

Comparison of Manual Vacuum Aspiration Versus Conventional Evacuation of Retained Products

Jehan Ara¹, Taqdees Iftkhar², Sumera Ijaz³, Naila Hina Qazi⁴, Nadira Sultana⁵

Author's Affiliation

¹Associate Professor,

²Assistant Professor,

³Postgraduate Trainee

⁴Senior Registrar

⁵ Professor of Obs and Gynae

All authors from department Of

Obstetrics & Gynaecology , Rawal

Institute of Health Sciences , Islamabad

Author's Contribution

¹Supervised the study, article writing

²Data Collection and Analysis,

³Active participation in active

methodology, ⁴data collection

⁵Final approval of the study

Article Info

Received: Nov 14, 2017

Accepted: Mar 24, 2018

Funding Source: Nil

Conflict of Interest: Nil

Address of Correspondence

Dr. Jehan Ara

Jehanaraalam@gmail.com

ABSTRACT

Objective: To compare the efficacy and safety of evacuation of Retained products of conception (ERPC) and Manual Vacuum Aspiration (MVA) in women experiencing a first-trimester miscarriage

Materials and Method: A comparative study was conducted at Rawal General & Dental Hospital, Islamabad from Sept 2016 to Sept 2017 and consisted of one hundred patients which were divided into two groups i.e. group 1 (ERPC) & group 2 (MVA). Data were extracted comparing the outcome in terms of safety and efficacy in both groups. Group 1 received General anaesthesia, while group 2 received paracervical block. Patients with a bleeding disorder, uterine anomalies, gestational trophoblastic disease and septic abortion were excluded from the study.

Result: Primary outcome measures were efficacy and safety and complete evacuation were similar in both groups while secondary outcome included Hospital stay, operating time and need for evacuation was less in group 2 (MVA) as compared to group 1 (ERPC). The efficacy of group 2 was 98 % and group 1 is 94 % in the evacuation of the uterus.

Conclusion: In patients with early pregnancy loss, treatment with MVA with local anaesthesia is an effective and safe alternative to Conventional Evacuation of Retained Products performed in general anaesthesia or sedation and it is more convenient and feasible for low socio-economic population.

Keywords; Efficacy, safety, MVA, ERPC, miscarriage.

Introduction

Miscarriage is the most adverse outcome of a pregnancy leading to abortion and evacuation of fetus. The risk factors involve but are not limited to chromosomal abnormality of the fetus with errors in meiosis caused by the advanced maternal age at the time of conception, alcohol and caffeine consumption and smoking.¹ According to Hospital Episode Statistics, NHS, UK, 15% of all pregnancies will end up in spontaneous miscarriage, with the actual figure being different in other countries according to their reporting and surveillance systems but the actual problem here is that 50% of such cases will be tagged as "idiopathic" without any known cause, making it difficult for preventive interventions and thus in the absence of predictive success rates with idiopathic recurrent cases, the clinician is at a disadvantage in the miscarriage clinic setting.²

Miscarriage cases, after diagnosis, are traditionally followed by surgical curettage because it is assumed that this method will reduce the risk of subsequent gynecological infection but

however, this method is packaged with other complications such as perforation and adhesion forming. Other management options include expectant, in which the products of conception are expelled spontaneously and medical management in which drugs are used to aid in the expulsion of the fetal remnants. There is lack of evidence about the efficacy of one option over other due to the absence of large randomized trials. Most of the studies were smaller randomized trials and did not reveal any advantage of one option over other. Larger studies were difficult to conduct because of recruiting a woman at the height of her emotions for randomization is merely possible and most of these women opted for surgical intervention.³

As stated earlier that curettage with sharp instruments has potential complications associated with it. These complications can result from the instrument itself and also from the induction of anesthesia. Curettage is done by an experienced physician in a proper surgical set up which reduces the cost-effectiveness and requires more economic resources that can be difficult to

provide in poor population of developing countries.⁴ Vacuum Aspiration is another surgical technique that has been used for over three decades with high efficacy and complete abortion rates between 95 and 100%, as reported in several trials and involves the evacuation of uterine contents through a plastic or metal cannula attached to a vacuum source which is either attached to an electric pump or a manual, hand-held, plastic syringe, hence called, Electric Vacuum Aspiration (EVA) and Manual Vacuum Aspiration (MVA).⁵ EVA is comparatively expensive; require electricity and expert operating procedure. Unfortunately, these amenities are a rare in a distant rural health care setup. Therefore the operating simplicity and cheap availability of MVA tips the balance of efficacy in its favor in low income health care settings. Even in urban health care settings, MVA is becoming a preferred choice because it is associated with shorter decision-to-procedure time and is highly acceptable to patients because of less pain and less recovery time. Integrating MVA into outpatient clinical setting can add time and resource saving options for uterine evacuation while maintaining a positive patient experience.⁶ According to World Health Organization's guidelines on safe abortion, MVA is the method of choice for evacuation of products of conception.⁷

