Original Article

Comparison of the Outcome of Manual Vacuum Aspiration and Evacuation of Retained Products of Conception in First Trimester Miscarriages

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ABSTRACT

Objective: To compare the outcome of manual vacuum aspiration and evacuation of retained products of conception in 1st trimester miscarriages.

Study Design: Randomized Controlled Trial study.

Place and Duration of Study: This study was conducted at the Department of Obstetrics & Gynecology, Bahawal Victoria Hospital, Bahawalpur from March 2019 to September 2019.

Materials and Methods: A total of 216 patients between the age of 18-40 were included in the study with 1st trimester miscarriages. Patients with signs of septic abortion, ectopic pregnancy, CRF, CLD and any bleeding disorders were excluded. Group A patients underwent evacuation manually by manual vacuum aspiration (MVA) while group B patients underwent evacuation of retained products of pregnancy (ERPC). Outcome variables like blood loss, hospital stay, perforation and incomplete evacuation were noted.

Results: The mean age of women in group A was 29.59 ± 4.76 years and in group B was 28.08 ± 5.83 years. Gestational age was from <12 weeks with mean gestational age of 7.83 ± 2.41 weeks. In this study, mean blood loss was seen in MVA as 58.70 ± 13.26 ml and 73.99 ± 9.96 ml in ERPC with p-value of 0.0001. Also hospital stay was seen in MVA as 30.94 ± 4.65 hours and 46.26 ± 4.76 hours in ERPC with p-value of 0.0001. Incomplete evacuation was found in ERPC group as 00 (0.0%) and in MVA group as 02 (1.85%) with p-value of 0.155. The uterine perforation was seen in 12 (11.11%) patients of ERPC group and 4 (3.70%) patients of MVA group with p-value of 0.038.

Conclusion: Conclusion of the study was that manual vacuum aspiration (MVA) is a safe procedure for first trimester miscarriages as compared to evacuation of retained products of conception.

Key Words: 1st trimester miscarriages, manual vacuum aspiration, blood loss.

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INTRODUCTION

Early pregnancy loss during first trimester is the main reason for social anxiety and increased no of hospital consultations.[1]Approximately 25% women will experience 1st trimester miscarriage during her reproductive life. Research shows a miscarriage rate per annum of 29 per 1000 in women aged 15-49 years.[2]

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Amongst the main causes of 1st trimester miscarriages, Incomplete and missed miscarriage are the most common[3]. It is not possible to know the exact prevalence and incidence of miscarriages as most of the women abort without even knowledge of being pregnant.[2] In addition, most women with may not attend a doctor assuming it to be their periods.[4]In order to determine the exact number some studies have tried by recruiting women in very early pregnancy, but this is again not a true representative of an entire population.[2] Local Hospital protocols about management and hospital admission should be based on local infrastructure, personal and practical limitations, patient preferences and, clinical efficacy of a particular method.[4] Since the early 1990s, care of women after miscarriage has been proven to reduce long and short term maternal mortality and morbidity.[5]

Termination of pregnancy can be done by both surgical and medical methods. Gestational age is the most important factor in choosing the appropriate method.

Medical approach is easy, non-invasive, cheap but may end up in surgical evacuation and success is not always guaranteed. Surgical evacuation can be done by different approaches including manual vacuum aspiration (MVA) or electric vacuum aspiration (EVA), evacuation of retained products of pregnancy (ERPC).[6] Vacuum aspiration is better than other approaches where safety, success and complications are a question. Yet most of the practitioners find dilatation and sharp curettage easy and convenient. Lack of appropriate training and literature that compares MVA with sharp curettage concerns the use of this method in Pakistan.[7] Incomplete evacuation in ERPC group was found to be 20% and in MVA group as 8%.[8] Amongst complications uterine perforation was found to be 10% in ERPC group and 2% in MVA group.[8] In another study, mean blood loss in MVA was 74.3±60.1 ml and 104.2±104.1 ml in ERPC. Also hospital stay in MVA was 35.9±13.1 hours and 45.9±19.0 hours in ERPC.[9]

Evacuation of retained products of conception is a routine procedure in early pregnancy assessment emergency units of our Hospitals. International literature shows that MVA is more effective and safer in 1st trimester miscarriage, so we decided to conduct a randomized clinical trial in our population in our Hospital Settings to compare the outcome of manual vacuum aspiration and Evacuation of retained products of conception in 1st trimester miscarriages. This study will not only provide the local statistics but will also provide our population a more effective and safe method in first trimester abortions. Then based on the results, the method with better outcome can be opted routinely in our practices for reducing the complications.

