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RESEARCH ARTICLE

MANUAL VACUUM ASPIRATION VERSUS DILTATION AND CURETTGE TERMINATION OF FIRST TRIMESTER ABORTION AMONG WOMEN ADMITTED AL-SADAQA TEATCHING HOSPITAL, ADEN JAN1st DECEMBER 31st 2020

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Abstract

Early pregnancy failure is a medical complication and major health problem across the globe. The aim of this study is to compare manual vacuum aspiration (MVA) and dilatation and curettage (D&C) for first trimester abortion, in terms of the efficiency of eliminating retain product of conceptus, frequency of complications, duration of the procedure, and duration of patients' hospitalization. This is a prospective comparative descriptive study performed at Al-Sadaqa Teaching Hospital. Over a period from 1st Jan 2020 to 31st December 2020, a total of 143 women, these patients either MVA group (n=72) or D&C group (n=71). Presented with spontaneous abortion and gestational age less than 12 weeks, patent cervix, and no signs of septic abortion, hemoglobin ≥9 g/dl and no bleeding disorder. Data was collected on prescribed questionnaire. The total number of abortion 637 in compare to 259 (40.7%) patient with first trimester abortion, 143 patients was included in this study, MVA group (n =72) and D&C group (n=71). The distribution in respect to the age, parity & gestational age was similar in both groups. The mean duration of procedure was significantly higher (P<0.05) in D&C group compared to MVA group. The duration of hospital stay was significantly lower (P<0.05) in MVA group compared to D&C group. MVA group showed the least incidence of complications regarding the amount of blood loss, and cervical laceration. Complete evacuation was achieved in 95.8% in MVA vs. 98.6% in D&C group with no statically significant (P=0.304). MVA is as effective as popular dilatation and curettage for treatment of early pregnancy failure while it need less time consuming, requires a shorter hospital stay and subsequently costs less. It does not require general anesthesia and complication rate is less than dilatation and curettage. So it can be easily accessible to the woman of both rural and urban societies belonging to any socioeconomic strata especially where high tech equipment and power supply are not available.

Keywords: Early pregnancy failure, Manual vacuum aspiration, Dilatation and curettage.

1. Introduction

Early pregnancy loss (miscarriage) is defined as a nonviable, intrauterine pregnancy with either an empty gestational sac or a gestational sac containing an embryo or fetus without cardiac activity within the first 12 weeks of gestation, [1] effecting 10-20% of clinically recognized pregnancies [2,3].

Options of treatment for early pregnancy failure include expectant management, medical termination with misoprostol and surgical evacuation. Traditionally first line surgical management has been dilatation and curettage (D&C) which requires a trained personnel, operating room, and presence of an anesthetist and sometimes blood transfusion. [2] Despite careful and skilled intervention, even in best hands complication like hemorrhage, incomplete evacuation, perforation and infection can occur. [2,4,5] Manual vacuum aspiration as a means of removing uterine contents was pioneered in l958 by Yuantai and Xianzhem in China that ultimately lead to the technique becoming a common and safe obstetric procedure. [4] Harvey Karmann in United States defined the technique in the early 1970s with the development of Karmann cannula, a safe, flexible that replaced the previously used hard metal

cannula safe, flexible that replaced the previously used hard metal cannula which reduced the risk of perforation. [6]

Treatment options for early pregnancy failure include expectant management, medical termination with misoprostol and surgical evacuation. Traditionally, first-line surgical management has been dilatation and curettage (D&C) which requires a trained personnel, operating room, and presence of an anesthetist and sometimes blood transfusion. [2] Complications like hemorrhage, incomplete evacuation, perforation and infection can occur despite careful and skilled intervention, even in best hands [7].

