVA was 96.55% effective for terminating pregnancy below 12 weeks of gestation while in 3.45% cases procedure failed and further procedure was required to evacuate the uterus. The data from a randomized controlled trial shows 98 effectiveness.¹⁸

Rates of incomplete evacuation in two different studies are 2.2 and 3% respectively¹⁹ which is almost similar to the result (3%). Slight differences may be due to operative skills. In both of these studies MVA was done by a senior operator who was quite experienced in MVA, while in our study MVA was done by senior residents trained for the procedure but who had little experience.

In this study, relationship of effective evacuation with patient age, parity, gestational age and BMI was noted. MVA performed at greater gestational age was associated with increased rate of ineffective evacuation. In this study 33.33% patients were at 11 to 12 weeks of gestation, while in study of Weat Fall et al²⁴ only 0.6% patients were greater than 10 weeks. In present study MVA is 100% effective in gestational age between 8 and 10 weeks while only 93.1% effective in gestational age between 11 and 12 weeks.

MVA for early induced abortion up to 9 weeks²⁰ as well as 12 weeks of gestation²¹ has been undertaken successfully as an outpatient procedure in the USA since the early 1970's. An extensive review of the literature on uterine evacuation for induced early abortion have documented that MVA was highly effective achieving complete uterine evacuation in 98% cases.²²

Present study shows that increased patient age, parity, extremes of gestational age and high BMI are associated with incomplete evacuation which is comparable with result of Inal et al.²³ World Health Organization has listed MVA as an

effective and safe method of uterine evacuation and hence the technique is being employed extensively in developing world under minimal anesthesia or sedation in management of incomplete miscarriages.²⁵

However, there is minimal available data regarding its use in missed miscarriages.²⁶ With the routine use of ultrasonography in early pregnancy, the diagnosis of missed miscarriage has become increasingly more common compared to incomplete miscarriage. Therefore, the possible use of MVA in the management of first-trimester missed miscarriage becomes an even more interesting issue. Yet this is a small study and further studies are required to assess safety, effectiveness and patient acceptability in our settings.

In view of the results of our study we concluded that MVA is an effective method to achieve complete evacuation in missed miscarriage of less than 12 weeks of gestation.

CONCLUSION

It is concluded from the study results that MVA is 96.5% effective method to terminate the missed abortion of less than 12 weeks gestation and it is highly effective (100%) in missed abortion of 8 to 10 weeks gestation.

In view of the study results we concluded that MVA is an effective method avoiding the need of general anesthesia and need of operation theater. It is safe, easily performed and possibly most effective procedure. It has advantages for both the patient and the physician. It should be considered routinely as an alternative option for management of missed abortion because it is quick, safe and effective.

REFERENCES

1. Week A, Alia G, Blum J, Winikoff B, Ekwarw P, Durocher J, et al. A randomized trial of misoprostol compared with manual vacuum aspiration for incomplete abortion. *Obstet Gynaecol* 2005;106:540-547.
2. World Health Organization Biennial Report-Geneva; WHO;1996.
3. Khaskheli M. Evaluation of early pregnancy loss. *Pak J Med Res* 2002;41:79-82.
4. Shamim S, Fatima T, Salahuddin R, Irfani I, Irum U. New trend in medical management of missed miscarriage. *Annals Abbasi Shaheed Hospital KMDC, Jun* 2004;9:481-485.
5. Ashraf R, Gul A, Noor R, Nasim T, Chahan A. Septic induced abortion-maternal mortality and morbidity. *MKE Med Coll* 2004;10:346-347.
6. Jafarcy SN. Maternal mortality in Pakistan—an overview in maternal and perinatal death in Pakistan. *Proceedings of Asian and Oceanic Federation of Obstetrics and Gynecology Workshop. Karachi, Nov* 1991. TWEL Publishers, Karachi 1992.
7. Wen J, Cai QY, Deng F, Li YP. Manual vs electric aspiration for first trimester abortion: a systemic review; *BJOG* 2008;115:13.
8. RCOG. The management of early pregnancy loss: Evidence-based Clinical Guideline No. 25, 2006 Oct.
9. Association of Reproductive Health Professionals. *Manual Vacuum Aspiration (Online)*. 2008 (cited 2009 Feb 6); Available from: URL:<http://www.arhp.org/publications-and-resources/quick-reference-guide-for-clinician/mva>.

