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**ORIGINAL ARTICLE**

**Evaluation of Manual-Vacuum Aspiration With Medical Method  
of Termination of Pregnancy in First Trimester**

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**ABSTRACT**

*Totally, 100 patients were selected for the study and allocated in to two groups, medical management and manual vacuum aspiration group respectively. The standard protocol was followed after the proper ethical approval. Statistical analysis on the effectiveness of method showed a significance of showing MVA superior to the medical method. Regarding post abortal bleeding intensity, it was found severe bleeding of 28% was seen only in medical method group, followed by 46% in medical and 58% showed moderate bleeding in MVA group. Regarding adverse effect, the symptoms were distributed both group but maximum in the medical groups only. Medical abortion has the advantages of being Natural, Non-invasive. Finally, it is concluded that the both the method is efficient and superior in different characteristics. But, the method should to be decided by the individual.*

*Keywords: Cohort study; Bleeding intensity; Non-invasive; Medical management; Symptoms.*

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**INTRODUCTION**

Abortion is derived from a Latin term Aboriri, which meaning "to miscarry." Abortion is the natural or induced termination of a pregnancy before it reaches viability. An abortion can happen naturally, resulting in a miscarriage, or it can be forced. The word "abortion" is commonly used to refer to the surgical or medical termination of a fetus that has not attained viability. Induced abortion has a long history and has been carried out using a variety of techniques, including the use of herbal abortifacients, sharpened implements, physical trauma, and other conventional ways. Abortion's legality, prevalence, cultural, and religious status differ significantly over the world. Its legality can be determined by a variety of reasons, including the mother's health, cast, rape, foetal malformations, and a high chance of impairment, socioeconomic considerations, and a high risk of disability. In many areas of the globe, public debate over abortion's moral, ethical, and legal concerns is prominent and acrimonious [1].

Since 1972, when the Medical Termination of Pregnancy Act was established, abortion has been legal in India. Because it attempts to prevent unlawful abortion and maternal mortality, the law is fairly flexible. Abortion is legal in the following circumstances: A lady has a serious illness, and the pregnancy may put her life in jeopardy. Pregnancy puts a woman's physical and emotional wellbeing in jeopardy. There is a significant chance of physical or mental disorders in the fetus. Ineffective contraception. Rape resulted in the pregnancy. Irradiated and drug-exposed fetus Incidence: There are three popular approaches for calculating the rate of abortion: Abortion rate - the number of abortions per 1000 women aged 15 to 44. Abortion percentage - the number of abortions for 100 known pregnancies (pregnancies include live births, abortions and miscarriages).

The total abortion rates may alternatively be expressed as the average number of abortions a woman has over her reproductive years (TAR). Throughout the world, early pregnancy failure is a major public health issue. Although around 15% of all pregnancies end in natural miscarriage, there are an estimated 46 million induced abortions performed each year. Many of them are carried out in unlawfully dangerous conditions, leading in around 78,000 fatalities each year worldwide<sup>1</sup>, with septicemia and haemorrhage

accounting for the majority of these deaths [2]. Furthermore, many more women experience long-term morbidity as a result of pelvic infection, uterine perforation, and anaemia. Many women have abortions begun by "back street abortionists" in India's countryside, and subsequently present to a health care institution with an incomplete abortion.

Every year, over 6 million abortions occur in India, with 4 million being induced and 2 million occurring spontaneously<sup>3</sup>. Induced abortions is one of the most commonly done procedures in gynaecology, as well as one of the most intensively researched [4]. Abortions are routinely given in our Patient Settings because of a range of medical and social considerations [5]. The total risk of mortality from legal abortion is less than one in a million<sup>6</sup>. Abortion complications are responsible for 13% of all maternal fatalities across the world [7]. Illegally induced abortion is one of the leading causes of mortality among women of reproductive age. Almost majority of the fatalities and problems caused by unsafe abortions could have been avoided [8]. Despite the fact that the Voluntary Termination of Pregnancy (MTP) Act has been legal in India for 32 years, its availability, particularly in rural regions, is extremely restricted.