Manual vacuum aspiration (MVA), a portable handheld vacuum aspirator connected to a semi-flexible plastic cannula, can be performed in a clinic or a hospital procedure room [8, 9].The Common techniques of pain control in such case are analgesic drugs or Para cervical block [10,11]. MVA has been clinically proven to be as effective as sharp curettage when employed in the management of first-trimester abortions. MVA procedure had no different complication when compared with those of traditional curettage in regard to cervical injuries, febrile morbidity, blood transfusion, or incomplete or repeated uterine evacuation procedures [12].In 2003, the World Health Organization [13] recommended MVA for performing a first-trimester termination of pregnancy. It is especially valuable in low resource settings where electricity and surgical suites are not widely available. [14] However, in our country, MVA is still not widely used in clinics and many healthcare providers are not trained to use MVA.

2. Material and Methods

This is a prospective descriptive, comparative, hospital study, conducted from 1st January to 31st December 2020, in Al-Sadaqa Teaching Hospital, a referral hospital which serves Aden and the surrounding areas. At obstetrics and gynecology department, one hundred and forty three patients, these patient underwent either MVA (no. =72) or D&C (no. = 71).

Inclusion criteria included all patient presenting with spontaneous miscarriage (Blighting ovum, Incomplete or missed) of gestational age <12weeks, with no signs of septic abortion (fever >37.7ºC, purulent vaginal discharge, tachycardia or abdominal distension), hemoglobin ≥9 g/dl .and patent cervix were included in the study. Patients with molar pregnancy, septic abortion and other co-morbidities like uterine anomalies; coagulation disorders were excluded from the study. An informed consent regarding the inclusion in study was obtained.

The diagnosis of miscarriage was made on the basis of history, clinical examination and pelvic ultrasound. Patients were kept under observation for any complications for few hours after intervention. No major complications were observed in both groups. Efficacy of the procedures was confirmed by pelvic ultrasound. Patient was called for follow up after two weeks. Data was collected on prescribed Performa.

The data will be processes using computer software statistical program called SPSS (statistical packages of social sciences) version 25.0 for Windows. The results will be presented as means ± standard deviations for quantitative variables and as percentages and frequency for categorical variables. For comparison of continuous variables the t test comparison of independent means and chi-square test to compare categorical variables was used. Statistical significance was determined as a $P < 0.05$.

3. Results

During the study period from January 1St –December 31st 2020. The total number of abortions (first and second trimester) were 637 admitted in Al-Sadaqa Teaching Hospital, 259 (40.7 %) of them was first trimester abortion with gestational age < 12week. Only 143 (55.2%) cases were included in this study, underwent either an MVA (n=72) 27.8% or D&C (n=71) 27.4%, while 116 cases represented 44.8% were excluded. All patients were referred from either the Outpatient Department or the Emergency Room (Figure 1)

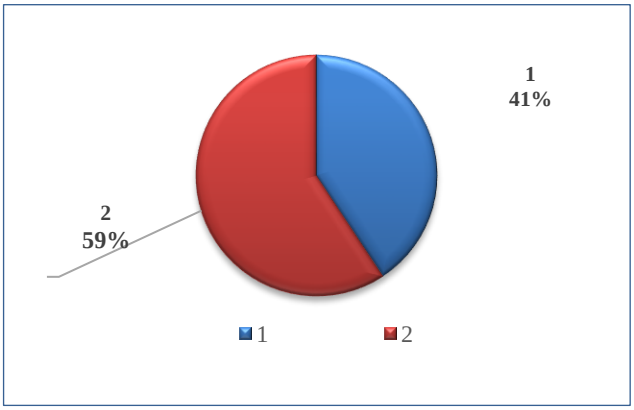

Fig 1. Distribution of patients according to time of abortion

Table (1) reveals the distribution of patients according to age group and mode of intervention.

That demonstrate the majority of abortion cases was in the age group (20-34years) in both comparative groups MVA & D&C (61% & 59% respectively). The mean age of women was 27.65±7.529 in MVA group and 28.39±7.094 in D&C group, with no statistical difference p =0.775.

