

## Manual Vacuum Aspiration (M.V.A) Versus Conventional Evacuation and Curettage in Early Pregnancy Loss

<sup>1</sup>Dr Uzma Shaheen,

<sup>2</sup>Dr Sumaira Yasmin\*,

<sup>3</sup>Dr Nazia Liaqat,

<sup>4</sup>Dr Sonia Rafique

<sup>1</sup>Medical Officer, Department of Obstetrics & Gynecology, LRH Hospital, Peshawar, Pakistan

<sup>2</sup>Assistant Professor, Department of Obstetrics & Gynecology, LRH Hospital, Peshawar, Pakistan

<sup>3</sup>Assistant Professor, Department of Obstetrics & Gynecology, LRH Hospital, Peshawar, Pakistan

<sup>4</sup>Assistant Professor, Department of Obstetrics & Gynecology, LRH Hospital, Peshawar, Pakistan

**Abstract: Objective:** The aim of this study is to compare the efficacy of manual vacuum aspiration and conventional evacuation and curettage in early pregnancy loss. **Study Design:** Randomized control trial. **Place and Duration:** Study was conducted at department of obstetrics and gynecology Lady Reading Hospital Peshawar from 1st January 2019 to 31st August 2020. **Methods** patients were early pregnancy loss (12 weeks or lesser gestational age) were enrolled. Patients were divided into two groups by lottery method. Group A were the patients who had conventional evacuation and curettage treatment. Group B were patient in which MVA was used. Patient's demographics were recorded after taking written consent. Gestational age was calculated from first day of last menstrual cycle and by ultrasound. Cervical ripening was done by (misoprostol 400mcg) two hours before procedure. Procedure was carried out under aseptic measures. Complete uterine evacuation by either procedure was assessed by ultrasound after procedure and complications were noted data was analysed by SPSS. **Results:** mean age in Group A was 29 years with SD  $\pm$  8.65 while mean age in Group B mean age was 30 years with SD  $\pm$  7.62. Group B (Manual Vacuum Aspiration) was effective in 96% patients while Group A (Conventional Evacuation and Curettage) was effective in 89% patients. complications were fewer in MVA as compared to conventional evacuation and curettage.

**Keywords:** MVA, Evacuation and Curettage, Early Pregnancy Loss.

**Copyright © 2021 The Author(s):** This work is licensed under a Creative Commons Attribution-Non Commercial 4.0 (CC BY-NC 4.0) International License.

## INTRODUCTION

The most common complication is early pregnancy is early pregnancy loss which contributes to 10-20% of clinically recognized pregnancies [1]. Around one out of four women will suffer such a failure in her life [2]. In Pakistan, there are about 890,000 women in missing or incomplete miscarriages per year and the annual incidence of miscarriage estimated to be 29 per thousand females aged between 15 and 49 years [3]. Every year 197,000 women in the public health system are being screened for the complication of post-abortion [4]. Miscarriage-related complications lead to 10-13 per cent of maternal mortality in developing countries, despite advances in health technology [5]. Treatment Options are expectant, medicinal (Misoprostol) and surgical options like sharp curettage and vacuum aspiration. The reports show that women do not accept medical option because they are unsure about how effective they are. [6] Dilation and evacuation or suction evacuation are the surgical choice for women. Dilatation and evacuation is as successful as 98%, but has side-effects such as perforation of the uterus, infection 6%, 4% cervical trauma, and blood loss greater than 100ml in 22% of patients. Manual vacuum aspiration is an alternative to the conventional form of surgery. A procedure for uterine evacuation is a manual vacuum aspiration. The MVA technology is simple, secure, effective, portable, lowcost [7]. Manual vacume aspiration has a lower blood loss, a lower time consumption, a short hospital stay and thus a lower cost[6]. You are safe to use local anesthetics and non-steroidal anti-inflammatory medication (NSAID) like ibuprofen in a clinical or physician's office. This

technique is in used for last three decades[8] initially for incomplete miscarriage but currently it is being used for missed miscarriage, molar pregnancy, medical termination of pregnancy and endometrial sampling. Complications are rare less than 2% over the last 30 years, clinical studies have demonstrated that MVA has been effective and very safe. As the preferred method for uterine evacuation, the World Health Organization (WHO) recommends MVA [9]. Studies show that MVA's effectiveness is comparable to EVA (electrical vacuum Aspiration) and successfully managed early-abortion and early pregnancy loss in approximately 99 percent of cases. Research shows that 98 percent of aspiration procedures are complicated, well above the alternative D&C procedure, which can result in excessive blood loss incidences, a pelvic infection, cervical damage and uterine perforation [10].

