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Comparative Study of Manual Vacuum Aspiration Versus Dilatation Evacuation and Curettage in First Trimester Incomplete Abortion

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Abstract
Abortion is the process of expulsion of the product of conception before the period of viability of foetus. When the product of conception i.e. embryo or foetus and placenta are expelled partially that is called incomplete abortion. Dilatation evacuation and curettage was the age-old procedure and most common elective surgical procedure in developed countries. Although the procedure is generally considered to be relatively safe and easy to perform, serious adverse effects may occur. To compare Manual Vacuum Aspiration and Dilatation Evacuation and Curettage in first trimester incomplete abortion in terms of efficacy and safety, complete removal of retained products of conception, duration, amount of blood loss, per-operative and post-operative complications including post-operative pain and duration of hospital stay. This was a prospective randomized controlled trial, study was conducted in Department of Obstetrics and Gynecology, College of Medicine and Sagore Dutta Hospital within a time frame of about 18 months from acceptance of synopsis. The study period was 18 months. 100 patients were included in this study. We found that, more number of patients had bleeding in Dilatation evacuation and curettage as Per-operative complications [4 (8.0%)], it was statistically significant (p=0.0412). From present study, it was found that no fever, no Foul-smelling vaginal discharge and no pyometra were seen in both groups, i.e. complete evacuation, found in both groups[50 (100.0%)] in Group-A and in Group-B [50 (100.0%)]. In present study, mean period of gestation in weeks was slightly lower in Group-A [9.0920±.9735] compared to Group-B [9.6040±1.6025] though it was not statistically significant (p=0.0564). Present study showed that, mean duration of procedure in minutes was significantly higher in Group-B [15.5000±1.9193] compared to Group-A [12.1800±1.8482] (p<0.0001).It was found that, mean Hb difference at Preop-Postop was significantly higher in Group-B [0.4100±0.2270] compared to Group-A [0.1980±0.0714] (p<0.0001). Present study showed that, mean Blood Loss was significantly lower in Group-A [61.9600±9.2073] compared to Group-B [89.6400±24.9332] (p<0.0001). In present study, difference in post-operative pain in two groups, in case of incomplete abortion, is statistically significant (P=0.0412), i.e. post-operative pain was more common in Group B compare to Group A. It was found that, in mean hospital stay in hours was significantly higher in Group-B [19.3800±3.2757] compared to Group-A [11.1400±1.6661] (p<0.0001). We concluded that less blood loss, less bleeding, less duration for procedure, less hemoglobin change and less hospital stay were observed in manual vacuum aspiration.

INTRODUCTION

Abortion is defined as spontaneous or induced termination of pregnancy before fetal viability[1]. In incomplete abortion, bleeding follows partial or complete placental separation and dilation of the cervical os[1]. Around 73 million induced abortions take place worldwide each year[2]. Most incomplete abortions take place in the first trimester[3]. Which, if not properly treated, may have major medical consequences. If left untreated, incomplete abortion can result in septic abortion, which is characterized by persistent bleeding and infection. Furthermore, incomplete abortions can result in more severe side effects like infection, bleeding and in the worst situation, death[4]. So early intervention to evacuate completely the product of conception is needed. Suction curettage or vacuum aspiration are the most popular surgical abortion techniques used in the first trimester. Using a cannula connected to an electric or manual suction source, vacuum uterine aspiration makes it easy to remove the uterus (Dalton *et al.,* 2006). Aspiration may be required to manage a continuing pregnancy if the medical technique of abortion results in a persistent gestational sac or severe, protracted bleeding, even though the success rate of medical abortion using contemporary regimens of misoprostol and mifepristone usually approaches 95%. When it comes to handling these circumstances, MVA provides an option to D and C or EVA. In many wealthy countries, dilatation evacuation and curettage, an ancient treatment, has become the most popular elective surgical procedure[5]. Serious side effects are possible even though the treatment is generally thought to be uncomplicated to conduct and quite safe. Cervical rips, hemorrhage, infection and uterine perforation-which occasionally coexists with bladder and intestinal perforations-are examples of short-term consequences. Asherman Syndrome, or the development of intrauterine adhesions, is a well -known long-term consequence of D and E that can result in monthly irregularities and issues with fertility[6]. Manual vacuum aspiration was introduced in 1958 by Dr Wu Yuantai and Wu Xianzhen in China[7]. It has been popularized for first trimester MTP. Later it was used to manage incomplete and missed abortion also. MVA was first described in the 1970s as a possible method for managing incomplete abortion or miscarriage[8]. (Milingos, Mathur, Smith and Ashok, 2009).