Table 1. The distribution of patients according age group and mode of intervention

Age group	MVA		D&C		P value
	No.	%	No.	%	
<20 years	9	12.5	7	9.85	0.775
20-34 years	44	61.1	42	59.15	
≥35 years	19	26.4	22	31	
Mean ±SD	27.65±7.529		28.39±7.094		
Total No (%)	72	100	71	100	

Table (2) illustrated the distribution of patients according to parity and mod of intervention. It shows that MVA was more than D&C in nulliparas (36%) and multiparas (18.1%) while D&C was more than MVA in pluriparas (38%) and grandmultiparas (16.9), with no significance relation. (*P-value*>0.05).

Table 2. The distribution of patients according to parity and mode of intervention

parity	MVA		D&C		P value
	No.	%	No.	%	
Nullipara	26	36	21	29.6	0.735
Pluripara	24	33.3	27	38	
Multipara	13	18.1	11	15.5	
Grandmultiara	9	12.5	12	16.9	
Total	72	100	71	100	

The distribution of patients according to gestational age and mod of intervention shows that most of abortions were in the 7-9 weeks group followed by 10-12 weeks and the distribution among the mode of intervention is very close to each other, with no significant statistical difference.

Table 3. The distribution of patients according to gestational age and mode of intervention

Gestational Age	MVA		D&C		P value
	No.	%	No.	%	
<=6week	7	9.7	8	11.3	0.947
7-9 week	41	56.9	39	54.9	
10-12week	24	33.3	24	33.8	
Mean ± SD	8.75 ± 1.6957		8.71 ± 1.7636		
Total No (%)	72	100	71	100	

According to figure (2) shows that incomplete abortion was the most indication in MVA group (69.4%) in compared to (30.9%) in D&C, while missed abortion was more frequented in D&C group (43.7%) . The indications had a significance statistical relation with type of procedure (p=0.001).

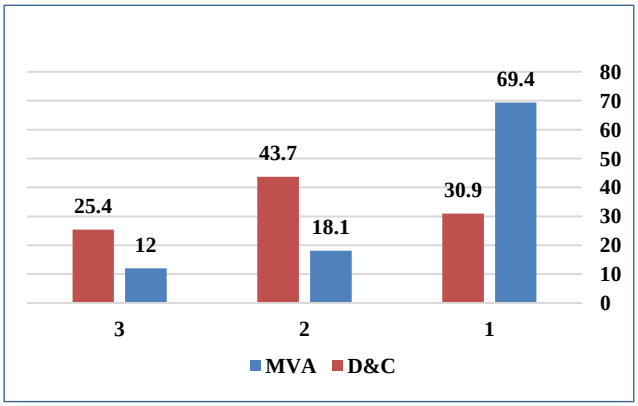

Fig 2. Types of abortion and mode of intervention

Most of D&C group lasted more than 15 minutes (54.9%), while the majority of MVA group lasted less than 15 minutes (92.9%), with a high significant statistical difference. Table (4).

Table 4. The distribution of patients according to duration of procedure and the mode of intervention

Time of procedure	MVA		D&C		P value
	No.	%	No.	%	
≤5 min	1	1.4	0	0	0.001
6-10 min	38	52.7	12	16.9	
11-15min	28	38.8	20	28.2	
>15min	5	6.9	39	54.9	
Mean ±SD	12.03 ± 4.138		18.48 ± 6.500		
Total No (%)	72	100	71	100	

While hospital stay was <5 hours in 84.7% of MVA group in comparison with 59.2% in D&C group. The duration of stay > 5 hours was more among D&C group (38%) than in MVA group (13,9%). The difference was highly significant. (Table 5)

Table 5. The distribution of patients according to duration of hospital stay and mode of intervention

Hospital stay	MVA		D&C		P value
	No.	%	No.	%	
<5 hours	61	84.7	42	59.2	0.007
5-8 hours	10	13.9	27	38	
9-12 hours	0	0	1	1.4	
>12 hours	1	1.4	1	1.4	
Mean ±SD	3.56 ± 2.276		4.56 ± 2.136		
Total No (%)	72	100	71	100	

Table (6) shows the complications according to the type of intervention. There is no incidence of perforation in both group, one case of cervical laceration represent (1.4%) was

among patient underwent D&C and two cases (2.8%) of excessive bleeding in D&C.