Methodology

This comparative study was done to determine the outcome of all patients who underwent ERPC and MVA at Rawal Hospital for missed miscarriage, incomplete miscarriage or anembryonic pregnancy from February 2017 to February 2018. Anembryonic pregnancy was defined as gestational sac with diameter of 20 mm or more without an embryo and miscarriage as remains of products of conception with anteroposterior diameter of 30 mm and missed miscarriage with uterine size <12wks. All the patients with bleeding disorder, uterine anomalies, gestational trophoblastic disease, such as Molar pregnancy and septic induced abortion were excluded from study. ERPC was performed under general anesthesia and MVA was done by administration of paracervical block, with or without analgesia, using "Ipas Easy grip" with canula attached to 60ml syringe with double locking valve mechanism. The primary outcome measures were efficacy as complete evacuation and safety of both study procedures. While secondary outcomes were hospital stay and operating time. Data was collected from hospital records on data sheet and entered and analyzed in SPSS version 16.0.

Results

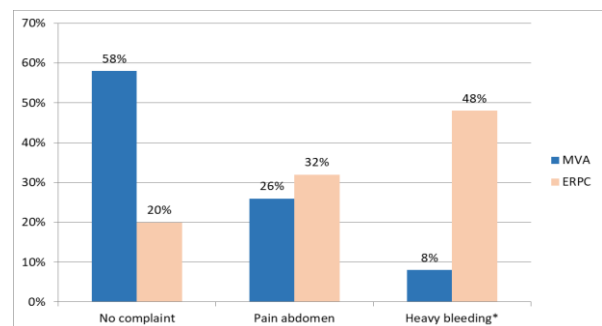
A total of 100 women with first-trimester pregnancy loss underwent either an MVA(n=50) or an ERPC (n=50).

Characteristics of the study population at enrollment were similar in MVA and ERPC groups with regard to age (mean 25.7 vs 26.5 years), education (uneducated 54 % vs educated 56 %) and weight (mean 56.7 vs 54.6 kg) respectively. Overall there was an association between race and treatment modality ($p < 0.001$). Patients in both groups were aged 18-30yrs. Parity was more than one in majority cases while 10 patients were primigravida with a missed miscarriage at 8-10wks of gestation. Gestational age was comparable in both groups.

The success rate for both treatment modalities was comparable between the two interventions. Overall, the efficacy was 98% for MVA and 94% for ERPC (p -value, 0.61). Patients in ERPC group received general anesthesia while in MVA received paracervical block with & without analgesia. Operating time of 5-8 minutes was significantly associated with MVA group (82%) than ERPC group (18%). (Table I)

	MVA group (n=50) n (%)	ERPC group (n=50) n (%)	P-value
Efficacy			
Achieved	49 (98%)	47 (94%)	0.61
Not achieved	1 (2%)	3 (6%)	
Operating time			
5-8 min	41 (82%)	9 (18%)	<0.001
9-12 min	9 (18%)	41 (82%)	
Hospital stay			
<24 hrs	43 (86%)	39 (78%)	0.43
24-48 hrs	6 (12%)	9 (18%)	
>48 hrs	1 (2%)	2 (4%)	

Heavy bleeding was found significantly associated with ERPC (48%) compared to MVA (16%) (p -value, <0.001). Further details regarding complications can be seen in figure I



*statistically significant difference (p -value <0.001)

Figure I: Comparison of complications between the two study groups

Discussion

After WHO acknowledged MVA as a safe and effective method of uterine evacuation, there is a pervasive use of MVA in developing countries with economic tribulations, such as

Pakistan, where budget allocation towards healthcare is intricate.⁸ The reason for this increase in the usage trend is because of the inexpensive and readily available equipment that can be used without the advance proficiency and skill-set of a medical doctor.⁹ The duration of procedure entail less time which in turn apportion the saved work hours to other said concerns.¹⁰ In our study, all the ERPC procedures were performed under general anesthesia whereas para-cervical block was administered with and/or without analgesia in MVA. The probability of complication during ERPC is more likely than MVA because it is performed with a sharp currette that can lead to perforation and/or moderate to severe bleeding; secondly, general anesthesia within itself is surrounded by a myriad of complications and contraindications.¹¹ In developing countries with limiting economy, expertise and rural allocation of healthcare personnel, MVA is an inexpensive, better and safe option.¹² Failure to perform MVA in emergency situation with incomplete miscarriage was shortcoming of this study, most probably due to unavailability of instrument and surgeon's expertise. Other studies have reported an efficacy of MVA from 95-100%, which is manifested in our study as well.¹³⁻¹⁵ Although the running time between commencing and concluding the procedure was significantly short in our study, but the overall hospital stay was insignificantly different in both groups. The reason can be attributed to similar hospital admission and discharge protocols for both groups. Therefore, it can be hypothesized that rewriting the protocols can reveal any difference as stated by Pereira et al.¹⁶ The disclosure of any difference in complications, such as hemorrhage, among both groups in our study was insignificant, which is comparable to another study.¹⁷ Molar pregnancy and septic induced abortion were excluded from our study because of the elective nature of MVA procedure and paucity of available data in such cases.^{18, 19}

Conclusion

Manual Vacuum Aspiration is by far the superior option available, especially in a low-income population setting without the need of general anesthesia, having least complications and improved outcome. The prevalence of miscarriage constitutes a significant proportion of maternal mortality and morbidity and therefore necessitates the need of a safe, cost-effective, easy to use and readily available intervention.