MATERIALS AND METHODS

Study Design: This was a prospective randomized controlled trial.

Study Setting and Time Line: This study was conducted in Department of Obstetrics and Gynecology, College of Medicine and Sagore Dutta Hospital within a time frame of about 18 months from acceptance of synopsis.

Period of Study: 18 months.

Study Population: All antenatal women with <12 weeks of gestation and history of incomplete abortion regardless of the cause of abortion, gravidity and maternal age, admitted in the ward of Department of Obstetrics and Gynecology during the study period was the study population. The patient was evaluated by history taking, clinical examination, relevant investigation on admission, detailed history and clinical evaluation was done. The diagnosis of incomplete abortion was confirmed from history like-menstrual history, period of amenorrhoea, any medication taken, history of passage of clots/with or without fleshy mass, 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.

Inclusion Criteria:

- Antenatal women with <12 weeks of gestational age and history of per vaginal bleeding with or without expulsion of fleshy mass p/v.
- Retained product of conception in USG.

Exclusion Criteria:

- Patients with hemodynamic instability (hypovolemia/septic shock).
- Patients with profound thrombocytopenia/ bleeding disorders.
- Patients withpresence of any gynecological pathology (uterus/pelvic/ovarian pathologies/ sexually transmitted infections).
- Patients with septic abortion (fever, tachycardia, purulent vaginal discharge, abdominal distension).
- Patients with molar pregnancy.

In patients of Group-A-MVA was performed under paracervical block. In patients in Group-B-Dilatation evacuation and curettage was performed under paracervical block.

Sample Size: Considering 95% confidence level and 90% power and using the finding reported by Jayashree *et al,* the sample size was calculated using Open Epi software (version 3.01) and found to be 16per group. As the data collection period is 12months, approx 50 subjects per group was recruited in the study.

Where, Za=1.96 (95% confidence level) Zß=1.24 (90% power).

S1=2.08 S2=1.11

d = 1-2, 1=7.89, 2=5.93

Randomization Procedure: Randomization of patients is done by using envelope method[97]. Sealed envelopes containing paper, in which MVA or DE and C is written by person, not involved in present study are used. Once a patient has consented to enter the study or trial, an envelope is opened and that particular patient is allocated in subsequent group.

Data Collection Methods: The patient was selected by taking history like:

- Menstrual history, period of amenorrhea, any medication taken, history of passage of clots/with or without fleshy mass per vaginally, p/v bleeding.
- Obstetric history like-gravida, parity, living issue, abortion, last child birth, previous IUFD /still born.
- Clinical history.
- Personal history like -smoking, alcohol intake, type of diet, drug history.

Then general examination and systemic examination was done. MVA and Dilatation evacuation and curettage was done in group-A and group -B respectively. Data was collected in structured proforma, collected data was corroborated later on.

RESULTS AND DISCUSSIONS

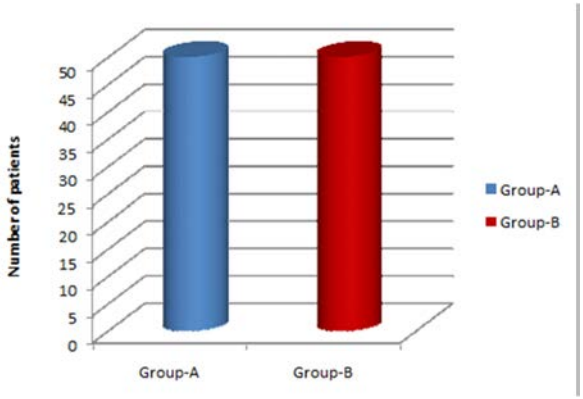

Fig. 1:Case Distribution According to Complete Evacuation of Retained Products of Conception in Two Groups

