

# International Journal of Clinical Obstetrics and Gynaecology

ISSN (P): 2522-6614  
ISSN (E): 2522-6622  
© Gynaecology Journal  
www.gynaecologyjournal.com  
2018; 2(5): 14-18  
Received: 25-07-2018  
Accepted: 26-08-2018

## Dr. Jayashree V

Associate Professor, Department of  
Obstetrics and Gynaecology, Rajah  
Muthiah Medical College,  
Annamalai University,  
Chidambaram, Tamil Nadu, India

## Dr. Latha K

Professor, Department of  
Obstetrics and Gynaecology, Rajah  
Muthiah Medical College,  
Annamalai University,  
Chidambaram, Tamil Nadu, India

## Dr. Mahalakshmi S

Final Year Post Graduate,  
Department of Obstetrics and  
Gynaecology, Rajah Muthiah  
Medical College, Annamalai  
University, Chidambaram, Tamil  
Nadu, India

## Correspondence

### Dr. Jayashree V

Associate Professor, Department of  
Obstetrics and Gynaecology, Rajah  
Muthiah Medical College,  
Annamalai University,  
Chidambaram, Tamil Nadu, India

## 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

Dr. Jayashree V, Dr. Latha K, Dr. Mahalakshmi S

### Abstract

The aim of this study is to compare manual vacuum aspiration and dilatation and curettage in the surgical management of early weeks incomplete abortion in terms of efficiency of complete removal of the partially expelled products of conception, incidence and frequency of procedure induced complications, duration of procedure and duration of hospital stay.

**Methods:** A Randomized controlled trial carried out at Department of Obstetrics and Gynaecology, RMMCH, over a period of 18 months from (January 2017 – June 2018) after getting the approval of Ethical committee. Antenatal women of <12 weeks gestation with history of incomplete abortion were taken for the study and were randomly separated into two groups. Women in group A underwent Manual vacuum aspiration and women in group B underwent dilatation and curettage after getting informed and written consent regarding the purpose of the study and details of the procedure. The diagnosis of incomplete abortion was based on history, clinical examination and sonographic findings at the time of admission. In the present work, safety and efficacy, rate of occurrence of complications, duration of procedures, duration of hospital stay, requirement of repeat procedure and anaesthesia / uterotonics / blood transfusion were compared between the two groups. A total of 160 patients were enrolled with 80 in each group. The entire statistical procedure was carried out using statistical packages of Social Sciences (spcs-21).

**Results:** Manual vacuum aspiration is a more effective and rapid office procedure and was associated with less blood loss, shorter duration of hospitalization when compared to dilatation and curettage. There were no cases of uterine perforation and cervical laceration in both groups.

**Keywords:** Manual vacuum aspiration (MVA), Dilatation and curettage (D&C), uterotonics

### Introduction

Early pregnancy loss is the most common complication of human gestation, affecting 10-20% of clinically diagnosed pregnancies. Early pregnancy loss is defined comprehensively as “a disturbance in pregnancy occurring before the period of fetal viability resulting in expulsion or retention of pregnancy”. About 18% of zygotes do not implant, about 32% of implantation spontaneously abort near the onset of next expected menstrual cycle and are unrecognized called subclinical miscarriage; the remaining 15-20% are spontaneous miscarriages after clinical recognition of pregnancy. Majority 80% occur before 13 week of pregnancy out of which three fourth occur in the first two months of gestation.

Spontaneous miscarriage is defined as expulsion of the products of conception before the period of viability, about 20-22 weeks of gestation (WHO definition). RCOG defines the period of viability as 24 weeks.

### The classification of abortion includes

#### ▪ Sporadic

#### Spontaneous Miscarriage Includes

- Threatened abortion- where the process of abortion has set in but has not reached the stage of irreversibility; h/o vaginal bleeding with closed cervix.
- Incomplete abortion-where part of the products of conception (fetus or placenta) has already got expelled and the remaining part are unable to be naturally expelled by the mother. h/o vaginal bleeding with passage of clots/products associated with cervical changes.
- Inevitable abortion-where the process of abortion is happening and has progressed to an irreversible stage.

