**Research Article**

# Manual Vacuum Aspiration versus Sharp Curettage for Incomplete Abortion: Which One is Better?

## *Aspirasi Vakum Manual dibandingkan dengan Kuret Tajam untuk Abortus Inkomplit: Mana yang Lebih Baik?*

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## Abstract

**Objective :** To acknowledge the effectiveness and safety of manual vacuum aspiration (MVA) compared with Sharp Curettage (SC) in the management of incomplete abortion below 12 weeks of gestation which compare time to perform the procedure, rates of evacuation and infection one week after the procedure, and complication during MVA and SC procedure.

**Methods :** A prospective study with 62 subjects with incomplete abortion came to the emergency wom of at Dr. Cipto Mangunkusumo hospital, Fatmawati hospital and Karawang hospital, divided into 31 subjects on MVA group and 31 subjects on SC group. The data was documented on the time of MVA procedure compare to SC, clinical findings on complication during the procedure, completed evacuation and infection symptoms one week after the procedure.

**Results :** Sixty two subjects (31 each group) with average time of procedure was 17,65 ± 4,128 minutes and SC was 22,26 ± 4,611 minutes with p = 0,00 and 95% CI; -4,513(-6,837 to -2,389 with significant statistically difference. The comparison of completed evacuation one week after procedure was 3,2% (n = 1) on MVA and 6,5% (n = 2) on SC with clinical findings, and p = 0,554, RR = 1,034 and 95% CI 0,924 – 1,158 with no statistically difference. On the other comparison, we did not find any infection symptoms one week after procedure and complication during the procedure on both procedures.

**Conclusions :** MVA has more effective than SC on the time of procedure in incomplete abortion with below 12 weeks of gestation. MVA has superiority from completed evacuation but no statistical difference and has equal safety to SC on clinical infection symptoms and complication during the procedure.

**Keywords :** incomplete abortion, manual vacuum aspiration (MVA), sharp curettage (SC).

## *Abstrak*

***Tujuan :*** *Mengetahui efektifitas dan keamanan dari AVM dibandingkan dengan kuret tajam pada penanganan abortus inkomplit di bawah usia kehamilan 12 minggu dengan melihat dari lama tindakan, proporsi tingkat kebersihan evakuasi sisa konsepsi 1 minggu pascatindakan, proporsi gejala–gejala infeksi 1 minggu pascatindakan dan proporsi komplikasi pada saat tindakan AVM dan kuret tajam.*

***Metode :*** *Penelitian ini merupakan penelitian kohort prospektif (observasional) dengan jumlah sampel 62 subjek yang berkunjung dengan abortus inkomplit ke UGD RSCM, RS Fatmawati dan RSUD Karawang terbagi dalam 31 subjek pada kelompok prosedur AVM dan 31 subjek pada kelompok prosedur kuret tajam. Data dikumpulkan melalui pencatatan waktu lama prosedur AVM dibandingkan kuret tajam, pemeriksaan klinis komplikasi selama prosedur berlangsung, pemeriksaan klinis kebersihan sisa konspesi 1 minggu pascatindakan dan gejala – gejala infeksi 1 minggu pasca tindakan.*

***Hasil :*** *Sebanyak 62 subjek (masing – masing 31 subjek), di mana didapatkan rerata dan simpang baku prosedur AVM 17,65 ± 4,128 menit dan kuret tajam 22,26 ± 4,611 menit dengan p = 0,00 dan IK 95% -4,513 (-6,837 -2,389), bermakna secara statistik. Pada perbandingan proporsi tingkat kebersihan evakuasi sisa konsepsi 1 minggu pascatindakan didapatkan pada AVM 3,2% (n = 1) dan pada kuret tajam 6,5% (n = 2) terdapat sisa konsepsi dengan penilaian klinis, p = 0,554, RR = 1,034 dan IK95% 0,924 – 1,158 tidak memiliki perbedaan bermakna secara statistik. Pada perbandingan lainnya, tidak ditemukan gejala – gejala infeksi 1 minggu pascaprosedur dan komplikasi selama prosedur berlangsung pada prosedur AVM dan kuret tajam.*

***Kesimpulan :*** *AVM juga memiliki keunggulan dalam kebersihan sisa konsepsi namun tidak bermakna secara statitik dan memiliki keamanan yang setara dengan kuret tajam dari tingkat gejala infeksi dan komplikasi selama prosedur.*