In-group-A, 30 (60.0%) patients had G1,8 (16.0%) patients hadG2, 5 (10.0%) patients had G3 and 7 (14.0%) patients had G4. In Group-B, 21 (42.0%) patients had G1,13 (26.0%) patients had G2, 8 (16.0%) patients had G3 and 8 (16.0%) patients had G4. In present study, difference in gravida in two groups in case of incomplete abortion is not statistically significant (p=0.3159). In Group-A, 12 (60.0%) patients had Multipara and 8 (40.0%) patients had Primipara. In Group-B, 16 (55.2%) patients had Multipara and 13 (44.8%) patients had Primipara. In present study, in case of incomplete abortion, difference in parity in two groups is not statistically significant (p=0.7371). In Group-A, 7 (35.0%) patients had caesarean section and 13 (65.0%) patients had vaginal delivery. In Group-B, 4 (13.8%) patients had caesarean section and 25 (86.2%) patients had vaginal delivery. There was no statistically significant difference regarding previous mode of delivery between two groups (p=0.0803). In Group-A, 50 (100.0%) patients were in <100ml Blood Loss group. In Group-B, 46 (92.0%) patients were in <100ml Blood Loss group and 4 (8.0%) patients were in >100ml Blood Loss group. In present study in case of incomplete abortion difference in blood loss in two groups statistically significant (p=0.0412).In Group-B, 4 (8.0%) patients had comparatively more per operative bleeding. In present study, difference in per operative bleeding in two groups in case of incomplete abortion, is statistically significant (p=0.0412) i.e., per operative bleeding is significantly more common in dilatation, evacuation and curettage group (Group B). In Group-A, the mean period of gestation in weeks (Mean±SD) of patients was 9.0920±.9735. In Group-B, the mean period of gestation in weeks (Mean±SD) of patients was 9.6040±1.6025. In present study in case of incomplete abortion difference in distribution of mean period of gestation in two groups is not statistically significant (p=0.0564). In Group-A, the mean Hb difference Pre op-Post op (Mean±SD) of patients is 0.1980±0.0714. In Group-B, the mean Hb difference at Pre op-Post op (Mean±SD) of patients is 0.4100± 0.2270. In Group B, 4(8.0%) patients had post-operative pain, whereas there was no pain in Group A. In present study, difference in post-operative pain in two groups, in case of incomplete abortion, is statistically significant (p=0.0412) In Group-A, 50 (100.0%) patients had complete evacuation and evacuation of retained products of conception is not required further. In Group-B, 50 (100.0%) patients had complete evacuation and evacuation of retained products of conception is not required further.

In this prospective randomized controlled trial, a total 100 patients with history of incomplete abortion were studied, of which randomly selected 50 patients underwent MVA (Group A) and remaining 50 patients underwent DE and C (Group B). Cases were compared with respect of their age, gravidity, parity, duration of procedure, blood loss, per-operative and postoperative complications and hospital stay. In Group-A, 5 (10.0%) patients were ≤20 years of age, 25 (50.0%) patients were 21-25 years of age, 15 (30.0%) patients were 26-30 years of age and 5 (10.0%) patients were 31-35 years of age. In Group-B, 5 (10.0%) patients were≤20 years of age, 23 (46.0%) patients were 21-25 years of age, 14 (28.0%) patients were 26-30 years of age and 8 (16.0%) patients were 31-35 years of age. In present study, in case of incomplete abortion, difference in age in two groups is not statistically significant (p=0.8470). In Group-A, the mean Age (Mean±SD) of patients was

Table 1: Association Between Gravida, Parity, Previous Mode of Delivery, Blood Loss and Per-Operative Bleeding Operative Bleeding Group

		Group			
		Group-A	Group-B	Total	P value
Gravida	**G1**	30 (60.0)	21 (42.0)	51(51.0)	0.3159
	G2	8 (16.0)	13 (26.0)	21(21.0)	
	G3	5 (10.0)	8 (16.0)	13(13.0)	
	G4	7 (14.0)	8 (16.0)	15 (15.0)	
Parity	**Multi para**	12(60.0)	16(55.2)	28(57.1)	
	Primi para	8(40.0)	13(44.8)	21(42.9)	0.7371
Previous mode of Delivery	**Caesarean Section**	7(35.0)	4(13.8)	11(22.4)	
	Vaginal Delivery	13(65.0)	25(86.2)	38(77.6)	0.0803
Blood Loss group	**<100ml**	52.1(100.0)	46 (92.0)	96 (96.0)	
	>100ml	0	4 (8.0)	4 (100.0)	0.0412
Per-operative Bleeding operative Bleeding	**Bleeding**	0(0%)	4(8.0%)	4(4.05)	
	No	50(100.0)	46(92.0%)	96(96.0%)	0.0412
	TOTAL	50(100.0%)	50(100.0%)	100(100.0%)	

