

Study of manual vacuum aspiration (MVA) at a tertiary health center

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Abstract : Unsafe abortion with its associated complications remains a public health challenge in spite of legalisation of induced abortion through MTP Act, 1971. Comprehensive abortion care (CAC) is an integral component of maternal health interventions as part of the National Health Mission. Present study was aimed to evaluate role of manual vacuum aspiration for induced/spontaneous abortions with uterine size less than 12 weeks at a tertiary teaching hospital & to assess safety of MVA. Present study was a prospective, observational study conducted in pregnant women underwent manual vacuum aspiration, for induced/spontaneous/incomplete abortions with < 12 weeks gestation. During study period 866 patients underwent manual vacuum aspiration procedure for first trimester MTP/missed/incomplete abortions. In present study most common age group was 26-30 years (39 %), most patients were gravida 2 (29 %). Most patients underwent MVA at 8-10 weeks gestation (38 %) & most common indication for MVA was medical termination of pregnancy (54 %) compared to incomplete abortion (46 %). In present study most common complications were blood transfusion (4.73 %), Hemorrhage (3.93%) & Incomplete abortion after MVA (2.42 %). MVA is a safe, simple, inexpensive method for first trimester induced/spontaneous/incomplete abortions. MVA is a promising method which can be practiced widely in rural areas where access to medical facilities are limited.

IndexTerms - Manual vacuum aspiration (MVA), safe abortion, unsafe abortion, post-abortion contraception.

INTRODUCTION

In India, Medical Termination of Pregnancy Act was passed in 1971 to prevent unsafe and illegal abortion with the aim to reducing the maternal mortality and morbidity due to unsafe abortion. According to Medical Termination of Pregnancy Act, abortion is legally available in India under a broad range of criteria, including to save a woman's life, to protect her physical and mental health, in cases of economic and social necessity, and if contraception has failed between married couples.¹ Still every year about 47,000 women die from complications of unsafe abortions and an estimate of 5 million women suffer temporary or permanent disabilities.²

Unsafe abortion with its associated complications remains a public health challenge in spite of legalisation of induced abortion through MTP Act, 1971. Government of India is committed to bring down maternal mortality ratio and has envisaged a comprehensive approach under the National Health Mission for responding to the health needs. Comprehensive abortion care (CAC) is an integral component of maternal health interventions as part of the National Health Mission.

Evacuation of the uterus in induced/spontaneous/incomplete abortions in which uterine size is < 12 weeks is usually performed by manual vacuum aspiration (MVA). Among various methods of all first trimester MTP procedures MVA (manual vacuum aspiration) is the best because of its simplicity, easily transportable, inexpensive, no need of electricity and decrease the need of manpower to handle electric pump. The World Health Organization (WHO) guidelines and a Cochrane Library review concluded that vacuum aspiration is the preferred surgical method for uterine evacuation after an incomplete abortion in the first trimester.³ Manual vacuum aspiration is faster, less painful, and is associated with less blood loss and fewer complications than D&C . Encouraging the use of MVA could help reduce obstetric complications and optimize resources.^{3,4}

As a nationally recognised centre for comprehensive abortion care, our institute always promote safe abortion services. MVA is instrumental in providing safe abortion services at periphery. Present study was aimed to evaluate role of manual vacuum aspiration for induced/spontaneous abortions with uterine size less than 12 weeks at a tertiary teaching hospital & to assess safety of MVA.

MATERIAL AND METHODS

Present study was a prospective, observational study conducted in pregnant women underwent manual vacuum aspiration, admitted under Department of Obstetrics & Gynaecology, Government Medical College, Aurangabad, Maharashtra, India. Study was conducted from 1st January 2019 to 31st December 2019 (1 year). Institutional ethical committee approval was taken for present study.