10. Forna F, Gulmezoglu AM. Surgical procedure to evacuate incomplete abortion: Cochrane Database Syst Rev. 2010; (9):CD001993.
11. Girvin S, Ruminijo J. An evaluation of manual vacuum aspiration instrument. *Int J Gynaecol Obstet* 2003;83:219-232.
12. Narrigan D. Early abortion updated and implication for midwifery practice. *J Nurse-Midwif* 1998;43(6): 492-501.
13. De Swiet M, Chamberlain G. Embryology In-Basic Sciences in Obstetrics and Gynaecology. 2nd ed. London: Churchill Livingstone;1992:40-41.
14. RCOG. The Care of Women Requesting Induced Abortion: Evidence-based Clinical Guideline Number 7. September 2007; 33.p.
15. Flett G, Templeton A. Termination of pregnancy. In Edmonds DK, editor. Dewhursts obstetrics and gynaecology. London; Wiely Black Well; 2007; 318-326.
16. Chia KV. Medical termination of missed abortion. *Obstet Gynaecol* 2002;22:184-186.
17. Kaunitz AM, Rovira EZ, Grim DA, Schuz K. Abortion that fail. *Gynaecol* 1985;66:533-537.
18. Hemlin J, Moller B. Manual vacuum aspiration— a safe and effective alternative in early pregnancy termination: *Acta Obstet Gynaecol Scand* 2001;80:563-564.
19. Goldberg AB, Dean G, Kang MS, Youssaf S, Darney PD. Manual vs electric vacuum aspiration for early first trimester abortion: a controlled study of complication rates; *Obstet Gynaecol* 2004;103:101-107.
20. Edwards J, Creinin MD. Surgical abortion for gestation less than 6 weeks; *Obstet Gynaecol Infertil* 1997;20:11-19.
21. Jonge ET, Jewkes R, Levin J, Rees H. Randomized controlled trial of the efficacy of misoprostol used as a cervical ripening agent prior to termination of pregnancy in the first trimester; *S Afr Med J* 2000;90:256-262.
22. Henshaw SK. Induced abortion: a world review; *Fam Plann Perspect* 1990;122:76-89.
23. Inal MM, Yildirim Y, Ertopcu K, Ozelmas I. The predictor of retained products of conception following first trimester pregnancy termination with manual vacuum aspiration; *Eur J Contracept Report Health Care* 2006;11(2): 98-103.
24. World Health Organization Safe Motherhood: care of mother and baby at the health care centre. A practical guide: Maternal Health and safe Motherhood Programme, Geneva:WHO Division of Family Health 1994.
25. Fawcus S, McIntyre J, Jewkes RK, Rees H, Katzenellenbogen JM, Shabodien R, et al. Management of incomplete abortions at South African public hospitals. National Incomplete Abortion Study Reference Group. *S Afr Med J* 1997;87:438-442.
26. Rocha CF, Chacon IJ, Amaro PR, Ramon AMJ, Vargas ZD. Manual intrauterine aspiration using a Karmann syringe-Multicentre study in Sonora and Sinaloa, Mexico; *Gynaecol Obstet Med* 1996;64:97-104.

ABOUT THE AUTHORS

Afshan Ambreen (Corresponding Author)

Professor, Department of Obstetrics and Gynecology, Fatima Memorial Hospital, Lahore, Pakistan, e-mail: afshanuppal@yahoo.com

Ayesha Intsar

Senior Registrar, Department of Obstetrics and Gynecology, Fatima Memorial Hospital, Lahore, Pakistan