As a result, India reports 15000 to 20000 abortion-related fatalities per year [9]. In impoverished nations, recognized facilities are underutilized, and there is an unmet demand for a simple, safe, and effective technique of early pregnancy termination. Early surgical abortion has emerged today as a safe and successful alternative to and backup for medical abortion [10] thanks to technological breakthroughs such as very sensitive urine pregnancy tests and Transvaginal USG. Surgical evacuation or manual vacuum aspiration is the typical therapy in the underdeveloped world, mainly because to worries about the danger of pelvic infection. However, due to a shortage of competent staff and facilities, access to these operations is frequently impeded. Misoprostol, which can be delivered at even the most basic rural health center, might save many lives each year in these situations. Misoprostol and manual vacuum suction, on the other hand, have never been compared in a randomized clinical trial before. (We used the key terms "misoprostol" and "vacuum aspiration" to search the Cochrane central registry of systematic reviews, controlled trials, and methodological reviews. The Cochrane Library, Issue 4, 2004] and the PubMed database [1980-2005] to find trials.) Vacuum aspiration, which accounts for more than 97 percent of all pregnancy terminations, is a safe and successful way to terminate a pregnancy within the first few weeks of pregnancy [10].

## MATERIAL AND METHODS

This is prospective comparative clinical study m 100 women undergoing termination of pregnancy in SBMCH and was designed to compare the Effectiveness of manual vacuum aspiration and medical method of MTP in first trimester abortion during August 2012 - July 2014. Women of pregnancy less than 12 weeks of gestational age which was confirmed by ultrasound and fulfilling the requirements of the MTP act of 1972, were eligible for recruitment.

### *Inclusion Criteria:*

Pregnancy less than 12 weeks of any parity  
Confirmed intrauterine pregnancy

### *Exclusion Criteria:*

Pregnancy more than 12 weeks  
Patients with cardiac, renal, hepatic and neurological Co-morbidities  
Allergy to misoprostol  
Missed abortion  
Haemorrhagic disorder and treatment with anticoagulants  
Suspected ectopic pregnancy

The patients were allocated randomly as per their preference of treatment based on their affordability and consent accordingly into two groups of equal numbers. The standard procedure for medical method and the vacuum aspiration was done to the allocated patients with maximum care by adopting the legislative rules. All data were collected by one author and analyzed using SPSS version 20, the x<sup>2</sup>-test, or Fisher's exact test as appropriate for categorical data. Mean, standard deviations were found for continuous data. Two tailed P values of 0.05 were taken to indicate statistical significance.

## RESULT

Table 1 showed the distribution of age group between the two groups. It is seen from the table that the average mean age in years in medical and manual vacuum aspiration group is found to be around 27 and 28 respectively. There is no major age differences between the age groups showing the demography of age is distributed equally in both groups (P=0.286). Average gestational age is 51.28 + 11.13 in medical management group and 49.16 + 9.99 in manual vacuum aspiration group with P value of 0.319.

Table 1. Age distribution between two groups

Demography	Medical management	Manual Vacuum Aspiration	P value
Age	27.42 $\pm$ 4.09	28.28 $\pm$ 3.92	0.286
Gestational Age	51.28 $\pm$ 11.13	49.16 $\pm$ 9.99	0.319

Mean  $\pm$  SD; P<0.05

Table 2 showed the distribution of gravida who participated in the study for medical termination of pregnancy in the, st trimester. It is shown that in medical management group 28.0%, 46.0%, 16.0% and 8.0% of the pregnancy belong to gravida 2,3,4 and 5 respectively (Figure. 1). In manual vacuum aspiration group the distribution in various gravida were 20.0%,38.0%,32.0% and 10.0% corresponding to gravida 2,3,4 and 5 respectively. The distribution does not show any in equality between the groups (P=0.259).

Table 2: Gravida distribution between two groups

Demography	Medical management	Manual Vacuum Aspiration	P value
Gravida 2	14 (28.0%)	10 (20.0%)	0.259
Gravida 3	24 (46.0%)	19 (38.0%)	
Gravida 4	8 (16.0%)	16 (32.0%)	
Gravida 5	4 (8.0%)	5 (10.0%)	
Total No of Patients	50	50	

Table 3 showed the efficacy of the two management group. From the table it is found that 42% of the patients in the medical group had complete evacuation. The rest 58% had incomplete evacuations that were next planned for manual vacuum aspiration group. In manual vacuum aspiration 94% showed the complete evacuation. It is shown there is significant statistical difference between the two management group with P=0.000.