Table 2: Distribution of Mean Period of Gestation in Weeks

		Number	Mean	SD	Minimum	Maximum	Median	p-value
period of gestation in weeks	Group-A	50	9.092	0.9735	8	11.2	9.05	0.0564
	Group-B	50	9.604	1.6025	7.1	11.6	9.6	

Table 3: Distribution of Mean HB Difference at Pre Op-Post Op with Group

		Number	Mean	SD	Minimum	Maximum	Median	p- value
Hb at Pre op-Post op	Group-A	50	0.198	0.0714	0.1	0.3	0.2	<0.0001
	Group-B	50	0.41	0.227	0.2	0.9	0.3	

25.0800±3.8377.In Group-B, the mean Age (Mean±SD) of patients was 25.5400±4.2533.In present study, in case of incomplete abortion difference in distribution of mean Age in two groups is not statistically significant (p=0.5715). S Saeed[9] in their comparative study of MVA versus D and C in case of incomplete and missed miscarriage, they found that 73 (66.36%) in Group A (MVA) and 67(60.91%) in Group B (D and C) were between 18-30 years while 37(33.64%) in Group A and 43 (39.09%) in Group B were between 31-45 years age, mean±SD was calculated as 27.37±5.99 years in Group A and 28.45±6.50 years in Group B. they observed, mean age of patient of DNC group was 29.35±6.4 years and the mean age of MVA group was 28.04±6.19 years (p=0.296). Syed Tanveer Abbas Gilani, Ghazala Iftikhar[10] in their comparative study of manual vacuum aspiration and sharp curettage in the first trimester abortions, the mean age of patient in MVA group was 31.8 years and 33 years in sharp curettage group respectively. In present study, In Group-A, 30 (60.0%) patients were G1, 8 (16.0%) patients were G2, 5 (10.0%) patients were G3 and 7 (14.0%) patients were G4.In Group-B, 21 (42.0%) patients were G1,13 (26.0%) patients were G2, 8 (16.0%) patients wereG3 and 8 (16.0%) patients were G4. In present study, difference in gravida in two groups in case of incomplete abortion is not statistically significant (p=0.3159). In present study, In Group-A, 12 (60.0%) patients were Multipara and 8 (40.0%) patients were Primi para. In Group-B, 16 (55.2%) patients were Multipara and 13 (44.8%) patients were Primipara. In present study, in case of incomplete abortion, difference in parity in two groups is not statistically significant (p=0.7371). Butt[11] in their comparative study of manual vacuum aspiration versus dilatation and curettage, mean parity of study females was 1.96+/-0.82. In present study, In Group-A, 21 (42.0%) patients had 8-8.6 weeks of gestation, 17 (34.0%) patients had 9-9.6 weeks of gestation, 8 (16.0%) patients had 10-10.6 weeks of gestation and 4 (8.0%) patients had 11-11.6 weeks of gestation. In Group-B, 8 (16.0%) patients had 7-7.6 weeks of gestation, 12 (24.0%) patients had 8-8.6 weeks of gestation, 9 (18.0%) patients had 9-9.6 weeks of gestation and 21 (42.0%) patients had 11-11.6 weeks of gestation. In present study, in case of incomplete abortion, difference in period of gestation in two groups is not statistically significant p-value: 0.0531. In Group-A, the mean period of gestation in weeks (Mean± SD) of patients was 9.0920±.9735. In Group-B, the mean period of gestation in weeks (Mean±SD) of patients was 9.6040±1.6025. In present study, in case of incomplete abortion, difference in distribution of mean period of gestation in two groups is not statistically significant (p=0.0564). In present study, In Group-A, 7 (35.0%) patients had Caesarean section and 13 (65.0%) patients had vaginal delivery. In Group-B, 4 (13.8%) patients had Caesarean section and 25 (86.2%) patients had vaginal delivery. There was no difference regarding previous mode of delivery between two groups (p=0.0803). In present study, In Group-A, 50 (100.0%) patients had complete evacuation and evacuation of retained products of conception is not required further. In Group-B, 50 (100.0%) patients had complete evacuation and evacuation of retained products of conception is not required further. In present study, in Group-A, the mean duration of procedure in minutes (Mean±SD) of patients is 12.1800±1.8482. In Group-B, the mean duration of procedure in minutes (Mean±SD) of patients is 15.5000±1.9193. Distribution of mean duration of procedure in minutes in two group is statistically significant (p<0.0001). In present study