MATERIALS AND METHODS

This study was carried out in Obstetrics & Gynecology Department, Bahawal Victoria Hospital, Bahawalpur from 6th March 2019 to 5th September 2019. All patients between ages 18-40 years with 1st trimester miscarriage < 12 weeks as assessed on LMP and presence of all these i.e. an abnormal-appearing large, deformed yolk sac, increased placental echogenicity and intrauterine hematoma (hyperechonic on scan) on ultrasonography were deemed as positive. However the patients with signs of sepsis (fever >37.7 ºC, foul smelling vaginal discharge, tachycardia or abdominal pain and distension) were excluded. Ectopic pregnancy, any history of bleeding disorder, hemodynamic instability, chronic liver disease(s/bilirubin >1.0 mg/dl), chronic kidney disease (s/creatinine >1.3 mg/dl) were other exclusions.

Data Collection Procedure: After ethical review committee approval of Bahawal Victoria Hospital, patients who fulfilled the inclusion criteria were included in the study process. Informed consent was obtained in written form and randomization was done into two different groups by using computer generated random number table. Group A patients underwent manual vacuum aspiration (MVA) while group B patients underwent evacuation of retained products of conception (ERPC). All evacuations were done by the single surgeon (with post-fellowship experience of 3 years). Outcome variables like blood loss, hospital stay, perforation and incomplete evacuation were noted as described in operational definition. A specially designed Performa was used for data collection.

Statistical Analysis: Data analysis was done by using SPSS version 20.0. Mean and standard deviation were calculated for age, gestational age, parity, hospital stay and blood loss. Frequency and percentage were calculated for incomplete evacuation (yes/no) and perforation (yes/no). Independent 'T' test was used to compare the hospital stay and blood loss of both groups and chi square was applied to compare the incomplete evacuation and perforation. P-value $\leq$ 0.05 was considered as significant. Effect modifiers like age, gestational age and parity were controlled through stratification and post-stratification Independent 'T' test was used to see their effect on outcome and chi square was used to see their effect on outcome. P-value $\leq$ 0.05 was considered as significant.

RESULTS

Age range in this study was from 18 to 40 years with mean age of 28.69 ± 4.31 years. The mean age of women in group A was 29.59 ± 4.76years and in group B was 28.08 ± 5.83years. Majority of the patients 136 (62.96%) were between 18 to 40 years of age.

Gestational age was from <12 weeks with mean gestational age of 7.83 ± 2.41 weeks. The mean gestational age in group A was 8.03 ± 2.52weeks and in group B was 7.57 ± 2.31weeks. Majority of the patients 130 (60.19%) were between 7 to 11 weeks of gestation. Mean parity was 3.29 ± 1.13. In this study, mean blood loss was seen in MVA as 58.70 ± 13.26ml and 73.99 ± 9.96ml in ERPC with p-value of 0.0001. Also hospital stay was seen in MVA as 30.94 ± 4.65hours and 46.26 ± 4.76hours in ERPC with p-value of 0.0001 (Table I).

TableNo.1: Comparison of outcome (in terms of mean hospital stay and blood loss) of manual vacuum aspiration and evacuation of retained products of conception in 1st trimester miscarriages

Outcome	Group A (n=108)	Group B (n=108)	p-value
	Mean ± SD	Mean ± SD	
Blood loss (ml)	58.70 ± 13.26	73.99 ± 9.96	0.0001
Hospital stay (hours)	30.94 ± 4.65	46.26 ± 4.76	0.0001

Table No.2: Comparison of outcome (in terms of incomplete evacuation and perforation) of manual vacuum aspiration and evacuation of retained products of conception in 1st trimester miscarriages

Outcome	Group A (n=108)		Group B (n=108)		p-value
	Yes	No	Yes	No	
Incomplete evacuation	02(1.85%)	106(98.15%)	00 (0.00%)	108 (100.0%)	0.155
Perforation	04 (3.70%)	104 (96.30%)	12 (11.11%)	96 (88.89%)	0.038

Incomplete evacuation was found in ERPC group as 00 (0.0%) and in MVA group as 02 (1.85%) with p-value of 0.155.The uterine perforation was seen in 12 (11.11%) patients of ERPC group and 4 (3.70%) patients of MVA group with p-value of 0.038 (Table 2).

DISCUSSION

Loss of pregnancy is a big social and health issue all over the world. Around 15-20%of the females in reproductive age group experience it at some point of time in their life. The World Health Organization (2003) statistics state that 46 million women end up in miscarriages yearly and out of these women 20 million females undergo unsafe procedures to deal with the process[10]. Around 67,000 females lose their life due to unsafe abortion techniques and a greater number suffer pain, sepsis, depression, death and other maternal morbidities. Unsafe techniques and untrained staff is responsible for 13% of the mortality in these women especially in underdeveloped countries like Pakistan.