Inclusion criteria - Pregnant women underwent manual vacuum aspiration for

- Induced abortion of up to 12 weeks gestation/uterine size
- Incomplete abortion of up to 12 weeks gestation/uterine size
- Missed abortion of up to 12 weeks gestation/uterine size

Exclusion criteria

- Presence of acute cervical, vaginal or pelvic infection.
- Suspicion of perforation due to a previous interference in the present pregnancy

- Suspicion of ectopic pregnancy
- Vesicular mole

A written informed consent was taken for participation in study. Patients underwent detailed history taking & clinical examination. In history taking, general history including personal details (age, religion, address), menstrual history (length and duration of cycle, flow, last menstrual period), obstetric history (parity, live births, abortions-induced and spontaneous, previous caesarean section, last child birth/abortion), any drugs taken during this pregnancy to attempt termination, contraceptive history: (type of contraceptive used, duration), sexual/domestic violence, medical history (hypertension/heart disease/diabetes mellitus/epilepsy/asthma/drug allergies/bleeding disorders/renal disease/thyroid disease),etc. was noted. Clinical examination consists general examination (pulse rate, blood pressure, temperature, pallor/icterus) , Systemic examination (chest and cardiovascular system, abdominal mass, scars and distension, rigidity and rebound tenderness), pelvic examination (external genitalia: labia (majora, minora) and introitus for redness, ulcer, growth, warts, swelling and discharge, speculum examination (vagina and cervix for ulcer, foul smelling discharge and bleeding, any evidence of infection) bimanual examination (tenderness on cervical movement ,size, shape, consistency and mobility of the uterus, any fullness or tenderness in the fornices)

Gestation age was estimated as:

- (A) LMP known: number of days since the last menstrual period divided by 7,
- (B) LMP not known or conception in lactational amenorrhea: gestation age estimated by pelvic bimanual examination
- (C) An ultrasound examination for accurate dating done only when there is a discrepancy in the size of the uterus by LMP and bimanual examination.

Laboratory investigations - Haemoglobin, urine for albumin and sugar, blood group/Rh for each patient. Wherever required additional investigations such as USG- Obstetric, urine for pregnancy test, CBC, LFT, RFT, ECG, were done.

Tablet misoprostol 400 mcg administered sublingual 2-3 hours or vaginally 3-4 hours before the procedure for cervical priming. Patient was asked empty bladder just before procedure. In lithotomy position, povidone Iodine used to clean the cervix and vaginal walls. A bi-manual examination done to confirm the assessment findings. Paracervical block given with 1% Lignocaine 10ml using a 22-24-gauge needle. Needle injected just under the epithelium to a depth of 1.5-2cm at 4 and 8 o'clock positions and inject 2-4ml of Lignocaine at each site. Standard procedure of manual vacuum aspiration done in all patients. Post-abortion contraception counselling done for each patient.

Data was collected in predesigned proforma, entered in Microsoft excel. Descriptive analysis was done in percentages.

RESULTS

During study period 1647 abortions noted in our institute. It includes natural & elective pregnancy terminations up to 20 weeks. 866 patients underwent manual vacuum aspiration procedure (used for MTP/missed/incomplete abortion), medical methods of abortion in 347 patients & 434 had spontaneous abortion. 671 were medical termination of pregnancy while 976 were spontaneous abortions.

In present study 866 patients satisfying inclusion & exclusion criteria were considered. Most common age group in present study was 26-30 years (39 %), followed by 21-25 years (31 %). Most patients were gravida 2 (29 %), followed by gravida 3 (25 %). Most patients underwent MVA at 8-10 weeks gestation (38 %), followed by 6-8 weeks (29 %) & 10-12 weeks (25 %).

Table 1: Distribution of patients according to age, parity, and period of gestation

Characteristics	No. of patients	Percentage
Age group(years)		
15-20	38	4%
21-25	271	31%
26-30	337	39%
31-35	145	17%
36-40	59	7%
>45	16	2%
Gravida status		
0	89	10%
1	195	23%
2	254	29%
3	219	25%
>3	109	13%
Period of gestation		
< 6 weeks	70	8%
6-8 weeks	247	29%
8-10 weeks	329	38%
10-12 weeks	220	25%
Residence		

Urban	535	62%
Rural	331	38%

In present study most common indication for MVA was medical termination of pregnancy (54 %) compared to incomplete abortion (46 %). Most medical termination of pregnancy were done for contraceptive failure (36 %).

Table 2- Indication Of MVA

Indication	No. of patients	Percentage
Medical Termination of pregnancy	469	54%
I - To save life of pregnant women	3	0%
II - To prevent grave injury to physical and mental Health of mother	102	12%
III - Eugenic (Anomalous Fetus)	29	3%
IV - Humanitarian (Rape)	23	3%
V - Contraceptive failure	312	36%
Incomplete abortion	397	46%

Patients undergoing MVA had high risk factors such as previous 1 LSCS (20%), previous 2 LSCS (12%), hypertension (9%), heart disease (8%), previous 3 LSCS (6%), diabetes mellites (5%) & history of uterine surgery other than LSCS (4%).

