Original Article

Manual Vacuum Aspiration (MVA): The Cheaper Way

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Objective: To determine the safety and efficacy of S2Q Improvised Manual Vacuum Aspiration (MVA).

Methodology: This prospective descriptive study was conducted in the department of obstetrics &gynecology at C.M.H. Lahore and PNS Shifa Hospital, Karachi, Pakistan from May2012 to Apr 2013.Total 150 Patients underwent the MVA procedure; 50 for diagnostic endometrial sampling and 100 for therapeutic pregnancy related indications. The patients with molar pregnancy and structural uterine malformations were excluded from the study. The S2Q MVA set was prepared out of common surgical disposable equipment consisting of a big nosel 60cc syringe, nelaton tube, and a holding plunger. Data were analyzed using MS excel.

Results: MVA for abortion and retained products of conception (RPOCs) related indications with had an efficacy of 99% while patients with heavy menstrual bleeding (HMB) and post menopausal bleeding (PMB) had an efficacy of 98%.

Conclusion: S2Q MVA was an effective and much cheaper alternative to the commercially available expensive MVA kits. (Rawal Med J 2014;39: 178-181).

Key words: MVA, Abortion, RPOCs, HMB, PMB.

INTRODUCTION

Manual Vacuum Aspiration (MVA) is technique being used for last three decades. Initially, it was used for management of incomplete miscarriage and later for missed miscarriage, molar pregnancy and termination of pregnancy. Currently, it is also recommended for endometrial sampling. It is cheap, safe, cost effective, portable, with lesser analgesia requirement, lesser hospital stay and lesser complications like hemorrhage, perforation etc. It has efficacy of upto 96-99.5%.Complete abortion rates between 95% and 100% are reported.

MVA is recommended for management of miscarriages especially in rural areas where access to medical facilities and health care professionals is limited and cases are being treated by Dais and LHVs. Unsafe abortion (which are approximately 22 million each year) related complications are contributing to the death of estimated 47000 women per year, especially in countries with restrictive abortive laws.

The purpose build device for manual vacuum aspiration is commercially available for around Rs. 6000 and is recommended for reuse after high-level disinfection. However, in far reaching areas of our country, it is not possible to ensure constant supply of the equipment or the disinfectants. We devised an MVA kit [named as S_2Q(Shehla, Sarwat, Qudsia) MVA] improvised out of commonly used cheap surgical disposable instruments. There is no issue of maintenance and sterilization and average cost of one S2Q MVA set is around 250 rupees only.

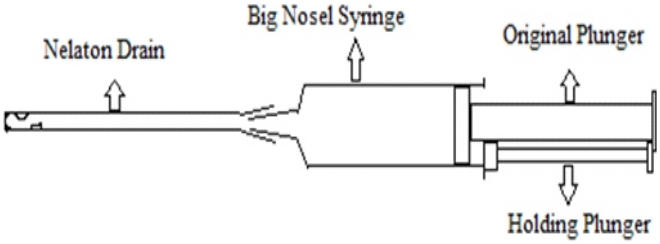
METHODOLOGY

This prospective study was conducted in the department of obstetrics and gynecology at C.M.H. Lahore and PNS Shifa Hospital, Karachi, Pakistan from May 2012 to Apr 2013.A total of 150 patients were enrolled; 100 had problems in early pregnancy and 50 had an indication of endrometrial sampling due to menstrual disorder. Inclusion criteria were miscarriage less than 12 wks size (incomplete, missed), RPOCs after delivery or TOP (termination of pregnancy) and endometrial sampling due to HMB (heavy menstrual bleeding) or PMB (postmenopausal bleeding). Patient with molar pregnancy, coagulation disorders, uterine anomalies and hemodynamically unstable patients were excluded from the study.

The test equipment consisted of big nosel, 60 cc

syringe, nelaton drain(size varying according to the cervical opening), a plunger of 10/ 20 cc syringe to hold plunger of big noselsyringe in a state of negative pressure (Fig. 1).The medics and paramedics at all the levels were trained in the procedure including the house officers, nursing staff and Midwives.

Figure 1. Setting up simple S2Q MVA system.



The patients were given mild analgesia with Tramadol infusion, and none of them received general anaesthesia (GA).Those presenting in emergency with incomplete miscarriage and open cervical os underwent procedure in labour room, while the cases with missed miscarriage etc first received cervical priming with misoprostol, as per FIGO guidance where clinical assessment rendered it necessary.

After Informed consent, the technique consisted of introducing the nelaton drain into uttering cavity till it touches the fundus, creating negative pressure by withdrawing the piston of big nosel syringe and holding it in its place with a 20 cc plunger. Then back and forth movement was given to the tube with gentle rotation so that all the walls are curetted. Completion of evacuation in case of miscarriages was confirmed clinically by signs of uterine evacuation that is grating sensation, reduced uterine size, absence of RPOCS and froth in the suction tube and later by trans vaginal scan (TVS).

RESULTS

Out of 150 patients, 100 underwent MVA procedure for pregnancy related indications while 50 underwent diagnostic endometrial sampling (Table 1). Clinical characteristics of study population are shown in Table 2. Missed and incomplete abortion and endometrial sampling were commonest indications for the procedure (Table 3).

