

# Manual Vacuum Aspiration: A Safe Tool for Evacuation of First Trimester Miscarriage

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## ABSTRACT

**Background:** Early pregnancy loss known as abortion or miscarriage is a common problem of females and is the main root cause for majority of pregnancy losses in world.

**Aim:** To find the frequency of success rate of manual vacuum aspiration (MVA) among females presenting with missed abortion during first trimester of pregnancy.

**Study Design:** Descriptive, cross-sectional.

**Methodology:** The current project was conducted at department of Obstetrics and Gynaecology, Jinnah Hospital, Lahore from 15-06-2018 to 15-12-2018. Study comprised of 174 females cases with early pregnancy loss. The females were 15 to 45 years old with singleton pregnancy (on scan) having first trimester (12 weeks) missed abortion and they were evacuated through MVA. The collected data was analyzed by using SPSS version 20. Mean with standard deviation was calculated for age, parity and gestational age. Post-stratification chi-square test was used and probability level  $\leq 5\%$  was measured as significant.

**Results:** In our study, MVA success rate was 97.1%. Females with 9-12 weeks of gestational age were successfully evacuated by MVA than  $<9$  weeks of gestational age. On parity basis, primiparous group showed more satisfactory results followed by nulliparous. Similarly, MVA was also successful in both females group (51%) with and without (49%) C-section history.

**Conclusion:** Manual vacuum aspiration (MVA) is a safe and effective method to treat the patients with missed abortion in first trimester. In this study, it has shown higher efficacy and excellent success rate.

**Keywords:** Pregnancy, Abortion, Trimester and Manual Vacuum Aspiration.

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## INTRODUCTION

Early pregnancy loss known as abortion or miscarriage is a common problem of females and is the main root cause for majority of pregnancy losses in world<sup>1,2</sup>. Reports indicated that 25% females will have to face such a loss in their life period<sup>3</sup>. Another study disclosed that 15% of medically diagnosed pregnancies are lost due to missed miscarriage and 890,000 women in a year face missed miscarriage problem<sup>4</sup>. Likewise, this gynaecological problem is also common in Pakistan and 29 women out of 1000 in age of 15-49 years have to experience abortion problem<sup>5</sup>.

The maximum abortions occurred before 12 weeks of pregnancy and handled through various procedures such as conventional dilatation, curettage etc<sup>6</sup>. Need for safe uterine evacuation is very important which can minimize the pelvic pain, infection and blood losses. Unsafe method causes complications during evacuation procedure and contributes 10-13% mortality in developing countries<sup>7,8</sup>.

Therefore, to look for cost effective and most safe method to evacuate uterine after missed miscarriage is very important. Currently there are numerous procedures such as sharp curettage, conservative management, evacuation via medical with misoprostol and vacuum aspiration are available. Vacuum aspiration is used widely because of its cost effective, safety and less painful as compared to medical and curettage methods<sup>3,5</sup>.

The maximum success rate (95-100%) with high safety of vacuum aspiration has been documented in different studies [5, 9]. Furthermore, vacuum aspiration is further divided into electrical vacuum aspiration and manual vacuum aspiration and both are available in the medical market. However, manual vacuum aspiration (MVA) is more cost effective as it does not use electricity, has light weight and can be used under local anaesthesia<sup>5</sup>. Thus, it is more valuable in developing countries where surgical equipment are not easily available and electrical problems are more<sup>8,9</sup>.

MVA method has been used in Europe, United States of America, Asia and Africa to manage the missed miscarriage and molar pregnancy<sup>10,11</sup>. However, use of MVA in Pakistan, being a developing country with limited resources, is low. Few studies are available which show various degrees of success, safety and efficacy of MVA. Therefore, the present study was planned to find the success rate of MVA among women having missed abortion during their first trimester of pregnancy.

The objective of the study was to find the frequency of success rate of manual vacuum aspiration (MVA) among females presenting with missed abortion during first trimester of pregnancy.

## METHODOLOGY

Present descriptive cross sectional study was conducted at department of Obstetrics and Gynaecology, Jinnah Hospital, Lahore from 15-06-2018 to 15-12-2018 following the approval by the Hospital's Ethical Committee. Study

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comprised of 174 females cases with early pregnancy loss. The females were 15 to 45 years old with singleton pregnancy (on scan) having first trimester (12 weeks) missed abortion and they were evacuated through MVA. Consent was taken from subjects. Patients not willing to MVA under general anesthesia, uterine anomalies (on ultrasound), previous attempt of surgical or medical evacuation determined on history, abnormal coagulation profile (PT >15 sec, APTT >35 sec) and medically unstable patients (BP  $\geq$  140/90 mmHg, BSR >200mg/dl, abnormal ECG and cardiac profile on record) were ruled out.