- Complete abortion- entire conceptus has passed out through the cervical canal followed by cessation of pain and bleeding.
- Missed abortion or embryonic demise – where confirmed nonviable pregnancy by ultrasound without any bleeding; no cervical changes and the conceptus remain in the womb.

**Induced miscarriage Includes**

1. Legal/ medical termination of pregnancy
2. Criminal

**Recurrent / habitual miscarriage**

The reliability of medical methods of incomplete abortion is uncertain and surgical methods are preferred to medical methods in first trimester abortions. The various surgical methods include dilatation and curettage, dilatation and evacuation (electrical vacuum aspiration) and manual vacuum aspiration.

Manual vacuum aspiration is the ideal method of termination of pregnancy of <12 weeks. The Government of India has accepted the MVA method as safe when performed upto 12 weeks by qualified medical personnel; upto 8 weeks if performed by trained midwives and nurses in primary health centres. When compared to sharp curettage methods vacuum aspiration technique is quicker, easier, requires less time and early discharge from hospital, less blood loss and need for blood transfusion, decreased rate of complications like uterine injury, cervical laceration and no need for anaesthesia. There is no need for additional uterotonics as there is minimal blood loss. Being developed as an alternative to the routine dilatation and curettage MVA is now evolving as the best surgical method of evacuation in first trimester abortion.

**Patients and methods**

**Study settings**

The study was done in the Department of Obstetrics and Gynaecology, Rajah Muthiah Medical College and Hospital, Chidambaram from January 2017 - June 2018.

**Study population**

Antenatal women with <12 weeks of gestation and history of incomplete abortion regardless of the cause of abortion, gravidity and maternal age, without any pelvic pathology, patent cervix were included in the study. patients with >12 weeks of gestation, with hemodynamic instability (hypovolemia/ septic shock)/ profound thrombocytopenia/ bleeding disorders, presence of any gynaecological pathology (uterus/ pelvic/ ovarian pathologies/ sexually transmitted infections), septic abortion (fever, tachycardia, purulent vaginal discharge, abdominal distension) and molar pregnancy were excluded from the study group.

160 patients were assigned for the study and were randomly assigned into two groups A & B

Group A underwent Manual Vacuum Aspiration

Group B underwent Dilatation and Curettage

An informed and written consent was obtained from the patients after explaining the details of the method and merits and demerits of both the procedures and included in the study.

The diagnosis of incomplete abortion was confirmed from history (menstrual history, any medications taken/ predisposing factors, h/0 passage of clots/ products of conception), clinical examination (bleeding through os, open internal cervical os) and obstetric sonogram (heterogenous/ echogenic material along the endometrial cavity and/or in the cervical canal)

Patients in group A – MVA was performed under paracervical block or with analgesics. In D&C group, patients required short general anaesthesia as pain was severe.

**Outcomes Assessed**

- Efficacy of the procedure (ultrasound revealed no evidence of retained products post procedure)
- Need for repeat evacuation
- Blood loss quantification and the need for blood transfusion
- Need for additional uterotonics (oxytocin, methergin, prostodin analogues) for arrest of bleeding
- Duration of procedure and hospital stay
- Chances for uterine perforation and cervical laceration

**Statistical analysis**

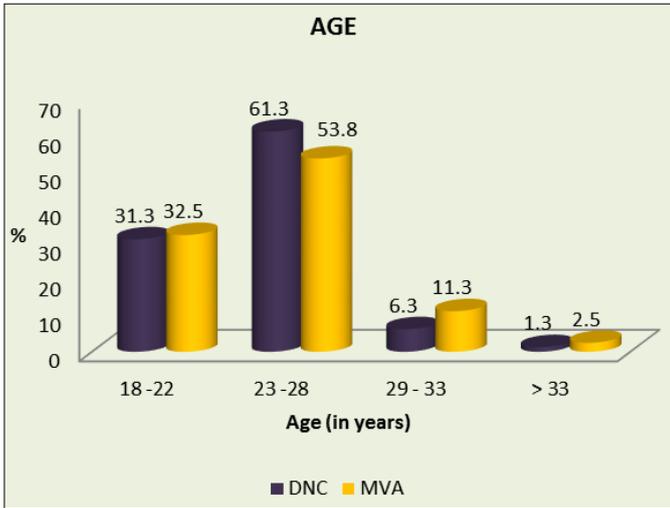
The entire statistical procedure was carried out using statistical package for social sciences – version 21. Duration of the procedure and hospital stay were compared between groups using independent sample ‘t’ test and chi-square test respectively. The complications such as excess blood loss, need for repeat procedure, use of additional uterotonics and blood transfusion requirement were compared between the two groups using frequency distribution and Chi-square test of association. The blood loss comparison is also done using independent sample ‘t’ test.