Both MVA and D&C was effective from aspect of complete evacuation of retain product of conception (RPOC) with percent of effectiveness (95.8%) and (98.6%) respectively, need of blood transfusion shown more frequently among patient underwent D&C (2.8%) compare to MVA (1.4%) . All patient among D&C exposed to general anesthesia in Operation Theater while no need of anesthesia in MVA.

Table 6. The distribution of patients according to the complications occurred in both mode of intervention

Complication		MVA		D&C		p value
		No.	%	No.	%	
Perforation	Yes	0	0	0	0	0.723
	No	72	100	71	100	
Laceration	Yes	0	0	1	1.4	0.497
	No	72	100	70	98.6	
Excessive Bleeding	Yes	0	0	2	2.8	0.254
	No	72	100	69	97.2	
Retain product of conceptus (RPOC)	Yes	3	4.2	1	1.4	0.304
	No	69	95.8	70	98.6	
Need for blood transfusion	Yes	1	1.4	2	2.8	0.685
	No	71	98.6	69	97.2	

4. Discussion

With increasing load of patients in tertiary care hospitals with limited health and monetary resources many procedures have moved from operating room to ambulatory setting. The same is true for the management of early pregnancy failure. With an incidence of 40.7% of early pregnancy failure the intervention is likely to significantly reduce the cost coped by inpatient treatment of such cases. Manual vacuum aspiration can be performed without the need for a fully equipped operation theatre as it does not need electricity and can be carried out under para-cervical block or analgesia. In countries with a small number of physicians, manual vacuum aspiration can be safely and effectively used by mid-level health care providers such as mid-wives. World Health Organization (WHO) recommends as the manual vacuum, aspiration preferred methods for the first trimester abortion. [15]

The mean age of both MVA and D&C group was nearby same (27.65±7.529) for MVA and (28.39±7.094) for D&C respectively. With no significant p value (0.775). Fariha et al (2011) in Pakistan [15], was with similar finding of mean age 28.04±6.19 years in MVA and 29.35±6.4 years in D&C group. With non-significant p value (0.296). Regarding to the parity, our study observed that most of MVA procedure was used among nulliparous (36.1%) followed by pluriparas (33.3%), multiparas (16.1%) and grandmultiparas (12.5%). D&C procedure was applied mostly among pluriparas (38%) followed by nulliparas (29.6%), grandmultiparas (16.9%) and multiparas (15.5%). These results reflect that patient were selected for either of the procedures according to the preference and training for MVA procedure of the doctors. But it reflects its safety regardless the obstetrical history and that most of the abortions were incomplete Fig.2.

It is not similar, as the pluripara as stated before is the most who underwent MVA. The results of Islam are with no significant difference as P value is 0. 2.

Most of abortions managed by MVA(69.4%) were incomplete ones and most of abortions managed by D&C were missed abortions (43.7%) and blighted ovum (25.4%) which reflects the preference of doctors according to the patency of the cervix although there are cases managed with MVA when the cervix is closed. The difference between the types of miscarriage in relation to the method of evacuation was statistically significant ($P < 0.05$).

In Bangladesh in 2016 as reported by Islam et al [16] it seems that MVA is not so popular and health care providers are hesitating in applying MVA as incomplete abortions which were managed by either method is close to each while in our results incomplete abortion was managed by MVA in 69.1% of all MVA group and in 31% by D&C.

Adeniran et al (2015) from Nigeria in [18] has been support the finding of the current study which reported that the incomplete abortion was the most frequently type of abortion admitted to the hospital. This study shows that for incomplete abortion the MVA was the preferred method (50/72) while for missed abortion, D & C was the most method used (31/71). Blighted ovum was managed by both methods but D & C was used twice more frequent than MVA. These results suggest that D&C is more likely suitable for cases when the cervical os is closed while MVA is appropriate for condition when the cervical os is opened such as incomplete abortion We accept the conclusion of Adeniran et al until MVA gains more training and confidence.