***Kata kunci :*** *abortus inkomplit , aspirasi vakum manual (AVM), kuret tajam*

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## INTRODUCTION

Incomplete abortion is a severe problem in the field of obstetrics and gynaecology. The data from previous research told that about 12% maternal death related to abortion in Zimbabwe.[1] Among the many factors in the management of incomplete abortion, evacuation methods of the uterus hold essential role. Effectiveness and safety procedure was needed in this management. Events of morbidity and complication increased with a gestational age of abortion. The complication management of abortion are uterus perforation, laceration of the cervix, massive bleeding, incomplete evacuation and infection.[2]Manual Vacuum Aspiration (MVA) was an alternative method for incomplete abortion management. In developing co untries, MVA replaced sharp curettage as management of incomplete abortion, but lack of operator to use this device.[3,4]General anaesthesia and operating room is needed for sharp curettage procedure, otherwise, MVA procedure can be used in a delivery room without general anesthesia.[5,6]

World Health Organization (WHO) recommended Manual Vacuum Aspiration as a method evacuation uterine conception in below 12 weeks of gestation rather than sharp curettage.1Many hospital and public health care in Indonesia used MVA. Based on Juknis DAK (Dana Alokasi Khusus) national budget in 2012, MVA was one of instrument mandatory to be available in PONEK services. Many of health services use MVA, but lack of data and research was published in Indonesia related comparison between MVA and sharp curettage.[7]

## OBJECTIVES

In this study, we hypothesised that the MVA has more effective and safe than the sharp curettage in the time of the procedure, proportion of incomplete evacuation, the proportion of infection and proportion of complication during the procedure. The goal of this study was To acknowledge the effectiveness and safety of MVA compare with SC in management of incomplete abortion below 12 weeks of gestation which compare time to perform procedure, rates of evacuation and infection one week after procedure, and complication during MVA and SC procedure in the ER patient obstetrics and gynecology Dr. Cipto Mangunkusumo Hospital, Fatmawati Hospital and Karawang Regional Hospital.

## METHODS

This was a prospective study. Subjects were reproductive-aged women diagnosed with incomplete abortion at the Emergency Room of Cipto Mangunkusumo Hospital, Fatmawati Hospital, and karawang Hospital. The subjects were further divided into two groups: 31 subjects on MVA group and 31 subjects on sharp curettage group. The data was documented on the time of MVA procedure compare to sharp curettage, clinical findings on complication during the procedure, clinical findings on completed uterine evacuation one week after the procedure and clinical findings on infection symptoms one week after the procedure. Research has already qualified and approved by the Ethics Committee for Health Researches Faculty of Medicine Universitas of Indonesia-RSCM in September 2016.

## RESULTS

A total of 62 subjects (Table 1) , consisting of 31 subjects underwent MVA and 31 subjects underwent sharp curettage. Subjects who received MVA procedure was performed in delivery room and for sharp curettage in operating theatre with sedation or general anaesthesia. We performed analysis using SpSS® Statistics Version 20. Resulting table 2x2 that were able to analyst and we analyst mean difference (Confident Interval), Relative Risk and Odds Ratio both of procedure. Statically the table was able to analysis using Chi-Square, with a p value<0,05 was significant statistically difference. In this study, we also compare the proportion of incomplete evacuation and infection one week after procedure and complication during the procedure between MVA versus sharp curettage.

**Table 1.** Time of Procedure Comparison MVA and Sharp Curettage

| | **Time of Procedure ( Mean, S.D.)** | ***P-value*** | **Mean Difference (CI 95%)** |
|---|---|---|---|
| MVA | 17.65+ 4.128 minute | 0.00 | -4.513 (-6.837) - (-2.389) |
| Sharp Curettage | 22.26 + 4.611 minute | | Ref |

We found there was a different time of procedure between MVA (17,65+ 4,128 minutes) and sharp curettage procedure (22,26 ±4,611 minute) with p = 0.00, CI 95% -4,513 {(-6,837) - (-2,389)}. There is significant difference statistically, But there is no significant difference clinically. We recorded the time of procedure from the beginning of the instrument were inserted until the procedure was finished assessed by the operator.

Based on Table.2, we analyst incomplete evacuation both of procedure (MVA vs Sharp Currettage), MVA cleaner than sharp curettage (incomplete evacuation, n =1 (MVA) vs n=2 (SC)). But there is no statistically difference among it (p = 0,554, CI 95% 0,924 – 1,158) and Relative Risk 1,034. We assessed incomplete evacuation from clinical symptom such as complaining of vaginal bleeding. From statistic data, MVA has equal with sharp curettagefrom effectiveness and safety on completed evacuation one week after the procedure.

