ORIGINAL ARTICLES

MANAGEMENT OF EARLY PREGNANCY LOSS: MANUAL VACUUM ASPIRATION VERSUS DILATATION AND CURETTAGE

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ABSTRACT

Objective: To compare the safety and cost effectiveness of manual vacuum aspiration (MVA) with dilatation and curettage (D&C) in first trimester pregnancy losses.

Study Design: Randomized control trial.

Place and Duration of Study: Conducted in Obstetrics and Gynaecology department of Combined Military Hospital Lahore from July 2014 to June 2015.

Material and Methods: The study involved 120 women divided into two groups of 60 each through consecutive sampling with one undergoing MVA and the other D&C. All women with gestational age <12 weeks with a diagnosis of anembryonic pregnancy, failed medical induction, incomplete or missed miscarriage were included in the study.

Results: The general characteristics of the groups were the same. In the MVA group the mean duration of procedure was 13.4 (± 2.7) min with mean hospital stay being 14.2 (± 2.4) hours. The D&C group had a mean duration of procedure of 24.6(± 5.3) min with mean hospital stay being 28.9 (± 4.8) hours. The mean cost of MVA was Rs 4820 ± 270.76 versus Rs 14,280 ± 927.38 for D&C. In MVA and D&C groups incomplete evacuation occurred in 3(5%) patients and 1(1.7%) patient respectively. The incidence of infection was 5% in MVA group and 3.3% in D&C patients. The rest of the complications occurred only in the D&C group, with 1(1.7%) patient having uterine perforation, 1 (1.7%) having haemorrhage and 1(1.7%) having anaesthesia complications.

Conclusion: MVA is as safe and effective as D&C for the management of miscarriage. Moreover MVA is cost effective as both hospital stay and procedure times are shorter.

Keywords: D&C, Miscarriage, MVA, Pregnancy termination.

INTRODUCTION

Early pregnancy loss occurs in 15-20% of recognised pregnancies. In spite of the fact that there has been progress in the field of medical technology, complications arising due to unsafe abortion still lead to 10-13% of maternal deaths in developing countries[1,2]. Hence we continue our pursuit of a safe and cost effective method of uterine evacuation.

Uterine evacuation is the removal of products of conception. There are many ways of performing this in the first trimester such as vacuum aspiration, surgical methods and pharmacological methods. Within these categories there are several different methods that can be employed. These depend upon the experience and training of the staff available and the equipment and materials provided at the time. A patient's individual clinical status, uterine size, pregnancy length and patient's choice are important considerations in deciding which method is best suited.

MVA is a safe and effective method of uterine evacuation with a success rate of 95 to 100 per cent[3-5]. It is quite practical when carried out on an outpatient basis, requiring fewer resources such as personnel, general anaesthesia, beds and operating theatres. MVA requires low level of pain management, with local anaesthesia, oral

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analgesics or light sedation, allowing the woman to remain awake and aware of what is happening during the procedure.

Indicators for considering surgical evacuation include continuous excessive bleeding, haemodynamic unstable patient and, signs of infected retained products of conception.

Possible side effects of uterine evacuation methods are abdominal cramping, menstrual like bleeding, nausea and vomiting. Although less common, complications include incomplete evacuation, cervical tears, uterine perforation, pelvic infection, haemorrhage and anaesthesia complication.

Sharp curettage is still the most widely practiced method of dealing with incomplete abortion in many developing countries. It usually entails the use of general anaesthesia in an operating theatre and often involves an overnight stay in the hospital[6].

Although the technique of MVA has been used widely in USA, African, Asian and European countries, its use in Pakistan, despite being a low resource country, is low. Very little data is available to prove its feasibility, safety and efficacy over D&C in our setup. Hence we conducted this study with the aim of comparing the safety and efficacy of MVA over D&C in first trimester pregnancy losses.