It is generally considered that vacuum aspiration take place without gross complications alternative D&C which can cause excessive blood loss, pelvic infections, cervical injuries and uterine perforation.. Though MVA use is easy, but clinicians don't know the use of the tool. If the efficacy in early pregnancy loss turns out to be more than evacuation curettage, with no significant MVA complications then MVA should be more widely used in low resource settings as well as in hospitals.

## MATERIAL AND METHODS

All the patients with early pregnancy failure (less than or equal to 12 weeks gestation) we were enrolled in study. Patients with ectopic pregnancy,

pregnancy with fibroids, septic abortion and unwilling patients were excluded from this study. Patients were divided randomly into two groups by lottery method. Group A were the patients who had conventional evacuation and curettage treatment. Group B were patient in which MVA was used. Patient's demographics were recorded after taking written consent. Base line investigation including complete blood picture, blood group, hepatitis serology, coagulation profile was done. Gestational age was calculated from first day of last menstrual cycle and by ultrasound. Cervical ripening was done by (misoprostol 400mcg) two hours before procedure. Procedure was carried out under aseptic measures. Effectiveness of the procedure was assessed by a complete uterine evacuation by either procedure by a pelvic ultrasound after the procedure frequency of complication were

noted among both groups. Categorical variables were measured by percentage and frequency. Numerical variables were calculated by standard deviation. Chi square and T test were used. Complete data was analyzed by SPSS 24.0 version.

## RESULTS

Mean in group A was 29.47+6.5 while in B it was 30 year  $\pm$  6.88 years. Mean duration of the procedure was higher in DNC group B 11.05+2.05 minutes and in group A MVA was 5.09+4.7 minutes. Hospital stay was lower in group A which was 4.35+2.3 hours as compared to group B 9.85+3.1 hours. Average gestational age among patients was 10.64+ 3.78 weeks. (Table 1).

**Table-1: Baseline Detailed Demographics of Enrolled Cases**

Variables	Group A (DNC)	Group B (MVA)
Mean age (years)	29 year $\pm$ 7,71	30 year $\pm$ 6.88
Mean BMI (kg/m <sup>2</sup> )	26.25+7.9	25.52+7.9
Mean Duration (minutes)	06.05+2.05	3.09+4.7
Mean hospital stay (hours)	8.85+3.1	3.35+2.3
Gestational age(weeks)	10.35+ 1.22	10.08+ 1.07

**Table-2: Comparison of Effectiveness and Complications among Both Groups**

Variables	Group A (n=92)	Group B (n=92)
<b>Effectiveness (complete evacuation)</b>		
Yes	55 (78.6%)	65 (94.3%)
No	15 (21.4%)	5 (5.7%)
Mean pain Vas	7.32+2.17	4.18+1.16
<b>Complications</b>		
Bleeding	5 (7.14%)	2 (2.9%)
Cervical trauma	2 (2.9%)	1 (1.43%)
Uterine perforation	2 (2.9%)	0
RPOC	2 (2.9%)	1 (1.43%)
Infection	4 (5.7%)	1(1.43%)

Regarding pain after the procedure, Mean VAS score was significantly greater in DNC group 7.32+2.17 as compared to MVA group 4.18+1.16.

Frequency of complications observed were higher in evacuation curettage than that of MVA. More over MVA was more effective than evacuation curettage as shown in (Table 2).