**Data analysis and results**

In the present work, efficacy and safety of MVA is compared with DNC in the management of early pregnancy failure. A total of 160 patients were enrolled and they were randomly divided in to either of two groups. Duration of procedure, hospital stay was compared between groups using independent sample 't' test and chi-square test respectively. Complications such as excess blood loss, repeat procedure, use of uterotonics and blood transfusion requirement was compared between groups using frequency distribution and Chi-square test of association. Blood loss comparison is also done using independent sample 't' test. The entire statistical procedure was carried out using statistical packages of social sciences. (SPCS-21)

**Table 1:** Age Distribution & Comparison

Age (in years)	DNC		MVA		Chi-Square Test	
	N	%	N	%	Value	'P'
18-22	25	31.3	26	32.5	9.53	.39
23-28	49	61.3	43	53.8		
29-33	5	6.3	9	11.3		
>33	1	1.3	2	2.5		
Total	80	100	80	100		
Mean	24.18		24.39			
S.D	3.26		3.69			



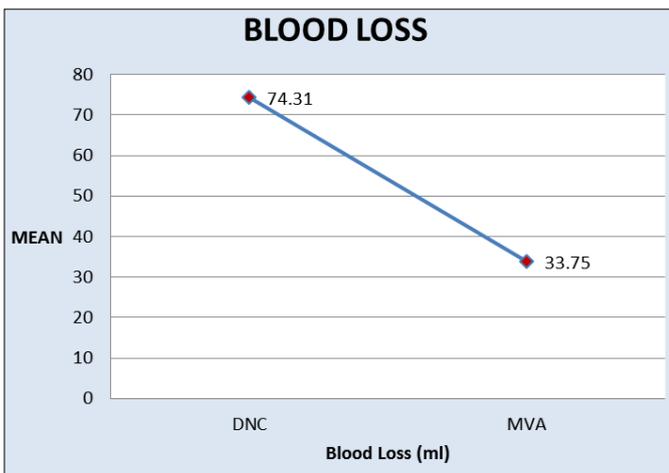
The common age group was 23 to 28 years where 61.3% in DNC and 53.8% in MVA were observed. The Chi-square test of independence is statistically significant. Hence the age of two groups are not differed significantly. The mean age of DNC was  $24.18 \pm 3.26$  whereas it was  $24.39 \pm 3.69$  for MVA.

**Blood Loss Comparison**

Blood loss	DNC		MVA	
	N	%	N	%
<100	63	78.8	80	100
>100	17	21.3	-	-
Total	80	100	80	100

**Table 2(6): Blood Loss Comparison**

	Mean	S.D	Independent Sample Test	
			't' value	'p'
DNC	74.31	25.12	13.57	.001
MVA	33.75	9.19		