Table 3: Efficacy wise distribution between two --management groups

Evacuation (after 48 hours)	Medical management	Manual Vacuum Aspiration	P value
Complete	21 (42%)	47 (94%)	0.000
Incomplete/intact	29 (58%)	3(6%)	
Total No of Patients	50	50	

Table 4 showed the post abortion bleeding intensity in the two management groups. Minimal bleeding was seen 42% followed by 58% moderate bleeding in manual vacuum aspiration arms. In medical management group 28% showed severe bleeding followed by 46% moderate bleeding and 26% minimal bleeding (Figure 2).

Table 4: Bleeding intensity post procedures

Post abortion bleeding	Medical management	Manual Vacuum Aspiration (Intraoperative + Post abortion)
No Bleeding	0(0%)	0 (0%)
Minimal	13 (26%)	21(42%)
Moderate	23 (46%)	29(58%)
Severe	14 (28%)	0(0%)
Total No of Patient	50	50

Table 5 shows the ultrasound finding the medical and manual vacuum aspiration group. It was shown that all 94% of the manual vacuum aspiration the uterine cavity is clear without any piece of products followed by 6% partial conception products retained. In medical management 42% cavity is free and the rest 50% and 8% it is found with the conceptional products.

Table 5: Ultrasonography findings between two groups:

Ultrasound finding (48 hours later)	Medical management	Manual Vacuum Aspiration
Complete Cavity	21 (42%)	47 (94%)
Partial R poc's Present	25(50%)	3(6%)
Intact Pregnancy	4(8%)	0(0%)
Total No of Patients	50	50

Table 6 shows the patients response to accept the procedure. It is found that 46% of the patients were satisfied and 54% were not satisfied for medical management and 82% and 18% of manual vacuum group were given a satisfactory and non-satisfactory response. There is a significant difference between two groups (Figure 2).

Table 6: Patient attitude towards the management

Patient's interest	Medical management	Manual vacuum aspiration	P value
Satisfactory	23(46%)	41(82%)	0.000
Not satisfactory	27(54%)	9(18%)	
	0	0	

Table 7 shows the various distribution of adverse effect in two groups. The various adverse effect seen in both the groups are backache, cramps, diarrhoea, dizziness, weakness, nausea, vomiting and fever. In medical method 50% do not present any side effect in medical group. Majority of side effects were seen only in medical method.

Table 7. Adverse effect in various groups.

Adverse effect	Medical method	MVA
None	25(50%)	17(34%)
Backache	0(0%)	16(32%)
Cramps	14(28%)	7(14%)
Diarrhoea	2(4%)	0(0%)
Giddiness/ dizziness	0(0%)	4(8%)
Fever	0(0%)	5(10%)
Nausea	7(14%)	0(0%)
Vomiting	1(2%)	1(2%)

Table 8 shows the pattern of pain intensity in two groups. The pain intensity is scored as none, mild, moderate and severe. In medical group it is 3(6%), 16(32%), 23(46%) and 8(16%). In MVA group it is 20(40%), 28(56%), 2(4%), and 0(0%) respectively.

Table 8: Pain intensity in various groups:

Pain intensity	Medical method	MVA
None	3(6%)	20(40%)
Mild	16(32%)	28(56%)
Moderate	23(46%)	2(4%)
Severe	8(16%)	0(0%)