**Table 2.** ProportionIncomplete Evacuation Comparison One Week after Procedure (MVA vs Sharp Curettage)

| | Complete Evacuation | | Incomplete Evacuation | | *P-value* | RR | CI 95% |
|---|---|---|---|---|---|---|---|
| | % | n | % | n | | | |
| MVA | 96.8 | 30 | 3.2 | 1 | 0.554 | 1.034 | 0,924 - 1,158 |
| Sharp Currettage | 93.5 | 29 | 6.5 | 2 | | | |
| **Total** | 95.2 | 59 | 4.8 | 3 | | | |

**Table 3.** Proportion Complication Comparison during Procedure (MVA vs Sharp Curettage)

| | No Complication n% | Complication n% | *P-value* |
|---|---|---|---|
| MVA | 100 | 0 | α |
| Sharp Curettage | 100 | 0 | |
| **Total** | 100 | 0 | |

Both of proportion comparison infection one week after procedure and complication during the procedure, there is no infection and complication both of procedures (MVA 0% vs Sharp curettage 0%). We assessed the proportion of infection from clinical symptoms such as fever, foully odour, uterine tenderness, and lower abdominal pain and criteria for complication during the procedure is massive bleeding, laceration of the cervix and uterine perforation. We conclude that both of the procedure is safe.There was no side effect on both procedures from this study (odds ratio = α).

## DISCUSSION

In this study, we analysed both procedure MVA, and sharp curettage has the same effectiveness and safety on incomplete abortion management below 12 weeks gestational age. We performed this study in three institutions (Dr. Cipto Mangunkusumo Hospital, Fatmawati Hospital and Karawang Region Hospital) with a total of 31 samples each of the procedures. The significant result from our study and previous study because of the amount of sample.Atreya on their study shows that MVA procedure has faster than sharp curettage (7.0 (SD ±2.0) minute vs 7.7(SD±2.1) minute ) with significant difference. That was proven that MVA more effective than sharp curettage.[3]Mahomed from their study showed incomplete evacuation in MVA 0% versus 0.7% on sharp curettage with p value <0.05. The difference result between this study and Mahomed study was because of the amount of sample both of study.[1] We diagnosed incomplete evacuation from clinical finding (vaginal bleeding). We gave patient diagnosed incomplete evacuation with prostaglandin E1 (misoprostol) 600µg orally in 3 days with success rate 95% .[8] It shows incomplete evacuation by MVA or sharp curettage can be administered with uterotonics (prostaglandin E1 / misoprostol). A study from Mahomed shows the proportion of infection MVA 1.6% compare to 2.5% in sharp curettage, and complication during procedure MVA was 0.7% and 4.5% in sharp curettage.[1]

## CONCLUSION

From this study, MVA has the same effectiveness and safety tosharp curettage with time of procedure MVA 17.65+ 4.128 (IK 95%,-6.837 to -2,389) minute versus 22.26+ 4.611 (IK 95%,-6.837 to -2.389) was statistically differences but

has no clinical differences. From the proportion incomplete evacuation, there is differences between MVA and sharp curettage ( n=1, 3.2% versus n =2, 6.5%) but there is no statistic and clinical differences both of procedure (p = 0.554, CI 95% 0.924 – 1.158). In this study, we not found any infection and complication both of procedure. From this study, we can conclude that MVA is an effective and safe procedure to performed incomplete abortion management below 12-weeks gestation age and can assess clinically by the general practitioners. We recommended MVA use in primary health care.

## REFERENCES

1. Mahomed K, Healy J, Tandon S. A comparison of manual vacuum aspiration (MVA) and sharp curettage in the management of incomplete abortion. Int J Gynecol Obstet, 1994;46:27-32.
2. Kulier R, Cheng L, Fekih A, Hofmeyr G, Campana A. Surgical methods for the first-trimester termination of pregnancy 2009; (3):1-46
3. Atreya JK. A comparison of Manual Vacuum Aspiration and Sharp Curettage in The Management of Incomplete Abortion Calcutta: Tribhuvan University; 1998;15-25.
4. Forna F, Gülmezoglu A. Surgical procedures to evacuate incomplete miscarriage.2007; (4):1-14
5. Milingos D, Mathur M, Smith N, Ashok P. Manual vacuum aspiration: a safe alternative for the surgical management of early pregnancy loss. BJOG. 2009;116:1268-71
6. Koontza SL, Perezb OMd, Leonc K, Foster-Rosalesd A. Treating incomplete abortion in El Salvador: cost savings with manual vacuum aspiration.Elsevier. 2003(68):345-51
7. Petunjuk Teknis Penggunaan DAK Bidang Kesehatan TA 2012. Jakarta: Kementerian Kesehatan RI; 2012;(20) 5-20.
8. Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Spong CY. Abortion. Williams Obstetrics. 24th ed. United States: The McGraw-Hill Companies, Inc; 2014: 719-64.