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A Comparative Study between the use of Manual Vacuum Aspiration (MVA) and Conventional Dilatation and Curettage (D&C) in the Management of Incomplete Miscarriage

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Abstract This study focused on comparing the MVA and D&C, in terms of safety and efficacy in uterine evacuation for the management of clinically diagnosed pregnancies end in miscarriage. Randomized Control Trial was carried out in Alfashir Hospital in Northern Darfur, Sudan, between March and September of 2022. The study involved 200 women diagnosed with spontaneous and first-trimester miscarriage. One hundred women were managed using MVA, and the remaining 100 were managed with conventional D&C. 38% of cases were <25-year ,46% of cases were <35y and 16% of cases were <50y. Regarding the gestational age, 9% of cases were <6 weeks, 47.5% were 6-9 weeks, 24.5% were 10-12 weeks and 19% were 13-14weeks. According to time duration of the procedure, 35% of the cases are done in <5 min, 31% done between 6-10 min, 15% done in <15 min and 19% done in >15 min. According to the need for analgesia and anesthesia, all cases of D&C were done under analgesics and anesthesia, and 73% of MVA cases used analgesics. Regarding the blood loss, only one case in the MVA group had sever blood loss, however 6 cases had significant blood loss. One case in the D&C group had uterine perforation and no perforation in the other group. 2 cases had anesthetics complications and no anesthetics complication in the MVA group. Regarding the retained product of conception, both groups were completely evacuated without the need for re-evacuation. In conclusion Both MVA and D&C are equally effective in uterine evacuation and the possibility of returned product of conception after uterine evacuation is extremely rare, compared to D&C, MVA had a substantially lower rate of complications, procedure length, blood loss and bleeding.

Key Words Miscarriage, MVA, Conventional D&C

INTRODUCTION

Ten to twenty percent of clinically diagnosed pregnancies end in miscarriage, making it a verycommon medical problem [1,2]. Medical termination with medication such as misoprostol, surgical evacuation, and expectant management are the available therapeutic options for early pregnancy failure [3]. Surgical evacuation is a common method for managing various types of miscarriage, which frequently occur in daily practice. However, it is associated with multiple complications that can contribute to increased maternal morbidity and mortality. This procedure can be performed using either metallic instruments or a vacuum aspirator. D&C is historically the first-line surgical management; it calls for an operating room, skilled personnel, an anesthetist, and occasionally blood transfusions [4,5]. Even in the best hands, problems such as bleeding, incomplete evacuation, perforation, and infection can happen despite cautious and expert management [6-8].

The procedure in which manual vacuum aspiration (MVA) is used to evacuate uterine contents is commonly referred to as dilatation and evacuation (D&E) or suction dilatation and curettage (D&C) [9]. The concept of using negative pressure for uterine evacuation was first introduced in 1958 by Drs. Wu Yuantai and Wu Xianzhen in China [10].

MVA can be carried out in a hospital procedure room or a clinic using a portable hand-held suction aspirator attached to a semi-flexible plastic cannula [11,12,13]. In these situations, analgesic medications or paracervical blocks are common methods of pain management [14].

The objectives of the study were comparing MVA and D&C, in terms of safety and efficacy in uterine evacuation.

To compare the time taken during the procedure, anesthesia required, intraoperative blood loss, postoperative blood loss, and other complications.

METHODS

This Randomized Control Trial was carried out in Alfashir Hospital in Northern Darfur, Sudan, between March and September of 2022. The study involved200 women diagnosed with spontaneous and first-trimester miscarriage, they were selected according to certain criteria.

Inclusion criteria: pregnant women equal to or less than 12 weeks of Gestation, were included in this study. Gestational age of more than 12 weeks, pelvic infection, and bleeding disorder were excluded from the study. One hundred women were managed using MVA, and the remaining 100 were managed with conventional D&C.

Women from both groups were randomly selected to bemanaged either with MVA or D&C. Comprehensive medical, surgical, obstetric, and menstrual histories were taken. A clinical examination was performed to determine the uterus' position, size, and motility, check for infections, and rule out ectopic pregnancy. Regular investigations were conducted for the patients of both groups.

An informed written consent was obtained after the patient was given information about the operation and its benefits and risks. Patients who did not give their consent were excluded from the study.