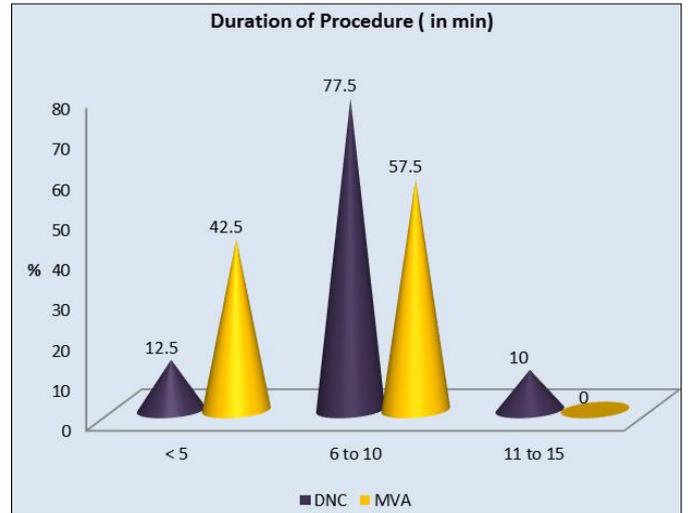


Excess blood loss was higher (N=17, 21.3%) in DNC when compared to MVA, where no excess blood loss was reported. The mean blood loss in DNC was  $74.31 \pm 25.12$  whereas it was  $33.75 \pm 9.19$  in MVA. The difference is statistically significant ( $P < .05$ ).

**Comparison of procedure related characteristics of both groups**

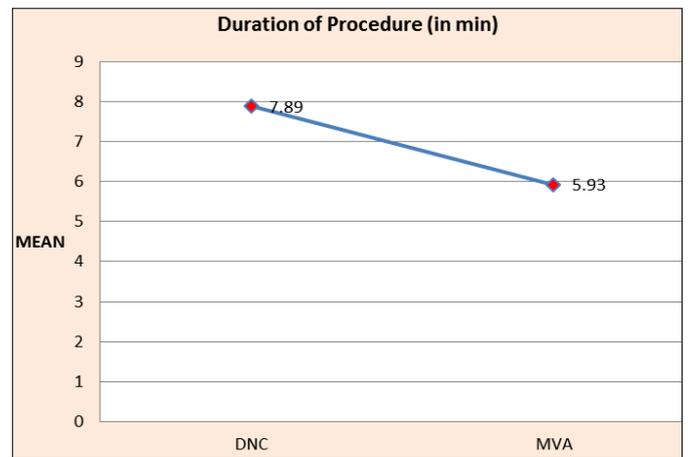
**Table 3 (a): Distribution of Duration & Procedure**

Duration of Procedure (Min)	DNC		MVA		Chi-Square Test	
	N	%	N	%	Value	'P'
≤5	10	12.5	34	42.5	3.30	.192
6-10	62	77.5	46	57.5		
11-15	8	10.0	-	-		
Total	80	100	80	100		



**Table 3(b): Comparison of Duration & Procedure**

Duration of Procedure (Min)	Mean	S.D	Independent Sample Test	
			't' value	'p' value
DNC	7.89	2.08	7.44	.001
MAV	5.93	1.11		



**Table 3(c): Duration of hospital day**

Hospital Stay (Days)	DNC		MVA		Chi-Square Test	
	N	%	N	%	Value	'P'
1	72	90	79	98.8	.113	.737
2	8	10	1	1.2		
Total	80	100	80	100		

In MVA, 42.5% had lesser than or equal to 5 minutes of duration of procedure.

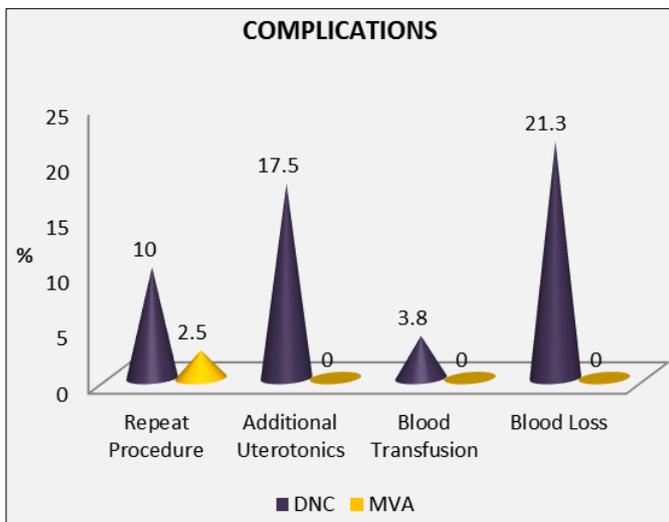
In DNC only 12.5% had lesser than or equal to 5 minutes of duration of procedure. In DNC, most of the patients had 6 to 10 minutes of procedure (N=62, 77.5%). Even 10% patients in DNC group had duration in excess of 10 minutes. The average duration of study procedure in DNC was 7.89±2.08 minute whereas it was only 5.93±1.11 minutes in MAV. The difference is statistically significant.