**Table-3: Efficacy of MVA and Evacuation Curettage at Different Gestational Ages**

GRAVIDA	EFFICACY	GROUP A	GROUP B	P value
1-7 weeks	Effective	24		0.2574
	Not effective	1	3	
Total		25	23	
8-12 weeks	Effective	65	60	0.0314
	Not effective	2		
Total		67	69	

## DISCUSSION

The pregnancy loss is a bitter experience in a women's life, accounting for 14% to 19 % of all recognized pregnancies. Approximately one out of four

women experience such a loss in their lifetime, and local data shows an annual miscarriage of 29 per 1000 in women aged 15- 49 years [11]. The methods used for the management of first-trimester miscarriage consist of expectant, medical or surgical intervention. The choices

amongst surgical methods include evacuation and curettage and vacuum aspiration. The Manual Vacuum Aspiration (MVA) is now a favorable choice over Electrical Vacuum Aspiration (EVA). In our comparison of MVA and evacuation and curettage both the groups were comparable regarding demographic characteristics mean age in Group A was 29 years with  $SD \pm 7.71$  while mean age in Group B was 30 years with  $SD \pm 6.88$ . In Group A 41% patients were primi para and 59% patients were multi para. Whereas in Group B 43% patients were primi para and 57% patients were multi para. Group A (Manual Vacuum Aspiration) was effective in 97% patients while Group B (Conventional Evacuation and Curettage) was effective in 87% patients. Similar results were observed in another study conducted by Mansoor A et al [12] in which the efficacy of manual vacuum aspiration for evacuation or retained products of conception was found to be 96.7%.

Results of our study comply well with Jayashree V et al study [13] which found that, contrary to dilatations and curettage, manual aspiration (MVA) was the more efficiently, less time consuming, without a heavy blood loss. Farooq F et al [14] reported consistently that MVA in an early pregnancy failure is the treatment choice with a lower blood loss rate, less time consumption, less stay in hospital and less complications as compared to dilation and curettage procedures.

Fatima Y et al [15] have stated that in the dilatation and curettage procedure complications including infection, blood loss, cervical laceration and incomplete evacuation were more as compared with MVA.

In DNC Group the mean VAS score was markedly higher 7.32±2.17 as compared to 4.18±1.16 for MVA Group showing that less post-operative pain was experienced by patients who had MVA.

Ara J et al also found less pain in the evacuation by manual vacuum aspiration [16]. This study also shows a substantially greater incidence of cervical trauma and serious bleeding among DNC patients than MVA patients ( $p=0.001$ ). The effectiveness of MVA has been 94.3 percent which is similar to our study and in line with study findings by Gazvani [17]. Our report also compares with the mean age of the study population and the mean gestational age 10.35±1.22 with Gazvani 2004. The efficacy of the manual vacuum is comparable with EVA electrical vacuum aspiration in incomplete miscarriages with retained products of conception. Similarly Bique et al have contrasted the effectiveness of MVA with misoprostol. Seven-day follow-up showed 100% success rate for MVA and 91% success rate for misoprostol (100% vs. 91%,  $p=0.002$ ) [18]. The findings favor manually vacuum aspiration over the other

medical and surgical treatments. Thus MVA is the better choice for uterine evacuation in the first quarter of pregnancy and a quicker and more efficient. In addition, a classified gynecologist carried out the operation in our case. This may be one explanation why MVA efficacy was better with a lower complication rate. Other healthcare providers must be adequately qualified or trained to achieve a better outcome in remote areas in which specialists may not be available.

There is a trend towards low cost technology such as the use of manual vacuum aspiration but it is mainly limited to the better resourced tertiary hospitals [19]. The selection for MVA or evacuation and curettage depends on the choice of the surgeon. Current study was a single center analysis and further studies are recommended with a view to assessing the safety and effectiveness of this technique.

## CONCLUSION

Manual vacuum aspiration was more effective than conventional suction and curettage in early pregnancy loss and was safe with lesser side effects as compared to conventional evacuation and curettage.