**Statistical analysis:** The collected data was analyzed by using SPSS version 20. Mean with standard deviation was calculated for age, parity and gestational age. Percentages and frequencies were also recorded for qualitative variables like H/o cesarean section and success. Data were stratified for age, parity, gestational age and H/o cesarean section. Post-stratification chi-square test was used and probability level  $\leq$ 5% was measured as significant.

## RESULTS

General parameters (age, parity, gestational age, Hx of C-section & success) for all enrolled patients in present study were presented as frequency and percentage with their respective means $\pm$ SD in table-1.

Results for the stratification of success of MVA with respect to age and gestational age among 174 enrolled patients was shown in table 2.

Results for the stratification of success of MVA with respect to parity and c-section history among 174 enrolled patients was shown in table-3.

Table-1: General characteristics of all enrolled patients

Variables	Groups	Frequency	%age
Age (years)	15-25	48	27.6
	26-35	115	66.1
	36-45	11	6.3
Mean $\pm$ SD (years)	28.08 $\pm$ 5.71		
Gestational age(weeks)	<9	60	34.5
	9-12	114	65.5
Mean $\pm$ SD(weeks)	9.61 $\pm$ 1.48		
Parity	Nulliparous	64	36.8
	Primiparous	34	19.5
	Multiparous	76	43.7
Mean $\pm$ SD	1.14 $\pm$ 1.42		
History of C-Section	Yes	89	51
	No	85	49
Success among patients	Yes	169	97.1
	No	05	2.9

Table-2: Stratification of success of MVA with respect to age & gestational age

Age (years)	Yes	n	P-value
15-25	46	2	0.310
26-35	113	2	
36-45	10	1	
<b>Gestational age (weeks)</b>			
<9	58	2	0.792
9-12	111	3	

Table-3: Stratification of success of MVA with respect to parity & C-section

Parity	Yes	N	P-value
Nulliparous	62	2	0.513
Primiparous	34	0	
Multiparous	73	3	
<b>History</b>			
History of c-section	87	2	0.478
History of c-section	82	3	

## DISCUSSION

A descriptive series trial was initiated to observe the success frequency of MVA in patients with missed abortion. MVA is approved by WHO as a safe and efficient procedure to evacuate uterine and hereafter this method is used in developing countries. In current project, it was found that the success rate of MVA was 97.1%. The results were in findings with Das et al<sup>12</sup> who showed success of MVA 88.1%. However Ansari et al<sup>6</sup> reported its success rate in their series as 97%. Alike, Westfall et al<sup>13</sup> also initiated similar trial and revealed that MVA was effective (99.5%) to terminate the pregnancy of <12 weeks' gestation age and very low complication rate was noted. MVA is being used successfully from last 3 decades throughout the world to manage early pregnancy loss because of its simplicity and better results than other methods<sup>14</sup>. Unfortunately, it is not used frequently in developing countries like Pakistan presumably due to unawareness of hospitals clinicians.

This study will be helpful to manage the early pregnancy loss particularly for tertiary care Hospitals where burden of patients is more and healthy facilities are limited and financial resources are also limited. Tasnim et al<sup>15</sup> documented in their findings that MVA was very effective and safe, and decreased hospital stay than other methods. They further mentioned that in outpatients, its success rate for complete evacuation was 96.1%. Similarly, Ashraf et al<sup>9</sup> compared MVA with intravaginal misoprostol and reported both were effective. Likewise Tasnim et al<sup>5,15</sup> observed that MVA showed better results in term of safety and is alternative to electric vacuum aspiration. MVA reduced the cost and also decreased the need for electricity and general anaesthesia. However, clinicians should be trained and familiarized regarding proper use of MVA.

## CONCLUSION

We concluded that manual vacuum aspiration (MVA) is a safe and effective method to treat the patients with missed abortion in first trimester. In this study it has shown higher efficacy and excellent success rate. It is therefore suggested that this technique should be made a routine in our clinical setups.

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**Limitations:** Our study had several limitations like financial constraints and fewer resources. It was a single centre study and we did not perform genetic workup among patients in-order to find the genetic cause.

**Conflict of interest:** None

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