Only one patient (1.2%) had two days of hospital stay when compared to 8 patients (10%) in D&C group. but the Chi-square difference is statistically insignificant

**Table 4:** Comparison of Complications

Characteristic	DNC		MVA		'P'
	N	%	N	%	
Repeat Procedure	8	10	2	2.5	.633
Uterine Perforation	-	-	-	-	NA
Cervical Laceration	-	-	-	-	NA
Additional Uterotonics	14	17.5	-	-	NA
Blood Transfusion	3	3.8	-	-	NA
Blood Loss	17	21.3	-	-	NA

NA- not applicable



The repeat procedure was comparatively higher in DNC (10%) than in MVA (2.5%). Uterine perforation was not observed in both the groups. Cervical laceration was again not observed in both the groups. Additional uterotonics was used in 17.5% (N=14) in DNC whereas it was not used in MVA. Blood transfusion was required in 3.8% (N=3) in DNC and not at all in MVA group.

### Discussion

Manual Vacuum Aspiration being easier, noiseless, rapid, reusable, portable and economical, not dependent on electricity can be tried even as an office procedure in both urban and rural settings. It can be performed even by trained midwives/ nurses in a primary health care centre without the need for a fully equipped operation theatre and can be carried out under Para-cervical block/ analgesics. World Health Organisation [6, 9] and Family Welfare, government of India and FOGSI, based on a pilot training project recommend MVA as the first method of evacuation of first trimester abortion even in Primary Health Centres.

Am j Obstet Gynaecol 2000; 183: S76-S83. "Surgical abortion by vacuum aspiration is one of the most commonly reported surgical procedures in the United States". Manual vacuum

aspiration can be safely performed in all setups as an elective procedure in an office setup or as an emergency procedure in patients with incomplete abortion

It takes a few seconds to create vacuum; the pre created vacuum creates a cleavage plane separating the sac from the decidua facilitating the evacuation of entire sac, thus minimizing the blood loss. In case of any uterine perforation which is very rare, the vacuum within the syringe automatically drops to <10mm Hg and hence the chances of injuring intra-abdominal organs is very minimal. The syringe can be freely rotated 360 degrees-easy maneuverability.

Both the procedures were found to be effective [1, 2, 5, 7, 8, 11, 15]. MVA was effective in 97.5% of cases versus D&C was effective in 90% cases. The presence of retained products and the need for repeat procedure was observed in 2.5% of MVA cases versus 10% in D&C group. Result was comparable to Yin 2005, Suwan A *et al*, 2009 [2].

Uterine perforation and cervical laceration were not found in both groups. Similar result was found in Forna F, Gulmezoglu AM where uterine perforation was not seen in both the study groups. no cervical laceration was seen in either group in Yin, 2005, Suwan A *et al*, 2009 [2].

The need for additional uterotonics was seen in 17.5% of cases of D&C group, whereas additional uterotonics were not required in the MVA group [14].

The mean age of D&C was 24.18±3.26 versus MVA was 24.39±3.69. the difference is statistically insignificant [10, 13].

Excess blood loss was higher in D&C group (21.3%). No excess blood loss was found in MVA group. The mean blood loss was 74.31±25.12 in D&C versus only 33.75±9.19 in MVA. The difference was statistically significant. Comparable to Elie NK wabong, Joseph Nelson Fomulu, 2015 [1, 3].

The average duration of the study procedure in D&C was 7.89±2.08 minutes whereas it was only 5.93±1.11 minutes in MVA. The difference is statistically significant [4, 12].

In this study MVA was done entirely under para-cervical block. But D&C group, 80% cases required short general anaesthesia/ TIVA (total Intravenous analgesia). Only 20% cases were done under para-cervical block. Milingos 2009 where the study result establishes that MVA can be done without anaesthesia [8].