## DISCUSSION

Medical abortion offers the benefits of being natural, non-invasive, and private. It does not require anaesthesia or surgery. It can be used as soon as the missed menstruation has occurred. Medical approach is free of instrumentation-related issues such as perforation, synaechae development, and pelvic inflammatory disease that leads to infertility, but it comes with a new set of hazards, including haemorrhage and heart failure. Side effects of medical abortion may be because of bleeding, cramping, expulsion are actually the desired outcomes. Surgical abortions like Manual vacuum aspiration have the advantages of being quick and effective. It is an invasive procedure and carries anaesthetic risks, beside those associated with surgery. The time lost from work is double for surgical abortion. With surgical abortions a woman faces the risks of cervical lacerations, uterine perforations, scarring, infection and even permanent infertility. MVA for first-trimester abortion is safe and effective. MVA abortion has been effectively introduced into established primary care practises and family medicine residency training programmes, according to multiple published papers. Incorporating MVA abortion treatment into primary care settings improves continuity of care and advances the Future of Family Medicine Project's aims of creating a medical home where patients may get a "basket of services." "By anticipating patient requirements and providing services to fulfil those needs, new model practises attempt to address patient and community demands for integrated care by offering patients what they want and need, when they want and need it." Given that abortion is one of the most regularly sought medical procedures, new model family physicians should incorporate early abortion into routine care to suit their patients' requirements [11]. When compared to surgical termination, medical termination with misoprostol is associated with a reduced rate of complete abortion, according to this study (MVA). Other comparative investigations [12,

13, 14] have shown similar results. A complete abortion rate of 42 percent was found in this study for medical termination [15, 16]. The UK Multicentre Trial of 1018 women using 600 mg mifepristone and a 1 mg vaginal pessary of gemeprost resulted in a 94.8 percent complete abortion rate, which is similar to the results in previous vaginal prostaglandin studies [17, 18].

When taken orally (87 percent) rather than vaginally, prostaglandin has been linked to a decreased risk of complete abortion in a randomized research (95 percent ) [18]. Recent trials in the United States utilising mifepristone and oral misoprostol have found that complete abortion rates vary from 77 to 92 percent depending on gestation [14]. In addition, the endometrial thickness measured by ultrasonography in the medical approach group was substantially thicker than in the MVA group. The current study's surgical complete abortion rate is comparable to rates that typically range from 95.0 to around 99.5 percent.[14]

PAC technologies that are simple to use and widely available are critical for women's health care. PAC programs have previously advocated MVA for the treatment of incomplete abortion. MVA is a very successful method of uterine evacuation in high-resource settings, but it is not always possible in low-resource settings with limited access to competent surgical doctors and equipment. Misoprostol's potential role in PAC programs has been debated by providers and policymakers for several years. By establishing that misoprostol is a safe, effective, and acceptable nonsurgical alternative to MVA, this study supports its inclusion in PAC programs [19].

When comparing the cost wise difference between the procedure, it was found that the package involving the medical treatment group was little more than the surgical procedure. The approximated amount spent in medical management group includes a procedural charges of rupees 1500 with other extra charges pertaining to routine investigation, pre and post ultrasonography. But in manual vacuum setting the procedural charges goes to rupees 1000 per patient with other extra charges a mentioned above. In addition the patient who was taken for medical management group with incomplete evacuation was again moved to the manual vacuum aspiration choice which further adding a huge spent on two procedures. Also the hospital stay of 20% of the patients in hospital during the start of treatment and during the post home management also added further expenditure in the medical groups. These findings are not in consistent with the other developed countries' charges where the group in medical management shows a benefitable choice of \$1000 for medical management as 2001 spent in this procedure in UK [20] Here in our study compared with manual vacuum aspiration counterparts, women receiving misoprostol reported significantly more bleeding but less pain at the time of the procedure. The bleeding pattern experienced with tissue passage is typically described as heavier than the patient's usual menstrual flow and lasts approximately 3 or 4 days. This was followed by a transition to vaginal spotting that may last for a week or longer. One common concern among providers who are considering treating outpatients with misoprostol is the possibility of acute blood loss resulting in hemodynamic instability and return to the emergency room. Although that is a legitimate concern that increases with gestational age, investigators have reported a greater decrease in hemoglobin among those treated by curettage [21].

## CONCLUSION

Every woman has the right to take decision about conceiving & continuing her pregnancy or terminating it. So, the early detection and termination of unwanted pregnancy by safe means is the aim of all clinicians. From this study it is concluded that Manual vacuum aspiration method is found to be Efficient, with better Patient satisfaction no prolonged bleeding in the Post abortal period and Pain tolerant. Medical abortion has the advantages of being Natural, Noninvasive. Finally, it is concluded that the both the method is efficient and superior in different characteristics. But, the method should to be decided by the individual.

## FUNDING

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## ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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