Women from both groups provided comprehensive medical, surgical, obstetric, and menstrual histories. A clinical examination was performed to determine the uterus' position, size, and motility, check for infections, and rule out ectopic pregnancy. Regular investigations were conducted into the patients. The following information was studied carefully in both groups: intra and post-operative amount of bleeding, pain and the need for anesthesia/analgesia or pain medications, duration of hospital stay, retained product of conception, Time duration of the procedure, and post-operative infection, and Uterine trauma

RESULTS

Two Hundred cases of incomplete miscarriage underwent uterine evacuation (up-to 12 weeks) of which 100 cases were done by traditional D&C and 100 cases were done by MVA.

In this study as illustrated in Table 1, it has been noticed that 38% of cases were <25-year, 46% of cases were <35 year and 16% of cases were <50 year. According to parity,1.5% were primigravida, 27% were gravida 2, 43.5% were gravida 3, 20.5% were gravida 4 and 7.5% were >4. Regarding the gestational age, 9% of cases were <6 weeks, 47.5% were 6-9 weeks, 24.5% were 10-12 weeks and 19% were 13-14 weeks.

In Table 2, it has been shown according to time duration of the procedure, 35% of the cases done in <5 min, 31% done between 6-10 min, 15% done in <15 min and 19% done in >15 min.

Table 1: Distribution of Cases According to age, parity and gestational age

Age in years	MVA N=100	D &C N=100	TOTAL	Percentage
16-25	34	42	76	38%
26-35	48	44	92	46%
36-50	18	14	32	16%
Total	100	100	200	100%
Parity				
primigravida	2	1	3	1.5
gravida 2	19	35	54	27
gravida 3	44	43	87	43.5
gravida 4	26	15	41	20.5
>4	9	6	15	7.5
Total	100	100	200	100
Gestational age (weeks)				
<6	06	12	18	9
6-9	49	46	95	47.5
10-12	31	18	49	24.5
13-14	14	24	38	19
Total	100	100	100	100

Table 2: Time duration of the Procedure

Duration (minute)	MVA N = 100	D&C N = 100	Total
<5	58	12	70
5-10	42	20	62
11-15	0	30	30
>15	0	38	38
Total	100	100	200

Table 3: Analgesia and Anesthesia

Variables		MVA	D&C
Analgesia	Yes	73	100
	No	27	0
	Total	100	100

Table 4: Complication

Complication	MVA N=100	D&C N=100	Total	Percentage
Incomplete evacuation	0	0	0	0%
Uterine perforation	0	1	1	0.5%
Severe blood loss more than 100 mL	1	6	6	3.5%
Anesthetic complication	0	2	2	1%
		28	30	

In Table 3, it has been illustrated that according to the need for analgesia and anesthesia, all cases of D&C were done under analgesics and anesthesia, and 73% of MVA cases used analgesics.

In Table 4, several complications have been highlighted, regarding the blood loss only one case in the MVA group had sever blood loss, however 6 cases had significant blood loss. One case in the D& C group had uterine perforation and no perforation in the other group. 2 cases had anesthetics complications and no anesthetics complication in the MVA group. Regarding the retained product of conception, both groups were completely evacuated without the need for re-evacuation.

DISCUSSION

The comparison between the two groups (100 cases of MVA and 100 cases of D&C) is done according to the following criteria, time duration of the procedure, the need for

analgesia and the complication (uterine trauma, bleeding retained product of conception).

Regarding the blood loss we found more in the D&C group in compare with MVA, this result was similar to study done by Kumkum Gupta *et al* 2019 and Gupta and Saxena [15].

Time duration of the procedure is less in the MVA group in compared to D&C (7.69±1.94 to 14.87±1.92) respectively with a p value equal to 0.003 this study is similar to study done by Farooq *et al*. [16].

Both groups were equal regarding the need for re-evacuation since all cases were completely evacuated. this result is different to another similar study comparing MVA to D& C done by Faichamnan *et al*. [17], he found 0 of cases had retained products of conception out of67 cases done with D&C, while 2 case required re evacuation in the MVA group.

In this study no complication related to genital tract injury in the MVA group, however in the D&C group there was one case of uterine perforation0.5 %. This is slightly similar to the study done by Faichamnan *et al*. [17] found that there no cervical injury or uterine perforation in both groups.

CONCLUSION

Both MVA and D&C are equally effective in uterine evacuation and the possibility of returned product of conception after uterine evacuationis extremely rare. MVA can be done without anesthesia or with paracervical block safely so the complication related to general anesthesia in case of D&C can be avoided. Compared to D&C, MVA had a substantially lower rate of complications, procedure length, blood loss and bleeding.

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