mean duration of procedure in Group A(MVA) was found 12.1800±1.8482mins which was less compared to Group B, which was 15.5000±1.9193mins. V jayashree[3] in their randomized controlled trial, they found shorter duration of procedure in MVA group compared to D and C group. The average duration of the procedure was 7.89+/-2.08mins in D and C group whereas it was only 5.93+/-1.11mins in MVA group, difference was statistically significant. In present study, In Group-B, 4 (8.0%) patients had comparatively more per operative bleeding. In present study, difference in per operative bleeding in two groups, in case of incomplete abortion, is statistically significant (p=0.0412). In Group-A, the mean Blood Loss in ml (Mean±SD) of patients is 61.9600± 9.2073.In Group-B, the mean Blood Loss in ml (Mean±SD) of patients is 89.6400±24.9332.In present study, in case of incomplete abortion, difference in mean blood loss in two groups is statistically significant (p<0.0001). Yasmin Fatima[12] journal of the society of obstetricians and gynaecologists of Pakistan, 10 (2), 106-109, 2020. In their comparative study, it was found that heavy bleeding, cervical trauma and other complications were significantly higher among DNC group as compared to MVA group(p-0.001). In present study, In Group-A, 50 (100.0%) patients were in <100ml Blood Loss group. In Group-B, 46 (92.0%) patients were in <100ml Blood Loss group and 4 (8.0%) patients were in >100ml Blood Loss group. In present study in case of incomplete abortion difference in blood loss in two groups statistically significant (p=0.0412). Kakinuma[13] 100ml blood loss was taken as standard of upper limit of normal blood loss in MVA or D and C procedure. In present study the same 100 ml blood loss is taken as standard. In present study, In Group-A, the mean Hb difference at Pre-op-Post-op (Mean±SD) of patients is 0.1980±0.0714. In Group-B, the mean Hb difference at Pre-op-Post-op (Mean±SD) of patients is 0.4100± 0.2270. In present study in case of incomplete abortion difference in mean Hb at Pre-op-Post-op in two groups is statistically significant (p<0.0001). In present study, In Group-A, mean duration of hospital stay in hours (Mean±SD) of patients is 11.1400±1.6661. In Group-B, the mean duration of hospital stay in hours (Mean±SD) of patients is 19.3800±3.2757. In present study in case of incomplete abortion difference in mean duration of hospital stay (in hours) in two groups is statistically significant (p<0.0001) i.e. mean duration of hospital stay (in hours) was more in Group B compared to Group A. In present study no post-operative sign of infection like fever, foul smelling discharge, pyometra were seen. In Group B, 4(8.0%) patients had moderate post-operative pain, whereas there was no post-operative pain in Group A. In present study, difference in post-operative pain in two groups in case of incomplete abortion, is statistically significant (p=0.0412), i.e. post-operative pain was more common in dilatation evacuation and curettage group(Group B). Nasreen kishwar[14] in there randomized controlled trial, they found 16.25% vs 46.25% of women in MVA vs E and C Group reported post-op pain, that is post-operative pain was more common in E and C group compared to MVA group, which is comparable to our present study.

CONCLUSION

According to the results of the present study, even though relatively small in sample size, this study concludes that in MVA group, the mean duration of procedure (in minutes) is significantly less compared to DE and C group . Per-operative bleeding and blood loss are less in MVA group compared to De and C group. Mean hemoglobin (Hb) difference (pre-op-post-op) is less in MVA group compared to DE and C group. The duration of hospital stay is significantly less in MVA group compared to DE and C group. Post-operative pain is more common in DE and C group compared to MVA group.

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