MATERIAL AND METHODS

This was a randomized control trial conducted in Obstetrics and Gynaecology department of Combined Military Hospital Lahore from July 2014 to June 2015. All women with gestational age <12 weeks with a diagnosis of anembryonic pregnancy, incomplete or missed miscarriage were included in the study after informed consent.

Patients with clinical signs of infection (fever, offensive discharge or generalised lower abdominal pain) were not included. Patients that were unwilling to participate in the study or women with molar pregnancy, septic miscarriage, uterine anomalies, leiomyomas >12 weeks, any medical disorder such as anti HCV positive or coagulopathy or haemodynamic instability were not included. Similarly patients with allergy to misoprostol and/or contr-aindication to use of misoprostol were not included. Patients who had an allergic reaction to local anaesthetic agents were also excluded.

A total of 120 women were included, 60 in each group through non probability consecutive sampling. The patients recruited were allowed to proceed with the procedure on alternate basis i.e. the first patient underwent manual vacuum aspiration and the next one underwent dilatation and curettage.

The concept of MVA is basically identical to routine surgical management of miscarriage except in the fact that it accompanies the recruitment of a handheld suction syringe.

Vitals including pulse, temperature and blood pressure were noted upon admission. Diagnosis of miscarriage was made by history, physical examination and ultrasonographic scanning (USG). The date of the last menstrual period and USG were used to determine the gestational age.

All the women were given 400µg misoprostol sublingual, 03 hours before procedure for cervical priming. The time taken for the misoprostol to dissolve was 10-15 min. The patients were instructed not to sallow the tablets during this period. For pain relief, 400-800 mg ibuprofen was administered orally one hour before the procedure.

The women were requested to empty the bladder right before the operation. The patient underwent a vaginal examination in the lithotomy position after proper cleaning with antiseptic solution and draping.

Bimanual examination was done. The anterior lip of the cervix was held with vulsellum and para cervical block was given.

Ipas MVA Plus was used for evacuation. It is a latex-free double-valve syringe with a volume of 60 ml and has the ability to make a

vacuum of 610 mm Hg to 660 mm Hg. Cannulas were 24 cm long and were colour coded correspondingly to their diameter, which ranged from 4-12 mm. The suction cannula used was of the same diameter (in mm) as the gestational age in weeks. The tube was flexible and tips were rounded to help reduce the chances of uterine perforation. The intrauterine contents were aspirated through the cannula and when the syringe was four-fifths full, it was removed from the cannula and emptied. The syringe was then prepared again.

After completion of procedure, products of conception were sent for histopathology. Pain scoring was done using visual analogue score. Recordings were made on a 0-10 numerical scale. Scores between 0-3 were considered to be mild, 4-6 as moderate and 7-10 as severe pain. All patients with severe pain were given injectable analgesics.

Table-1: Comparison of procedure indications and complications in both groups.

Indication for procedure	**MVA(n=60)**	**D&C(n=60)**	***p*-value**
Incomplete miscarriage	9 (15.0%)	12 (20.0%)	0.752
Missed miscarriage	24 (40.0%)	20 (33.3%)	
Anembryonic pregnancy	25 (41.7%)	27 (45.0%)	
Failed medical treatment	2 (3.3%)	1 (1.7%)	
Complications			
Incomplete evacuation	3 (5%)	1 (1.7%)	0.37
Uterine perforation	0	1 (1.7%)	
Infection	3 (5%)	2 (3.3%)	
Blood loss >100 ml	0	1 (1.7%)	
Anesthesia	0	1 (1.7%)	

Table-2: Comparison of visual analogue score among both groups.

Level of pain	**MVA (n=60)**	**D&C(n=60)**	***p*-value**
Mild(0-3)	53 (88.3%)	60 (100.0%)	0.024
Moderate(4-6)	5 (8.3%)	0 (0.0%)	
Severe(7-10)	2 (3.3%)	0 (0.0%)	

Table-3: Comparison of procedure cost and duration among both groups.