But with the advent of new techniques and better health care services opted by health care professionals the percentage of maternal deaths has undergone a declining trend.[11] As professional malpractice in dealing termination of pregnancy is the reason behind the bad health, economic and social repercussions. The World Health Organization discourages the use of sharp curettage (D&C) for first trimester miscarriages as Asherman's syndrome can occur therefore, suction remains the safe option.[12] The possible treatment choices are Expectant, Medical and Surgical termination. Conventional surgical choice i.e. dilatation and curettage (D&C) needs professional training, anesthesia and other pre-requisites like blood arrangement etc. Even with best arrangements hemorrhage, incomplete evacuation, sepsis, pain and perforation are dreaded complications.

This study was regulated to compare the outcome of manual vacuum aspiration and evacuation of retained products of pregnancy in 1st trimester miscarriages. In my study age ranges from 18 to 40 years with mean age of 28.69 ± 4.31 years. The mean age of women in group A was 29.59 ± 4.76years and in group B was 28.08 ± 5.83years. Most of the patients 136 (62.96%) were between 18 to 40 years of age. Gestational age was from <12 weeks with mean gestational age of 7.83 ± 2.41 weeks. The mean gestational age in group A was 8.03 ± 2.52weeks and in group B was 7.57 ± 2.31 weeks. In my study, mean blood loss was seen in MVA as 58.70 ± 13.26ml and 73.99 ± 9.96ml in ERPC with p-value of 0.0001. Also hospital stay was seen in MVA as 30.94 ± 4.65hours and 46.26 ± 4.76hours in ERPC with p-value of 0.0001.Incomplete evacuation was found in ERPC group as 00 (0.0%) and in MVA group as 02 (1.85%) with p-value of 0.155.The uterine perforation was seen in 12 (11.11%) patients of ERPC group and 4 (3.70%) patients of MVA group with p-value of 0.038.

The method of choice for up to 12 completed weeks abortion sanctioned by World Health Organization is vacuum aspiration. Using Misoprostol for medical management is another preferred choice. Dilatation and curettage should be the last course of action. The advantages associated with Vacuum aspiration are less pain, shorter procedure, less blood loss, reduced cost and increased patient satisfaction. Complete evacuation achieved by manual vacuum aspiration (MVA) was 95-100%.[13] MVA is a safe choice for incomplete miscarriage.

When compared duration of the procedure, hospitalization and decrease in hemoglobin level were significantly shorter in the MVA group. In a study done by Faichamnan S et al[14] in 2010 has shown the mean blood loss of 74.3 ± 60.1 ml during manual vacuum aspiration (MVA) and 104.2 ± 104.1 ml during evacuation and curettage (E&C).In one study by Tasnim N et al[15] complete emptying of uterus was achieved in 89.6% with manual vacuum aspiration. Success rate with manual vacuum aspiration was 95.2%. Ansari R et al[16] found success rate with manual vacuum aspiration as 97.7%.

Another study results show that all the ERPC procedures were performed under general anesthesia whereas para-cervical block was administered with and/or without analgesia in MVA. The probability of complication during ERPC is more likely than MVA as it involves a sharp curette resulting in and bleeding; secondly, general anesthesia itself has its own complications and contraindications. In developing countries with limited resources, expertise and lack of appropriately trained birth attendants, MVA is an inexpensive, better and safe option.[17] Failure to perform MVA in emergency situation with incomplete miscarriage was shortcoming of this study, most probably due to unavailability of instrument and surgeon's expertise. Other studies have reported an efficacy of MVA from 95-100%, which is manifested in our study as well.[18] The use, implementation and adaptation of MVA by health care providers involves interplay between personal and professional factors. But appropriate training can help overcome these barriers as with as confidence comes with frequent practice[19].

CONCLUSION

This study was concluded that manual vacuum aspiration (MVA) is effectual and guarded procedure as

compared to evacuation of retained products of conception in 1st trimester miscarriages. So, we recommend that manual vacuum aspirations should be used as a first line surgical method in the management of 1st trimester pregnancy losses in order to reduce blood loss and eventually maternal morbidity and mortality.

Author's Contribution:

Concept & Design of Study:	Saba Nadeem
Drafting:	Shakila Yasmin, Sadia Shakeel
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Revisiting Critically:	Saba Nadeem, Shakila Yasmin
Final Approval of version:	Saba Nadeem

Conflict of Interest: The study has no conflict of interest to declare by any author.

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