Table1.Distribution of cases studied.

Diagnosis	Cervical Priming Received	Number	Percentage
Incomplete miscarriage including spontaneous and induced	No	63	63%
Anembryonic pregnancy/Missed miscarriage<12 wks	Yes	34	34%
Post delivery RPOCS	Depending upon clinical findings	3	3%
Heavy Menstrual bleeding	No	41	82%
Postmenopausal bleeding	No	9	18%

Table 2.Demographic distribution of gravid population.

Character	Result
Marital status	All married
Mean ± SDage	28.2 ± 3
Mean ± SD parity	2 ± 1.3
Mean gestational age	10 ± 6 days

Table 3.Indications for procedure.

Indications	Number	Percentage
Missed miscarriage	34	22.67%
Incomplete miscarriage	61	40.67%
RPOCs after delivery	3	2%
Induced miscarriage	2	1.33%
Endometrial sampling	50	36.67%

Incases requiring evacuation, 100% had complete evacuation. The adequacy of endometrial sampling was obtained in 49 (98%) patients. None of the cases developed infection, intractable hemorrhage, uterine perforations, or needed blood transfusions.

In all the pregnancy related procedures, complete expulsion was achieved, and any level of performer reported no perforations. 98% of the patients were satisfied with the procedure while only 2 patients commented that they would rather prefer it under GA, if needed again.

The staff who previously were using standard MVA by IPAS equipment, also used S2Q MVA, reported later to be of similar effectiveness but much more convenient in being hassle free. This was mainly because the overall cost of single set was so low that it was used only once per procedure, hence eliminating the difficult process of high level disinfection.

DISCUSSION

WHO recommends MVA for treatment of incomplete miscarriage in developing countries and dilatation and curettage (D&C)is only indicated if MVA is not available. As Pakistan is low resource country with power crisis, we need to use MVA or even its cheaper alternative, as used in our study, especially in rural areas. MVAis even superior to misoprostol, as seen in a study showing 100%efficacy of MVA and 92% with misoprostol.

In our study, mean parity was 2±1.2 and mean gestational age was 9wks±6 days. Mean operation time was 8.11±2.25min. A Meta-analysis of 10 studies made similar observations. This may be due to repeated emptying of syringe owing to its limited capacity, which is a contributing factor in such cases. It is consistent with previous studies which showed an average 10 min operation time[,11]

No patient required GA, only 2 commented that they will prefer to have it under GA, if needed again. This is consistent with other studies. The recommended surgical technique for abortion up to gestational age less than 15 weeks is vacuum aspiration. Its high efficacy has been well established in several randomized controlled trials with complete abortion rates between 95% and 100%.[4,5] Electric and manual vacuum technologies appear to be equally effective; however, the use of manual vacuum aspiration is associated with less pain in pregnancies under 9 weeks' gestation and with more procedural difficulty over 9 weeks' gestation.[7] Vacuum aspiration under 14 weeks' gestation is more effective and associated with fewer minor complications than medical abortion.[5] Our study is contrary to another study which found significantly higher pain severity with MVA vselectric vacuum aspiration (EVA). This could be due to individual threshold for pain and also because our study had primed cervix (where it was required based on clinical assessment e.g. tightly closed, firm cervical os) so procedure was easier to do.

Our efficacy of 99% is equivalent to another study for MVA[8] in terms of incomplete miscarriage with no complications. It is better than reported effectiveness of 95%.[13] No patient had incomplete evacuation in our study, however, rate of incomplete evacuation of 2-3% have been reported. Our equipment has shown results better than standard MVA equipment and also standard surgical curettage reported in literature.

No complications like infection or haemorrhage were seen, which is lesser than in literature. Vacuum aspiration is recommended over D&C by FIGO for uterine evacuation, as it is associated with less blood loss, less pain and shorter procedure times. Although any instrumentation of uterus can result in complications, MVA is overall associated with complication rate of 2%.

No complication like blood transfusion, or longer hospitalization, or perforation was seen with this equipment. This was possibly due to soft and flexible nelton tube used in instrument. However it is also reported upto 0.06% with MVA.

Our primary purpose was to document the safety and efficacy of a cheaper alternative to standard MVA apparatus in our low resource country with poor health facilities specially in rural areas where constant supply of specific equipment, its maintenance and sterilization cannot be ensured. We conducted the study in outpatient department and labour room rather than operation theater and no GA was used. Thus, it results in substantial cost savings,[16] lesser waiting time. Minor complications are reported to 0.72% with MVA in literature. We have studied a cheaper alternative for this highly effective treatment modality of uterine evacuation. We are looking forward for rising interest of discussion in this method after our study results and increased acceptance of this method. Another study for direct comparison of S2Q MVA versus Standard MVA equipment is already being undertaken at PNS Shifa Hospital.

CONCLUSION

MVA is established treatment modality for miscarriages and the S2Q MVA can be improvised effectively out of simple surgical equipment. The equipment can prove lifesaving in emergencies with much lower overall cost on health care system. Manufacturers should consider making graduated nelaton drains and small sized drain should be made available with rigid tubings as well. S2Q MVA should be included in training curricula of the midwives and LHVs, so that safe abortion services

can be provided in the most underprivileged areas of the country.

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