Time	**MVA**	**D&C**	***p*-value**
Duration of procedure and post op time (minutes)	13.4 (±2.7)	24.6 (±5.3)	<0.001
Total time in hospital (hours)	14.2 (±2.4)	28.9 (±4.8)	<0.001
Cost (Rupees)			
4000-6000	60	0	<0.001
13000-15000	0	59	
>15000	0	1	
Mean ± SD	4820 ± 270.76	14280 ± 927.38	<0.001

p-value<0.05 taken as significant.

Dilatation and curettage was performed under general anaesthesia in the operation room. Metallic dilators were used for dilatation and sharp curettage was done until the procedure was completed.

To decrease the bias both these procedures were performed by senior registrar or assistant professor and the data was collected on Performa.

Data entry and analysis was done by SPSS version 20. The main outcomes include hospital stay, hospital cost, complication and duration of

procedure. Chi square and t-test were used for categorical and continuous variables respectively. A *p*-value of <0.01 indicated significance in all of the analyses.

RESULTS

A total of 120 women participated in this study. The mean age of the MVA group, in years, was 26.1 ± 4.30 while the mean age in the DNC group, also in years, was 27.3 ± 5.04 (*p*-value being 0.16, not significant). The Gestational age (wks) in the MVA group was 9.9 ± 1.20 and in the D&C group it was 10.2 ± 1.40 (*p*-value being 0.21, not significant).

In the MVA group 19 (31.7%) women were primigravida, 36(60%) were multigravida and 5 (8.3%) were grand multigravida. The D&C group had 18 (30%) women who were primigravida, 40 (66.7%) who were multigravida and 2 (3.3%) who were grand multigravida.

The complete evacuation rate (success rate) was similar in both groups (95% in MVA and 98.3% in D&C). The remaining cases were given medical treatment to complete evacuation. With regards to complication there is no difference between the two. There was no excessive blood loss requiring transfusion except in one case which required laparotomy for perforation during the procedures.

DISCUSSION

MVA is particularly appealing because it is convenient and extremely safe. It is not associated with an increased risk of pain, bleeding, uterine perforation or infection. Furthermore it is cost effective.

Employing MVA allows women to undergo treatment in a timely way. With the removal of the requirement of general anaesthesia, any delays that are associated with availability of operating room space can be avoided. The woman can be discharged soon after the procedure. MVA is a suitable technology for a developing country like Pakistan where electrical supply is not constant.

There has been an increase in the use of this method in the developing world[7]. It is also recommended as an effective and acceptable surgical method in Royal College of Obstetrics and Gynaecologists (RCOG) evidence based guideline, the care of women requesting induced abortion[8]. Many other studies have shown MVA to be a practical alternative to EVA with high success rates[9-16]. These studies have proved that management of incomplete abortion with manual vacuum aspiration is cost effective with short hospital stay.

A systematic review of ten randomised trials which involved 1660 women compared MVA against EVA for first trimester miscarriage. There was found to be no difference in the number of complete evacuations and patient satisfaction[16].

Another study conducted at Michigan University compared 115 women undergoing MVA with 50 women undergoing D&C in theatre. The procedure itself took 80% more time and costs were at least two-fold higher in D&C than in the office setting[17].

In an analysis of cost studies carried out in Kenya, Mexico and the United States, MVA was shown to be cheaper than D&C[18].

The patient needs to be fully counselled on what she should expect in each procedure and ample time to reach a decision. Counselling regarding contraception should also be given. There appears to be no statistical difference in the patient's acceptability of MVA versus D&C[16].

The complication rate is low in both groups because the procedure was done by senior personnel and not by trainees. There was only one perforation in D&C group and none in MVA group because MVA is done by soft flexible cannula.

There are, however, limitations of the study. The patients were not randomised to the procedure. In addition, the sample size could not be increased due to the unavailability of senior registrar / assistant professor.

CONCLUSION

Our study shows that MVA is a better option than D&C for surgical management of miscarriage due to its cost effectiveness, usefulness in the absence of electricity and its reduction in total hospital stay time, while being able to maintain the same level of complications in selected patients.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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