References

1. Feodor Nilsson S, Andersen PK, Strandberg-Larsen K, Nybo Andersen AM. Risk factors for miscarriage from a prevention perspective: a nationwide follow-up study. *BJOG*. 2014;121(11):1375-84.

2. Brigham S, Conlon C, Farquharson R. A longitudinal study of pregnancy outcome following idiopathic recurrent miscarriage. *Hum Reprod*. 1999;14(11):2868-71.
3. Trinder J, Brocklehurst P, Porter R, Read M, Vyas S, Smith L. Management of miscarriage: expectant, medical, or surgical? Results of randomised controlled trial (miscarriage treatment (MIST) trial). *BMJ*. 2006;332(7552):1235-40.
4. Forna F, Gulmezoglu AM. Surgical procedures to evacuate incomplete abortion. *The Cochrane database of systematic reviews*. 2001(1):Cd001993.
5. Wen J, Cai QY, Deng F, Li YP. Manual versus electric vacuum aspiration for first-trimester abortion: a systematic review. *BJOG*. 2008;115(1):5-13.
6. Dodge LE, Hofer LG, Hacker MR, Haider S. Patient satisfaction and wait times following outpatient manual vacuum aspiration compared to electric vacuum aspiration in the operating room: a cross-sectional study. *Contraception and reproductive medicine*. 2017;2:18.
7. World Health Organization DoRHaR. Safe abortion: technical and policy guidance for health systems. Second ed2012. 132 p.
8. Farooq F, Javed L, Mumtaz A, Naveed N. Comparison of manual vacuum aspiration, and dilatation and curettage in the treatment of early pregnancy failure. *Journal of Ayub Medical College, Abbottabad : JAMC*. 2011;23(3):28-31.
9. Gaertner E, Petro G, de Jong P. Comparison of the footpump suction evacuator with the manual vacuum aspirator for uterine evacuation. *South African medical journal = Suid-Afrikaanse tydskrif vir geneeskunde*. 1998;88(2 Suppl):187-8, 91-2.
10. Qamar S, Masood S, Asif U. Management Of Early Pregnancy Loss: Manual Vacuum Aspiration Versus Dilatation And Curettage. *Pak Armed Forces Med J* 2016; 66 (Suppl-3): S173-77.
11. Lukman HY, Pogharian D. Management of incomplete abortion with manual vacuum aspiration in comparison to sharp metallic curette in an Ethiopian setting. *East African medical journal*. 1996;73(9):598-603.
12. Lince-Deroche N, Fetters T, Sinanovic E, Devjee J, Moodley J, Blanchard K. The costs and cost effectiveness of providing first-trimester, medical and surgical safe abortion services in KwaZulu- Natal Province, South Africa. *PloS one*. 2017;12(4):e0174615.
13. Das CM, Srichand P, Khursheed F, Shaikh F. Assessment of efficacy and safety of Manual Vacuum Aspiration (MVA). *JLUMHS*. 2010;9(03):130.
14. Say L, Brahma D, Kulier R, Campana A, Gülmezoglu AM. Medical versus surgical methods for first trimester termination of pregnancy. *The Cochrane Library*. 2002.
15. Greenslade F, Benson J, Winkler J, Henderson V, Wolf M, Leonard A. Summary of clinical and programmatic experience with manual vacuum aspiration. *IPAS Advances in Abortion Care*. 1993;3(2):1-4.
16. Pereira PP, Oliveira ALMLd, Cabar FR, Armelin AR, Maganha CA, Zugaib M. Comparative study of manual vacuum aspiration and uterine curettage for treatment of abortion. *Revista da Associação Médica Brasileira*. 2006;52(5):304-7.
17. Marshall B. Emergency room vacuum curettage for incomplete abortion. *The Journal of reproductive medicine*. 1971;6(4):177.
18. Warriner IK, Meirik O, Hoffman M, Morroni C, Harries J, Huong NM, et al. Rates of complication in first-trimester manual vacuum aspiration abortion done by doctors and mid-level providers in South Africa and Vietnam: a randomised controlled equivalence trial. *The Lancet*. 2006;368(9551):1965-72.
19. Mansoor A. Assessment of efficacy and safety of manual vacuum aspiration (MVA). *Journal of Rawalpindi Medical College*. 2013;17(1):107-9.