## REFERENCES

1. Milingos, D. S., Mathur, M., Smith, N. C., & Ashok, P. W. (2009). Manual vacuum aspiration: a safe alternative for the surgical management of early pregnancy loss. *BJOG: An International Journal of Obstetrics & Gynaecology*, 116(9), 1268-1271.
2. Tasnim, N., Mahmud, G., Fatima, S., & Sultana, M. (2011). Manual vacuum aspiration: a safe and cost-effective substitute of electric vacuum aspiration for the surgical management of early pregnancy loss. *JPMA. The Journal of the Pakistan Medical Association*, 61(2), 149-153.
3. Bano, K., & Talat, I. S. (2009). Alternative to surgical evacuation of uterus: Misoprostol for post abortion care. *J Surg Pak*, 14, 53-7.
4. Das, C. M., Srichand, P., Khursheed, F., & Shaikh, F. (2010). Assessment of efficacy and safety of Manual Vacuum Aspiration (MVA). *J Liaquat Uni Med Health Sci*, 9(03), 130.
5. Ahsan, A., & Jafarey, S. N. (2008). Unsafe abortion: global picture and situation in Pakistan. *JPMA. The Journal of the Pakistan Medical Association*, 58(12), 660-661.
6. Farooq, F., Javed, L., Mumtaz, A., & Naveed, N. (2011). Comparison of manual vacuum aspiration, and dilatation and curettage in the treatment of early pregnancy failure. *J Ayub Med Coll Abbottabad*, 23(3), 28-31.
7. Kamel, H., Goswami, S., & Dutta, R. (2011). Manual vacuum aspiration and electrical vacuum aspiration-A comparative study for

- first trimester MTP. *The Journal of Obstetrics and Gynecology of India*, 61(1), 53-56.
8. Wen, J., Cai, Q. Y., Deng, F., & Li, Y. P. (2008). Manual versus electric vacuum aspiration for first-trimester abortion: a systematic review. *BJOG: an international journal of obstetrics and gynaecology*, 115(1), 5-13. <https://doi.org/10.1111/j.1471-0528.2007.01572.x>
  9. World Health Organization (WHO) (2003). *Safe abortion: Technical and policy guidance for health systems*. Geneva.
  10. Cates, W. J., & Grimes, D. A. (1981). Morbidity and mortality of abortion in the United States. In J. E. Hodgeson (Ed.), *Abortion and sterilization: Medical and social aspects*. London: Academic Press.
  11. Mansoor, A. (2013). Assessment of efficacy and safety of manual vacuum aspiration (MVA). *Journal of Rawalpindi Medical College*, 17(1), 107-109.
  12. Jayashree, V., Latha, K., & Mahalakshmi, S. (2018). Comparative study between manual vacuum aspiration and dilatation and curettage in the surgical management of early incomplete abortion in RMMCH, Tamilnadu: A randomized controlled trial. *Int J Clin Obstet Gynaecol*, 2, 14-8.
  13. Farooq, F., Javed, L., Mumtaz, A., & Naveed, N. (2011). Comparison of manual vacuum aspiration, and dilatation and curettage in the treatment of early pregnancy failure. *J Ayub Med Coll Abbottabad*, 23(3), 28-31.
  14. Fatima, Y., Firdos, S., & Sajid, M. (2020). 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 Obstetrics and Gynaecologists of Pakistan*, 10(2), 106-109.
  15. Ara, J., Iftkhar, T., Ijaz, S., Qazi, N. H., & Sultana, N. (2018). Comparison of manual vacuum aspiration versus conventional evacuation of retained products. *Annals of PIMS-Shaheed Zulfiqar Ali Bhutto Medical University*, 14(1), 90-92.
  16. Gazvani, R., Honey, E., MacLennan, F. M., & Templeton, A. (2004). Manual vacuum aspiration (MVA) in the management of first trimester pregnancy loss. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 112(2), 197-200.
  17. Bique, C., Ustá, M., Debora, B. E. T. A. L., Chong, E., Westheimer, E., & Winikoff, B. (2007). Comparison of misoprostol and manual vacuum aspiration for the treatment of incomplete abortion. *International Journal of Gynecology & Obstetrics*, 98(3), 222-226.
  18. Brown, H. C., Jewkes, R., Levin, J., Dickson-Tetteh, K., & Rees, H. (2003). Management of incomplete abortion in South African public hospitals. *BJOG: An International Journal of Obstetrics & Gynaecology*, 110(4), 371-377.