The patients are equally distributed for each gestational age group and the method applied and that most gestational age groups were 7-9 weeks followed by10-12 weeks, here we can say that doctors have no preference of the method of management according to GA.

This finding is consistent with Khani et al (2010) in Isfahan in [19] reported similar results. The maximum number of gestational age among women treated by both D&C and MVA procedure ranged between 7-9 weeks in MVA and D&C with (54.9%, 56.9%) respectively followed by gestational age 10-12 weeks (33.8%), (33.3%) of MVA and D&C respectively. The mean gestational age being 8.55 ± 1.6 weeks and 8.51 ± 1.7 week for MVA and D&C groups respectively. Islam et al (2016) in Bangladesh in [16] described findings as the maximum number of gestational age ranged from 9 to 11 weeks, median gestational age being 9.3 weeks and 9.5 weeks for each procedure. Our

study is also compatible with the findings of Fatima et al (2020) in Pakistan, in [20] reported the mean gestational age was 8.46+ 1.88 and 8.32+ 1.56 week for women treated by D & C and MVA respectively.

In the present study the mean time of procedure 12.03 ± 4.1 min for MVA, in compare to 18.48 ± 6.5 min in D&C. The duration of MVA procedure is significantly shorter than D&C duration which agrees with Islam et al results, report the mean procedure time was 6.5min for MVA group and 15.3 min for D&C group, .but our results are higher than his denoting that our doctors need more time to be more familiar with it.

Most of MVA treated patients had significantly less hospital stay than D&C ones. This finding is in agreement with the results of Tuncalp O et al (2010) study,[13] Koontz SL et al (2003)[26] and Kulier R et al study (2001) in [11] that reported the duration of hospital stay was significantly lower (p<.0001) in MVA group.

The current study aimed to assess the efficacy of MVA in the management of first trimester miscarriages in compare to dilatation and sharp curettage. This was a prospective study of 143 patients, who were designated to undergo surgical evacuation. The study population was two groups, 72 of these women undergone MVA and the rest 71 undergone D&E. Both MVA and D&E were found to be efficient. MVA was found effective in 95.8% of the cases whereas D&E was effective in 98.6 % cases. Incomplete uterine evacuation was seen in 4.2% (3/72) patients in MVA group whereas it was seen in 1.4% (1/71) patients in D&E group. Islam et al (2016) in [16] from Bangladesh did not show much difference as far as their effectiveness was concern (97% in MVA and 99% in curettage group). Several studies done elsewhere show the same result for MVA. Pradhan et al in [21] showed 98% efficacy for MVA, Hemlin & Moller (2001) in [22] showed it to be 98%, Goldberg et al in [23] found. MVA to be effective in 97.8%. Westfall in [24] also found MVA to be effective in 99.6%.

Overall complication was lower in MVA group compared to D&C group in the present study. But most of these complications were minor complications and were managed easily. No cases of uterine perforation in both group, and one patient with cervical laceration (1.4%) and two patient with excessive blood loss (2.8%) in D&C group, and no laceration or excessive blood loss with MVA group. Three patients in the MVA group and one patient in D&C group had re-evacuation of the uterus due to retained product of conception which was confirmed by ultrasonography.

Islam et al (2016) in [16] report that, Two patients are in each group who had perforation. Six patients in the MVA group and two patients in curettage group had re-evacuation of the uterus due to retained product of conception, that complications were minor and managed conservatively.

With regard to cervical injuries, bleeding, and need of blood transfusion. Nasira et al (2021) in India in [25] showed there were no statistically significant differences for excessive blood loss, blood transfusion, incomplete or repeat uterine evacuation procedure between the two groups in two studies including 467 women.

In present study many factors as cervical preparation before procedure in cases of closed cervixes and high-level health care providers well-trained resident, so decrease the chance of cervical injury with low rate of complications and also there was no maternal death.