### Conclusion

It's evident from this comparative study that both dilatation and curettage and Manual vacuum aspiration are safe and effective for incomplete abortion in early weeks of gestation. Manual Vacuum Aspiration is associated with less pain and no need for anaesthesia and hence can be performed as an outpatient procedure without making any undue delay in evacuation and also necessitated decreased duration of hospital stay when compared to Dilatation and Curettage. Manual vacuum aspiration is a safe alternative to Dilatation & curettage in the surgical management of first trimester incomplete abortion.

### References

1. Elie Nkwabong, Joseph Nelson Fomulu. Dilatation and curettage versus Manual vacuum aspiration for first trimester clandestine abortions. Int J Reprod Contracept Obstet Gynecol. 2015; 4(3):716-720.
2. Suwan A, *et al*. Comparison of efficacy between Manual Vacuum Aspiration and Sharp curettage for the treatment of incomplete abortion. Thai Journal of Obstetrics and Gynaecology January. 2009; 17:43-50.
3. Rohana Salammm. Comparison study of Manual Vacuum Aspiration and Dilatation and Evacuation for the surgical

- treatment of early miscarriages: a Randomized Controlled Trial. *P J M H S* vol.10, No. 1, Jan-Mar 2016; 183-185.
4. Mohammed Abd El Ghafar. Comparative study of dilatation and curettage, manual vacuum aspiration and electric vacuum aspiration as methods of treatment of early abortion in BeniSuef, Egypt. *International Research Journal of Medicine and Medical Sciences*. 2013; 1(1):43-50.
  5. Gazvani R, Honey E, MacLennan FM, Templeton A. Manual Vacuum Aspiration in the management of first trimester pregnancy loss. *Eur J Obstet Gynecol REprod Biol*. 2004; 112:197-200.
  6. WHO. Safe abortion: Technical and policy guidelines for health systems. Geneva, 2003.
  7. Farooq F, Javed L, Mumtaz A, Naveed N. comparison of manual vacuum aspiration and dilatation and curettage in the treatment of early pregnancy failure. *J Ayub Med Coll Abbottabad*. 2011; 23:28-31.
  8. Miligos D, Mathur M, Smith N, Ashok P. manual vacuum aspiration a safe alternative for surgical management of early pregnancy loss. *Br J Obstet Gynecol*. 2009; 116:1268-71.
  9. WHO. Unsafe abortion: global and regional estimates of the incidence of unsafe abortion and associated mortality in 2003. 5<sup>th</sup> edition. Geneva: World Health Organisation, 2007.
  10. Yin LH. Efficacy assessment of terminating pregnancy by different methods of induced abortion. *Huaihai Med*. 2005; 23:115-116.
  11. Lukman HY, Pogharian D. management of incomplete abortion with manual vacuum aspiration in comparison to sharp metallic curette in an Ethiopian setting. *East Afr Med J*. 1996; 73:598-603.
  12. Lean TH, Vengadasalam D, PachauriS, Miller ER. A comparison of D&C and vacuum aspiration for performing first trimester abortion. *Int j Gynaecol Obstet*. 1976; 14(6):481-6.
  13. Zaldi S, Yasmin H, Hassan L, Khakwani M, Sami S. Replacement of dilatation and curettage /evacuation by manual vacuum aspiration, and the introduction of postabortion contraception in Pakistan. *Int J Gynaec Obstet*. 2014; 126(1):S40-4. doi:10.1016/j.jigo.2014.03.016. Epub 2014 Mar 30s
  14. International Federation of Gynaecology and Obstetrics (FIGO). Uterine evacuation: use vacuum aspiration or medications, not sharp curettage. Consensus statement on Uterine Evacuation. London: FIGO, 2012.
  15. Shahida Zaidi, Haleema Yasmin, Lubna Hassan, Mehnaz Khakwani, Shehla Sami, Tazeen Abbas. Replacement of dilatation and curettage / evacuation by Manual vacuum aspiration and medical abortion, and the introduction of postabortion contraception in Pakistan. *International Journal of Gynecology and Obstetrics*. 2014; 126:S40-S44.