5. Conclusion

MVA as D&C is effective, but less time consuming, and requires shorter hospital stay. It does not require general anesthesia and complication is also less. So the judicious use of MVA comes with a promise to make early abortion safe and easily accessible to women of both rural and urban societies, especially where high tech equipment and power supply are not available

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مقالة بحثية

الشفط اليدوي مقارنته باالتوسيع والكحت في إنهاء إجهاض الثلث الاول من الحمل بين النساء المترددات الى مستشفى الصداقة التعليمي، عدن، للفترة من 1 يناير حتى 31 ديسمبر من عام 2020

رشا محمد علي الدويل* و نهلة صالح الكعكي

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المُلخّص

يعد فشل الحمل المبكر من المضاعفات الطبية ومشكلة صحية رئيسية في جميع أنحاء العالم. هدف هذه الدراسة هو مقارنة الامتصاص (الشفط اليدوي) (MVA) وتوسيع الرحم والكحت (D&C) للإجهاض في الثلث الاول من الحمل، من حيث كفاءة التخلص من منتج الحمل المتبقي، وتواتر المضاعفات، ومدة الإجراء، ومدة إقامة المرضى في المستشفى. هذه دراسة مقارنة وصفية تنفيذية أجريت في مستشفى الصداقة التعليمي. خلال الفترة من 1 يناير 2020 إلى 31 ديسمبر 2020، بإجمالي 143 امرأة، تم إجراء الشفط اليدوي (MVA) لمجموعة (عدد 72) وتم إجراء الكحت (D&C) لمجموعة (عدد 71). الحالات القادمة ذات اجهاض عفوي والعمر الجنيني أقل من 12 أسبوعًا، وعنق الرحم من غير انسداد، ولا توجد علامات للإجهاض المعدي، ونسبة الهيموجلوبين ≤ 9 جم / ديسيلتر، ولا يوجد اضطراب في النزف. وتم جمع البيانات وفقًا للاستبيان المحدد. إجمالي عدد حالات الإجهاض 637 مقارنة بـ 259 (40.7٪) مريضة تعاني من إجهاض في الثلث الأول من الحمل، تم تضمين 143 مريضة في دراستنا، مجموعة الشفط اليدوي (MVA) عدد 72، ومجموعة التوسيع والكحت (D&C) عدد 71. كان التوزيع فيما يتعلق بالعمر والتعداد الولادي والعمر الجنيني مماثلًا في كلا المجموعتين. كان متوسط مدة الإجراء أعلى بشكل ملحوظ ($P < 0.05$) في مجموعة D&C مقارنة بمجموعة MVA. كانت مدة البقاء في المستشفى أقل بشكل ملحوظ ($P < 0.05$) في مجموعة MVA مقارنة بمجموعة D&C. أظهرت مجموعة MVA أقل حدوث للمضاعفات فيما يتعلق بكمية فقدان الدم وتمزق عنق الرحم. تم تحقيق إخلاء كامل للرحم في 95.8٪ من حالات مجموعة MVA مقابل 98.6٪ في مجموعة D&C دون وجود فروق ذات دلالة إحصائية ($P = 0.304$). الامتصاص (الشفط اليدوي) فعال مثل التوسيع والكحت للرحم الشائع لعلاج فشل الحمل المبكر، في حين يحتاج إلى وقت أقل ويتطلب إقامة أقصر في المستشفى وبالتالي يكلف أقل. لا يتطلب التخدير العام ومعدل المضاعفات أقل من توسيع وتنظيف الرحم. لذا يمكن الوصول إليه بسهولة للمرأة في المجتمعات الريفية والحضرية التي تنتمي إلى أي طبقة اجتماعية خاصة حيث لا تتوفر المعدات ذات التكنولوجية العالية والطاقة الكهربائية.

الكلمات المفتاحية: فشل الحمل المبكر، الشفط اليدوي، التوسيع والكحت.

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