Table 3- High risk factors

High risk factor	No. of patients	Percentage
Prev 1 LSCS	173	20%
Prev 2 LSCS	105	12%
Hypertension	74	9%
Heart disease	66	8%
Prev 3 LSCS	48	6%
Diabetes mellites	41	5%
History of uterine surgery other than LSCS	37	4%
Age less than 18 years	11	1%

Contraception is an essential component for health of females in reproductive age group. We asked contraception history for contraception used in the last 1 year. Patients were using condom (21 %), copper-T (12 %), oral pills (10 %), DMPA (6 %), other (5 %) & none (46 %).

Table 4 - Type of Contraception used in the past (last 1 year)

Contraception	No. of patients	Percentage
Condom	179	21%
Copper-T	102	12%
Oral pills	89	10%
DMPA	51	6%
Other	44	5%
None	401	46%

During counselling for MVA, patients were also counselled for post-abortual contraception. In present study, post-abortual contraception was as copper-T (22 %), oral contraceptive pills (19 %), condoms (13 %), female sterilisation (9%), DMPA (9 %), male sterilisation (6 %), other (4 %) & none (17 %).

Table 5 - Type of Contraception accepted after MVA

Contraception	No. of patients	Percentage
Copper-T	188	22%
Oral Contraceptive Pills	166	19%
Condoms	113	13%
Female sterilisation	82	9%
DMPA	79	9%
Male sterilisation	56	6%
Other	34	4%
None	148	17%

Patients were monitored for any intra-operative or post-operative complications. In present study most common complications were blood transfusion (4.73 %), Hemorrhage (3.93%) & Incomplete abortion after MVA (2.42 %). Less common complications were GI symptoms (loose motions, vomiting) (1.04 %) & infection (2 cases). No uterine perforation, injury to cervix, SICU admission, anaesthetic complication or maternal mortality was noted in patients underwent MVA.

Table 6: Distribution of patients according to complications.

Complications	No. of patients	Percentage
Blood transfusion	41	4.73
Hemorrhage	34	3.93
Incomplete abortion (RPOC)	21	2.42
GI symptoms (loose motions, vomiting)	9	1.04
Infection	2	0.23

DISCUSSION

In present study 866 patients underwent manual vacuum aspiration procedure for first trimester MTP/missed/incomplete abortions. Most common age group in present study was 26-30 years (39 %), followed by 21-25 years (31 %). Most patients were gravida 2 (29 %), followed by gravida 3 (25 %). Most patients underwent MVA at 8-10 weeks gestation (38 %), followed by 6-8 weeks (29 %) & 10-12 weeks (25 %). In present study most common indication for MVA was medical termination of pregnancy (54 %) compared to incomplete abortion (46 %). Copper-T (22 %) was most common post-abortion contraception followed by oral contraceptive pills (19 %), condoms (13 %), female sterilisation (9%), DMPA (9 %), male sterilisation (6 %), other (4 %) & none (17 %).

In present study most common complications were blood transfusion (4.73 %), Hemorrhage (3.93%) & Incomplete abortion after MVA (2.42 %). As a tertiary care centre, catering services to large number of periphery centres, majority patients with incomplete abortions were referred to our institute. Such patients had hemorrhage, required blood transfusion. Less common complications were GI symptoms (loose motions, vomiting) (1.04 %) & infection (2 cases).

The Maternal Mortality Ratio (MMR) for India is 130/lakh live births and unsafe abortions account for 8% of the MMR.⁵ Major barriers which impede women from reaching the required medical services and attention include illiteracy, lack of information, lack of access to health facilities, confidentiality, privacy and respect towards females undergoing the abortion process.

A rate of 70 unintended pregnancies per 1000 women and the finding that nearly half of all pregnancies are unintended suggest that there is great need for improvements in contraceptive services for women and for couples in general and in the context of abortion care.⁶ Same study also reported that, an estimated 78% of abortions in India occur outside of a health facility, and the large majority do not meet the criteria for legality. The reason was said to be, the amendments offered in 2014 have still not been approved; proposed changes include allowing more types of health practitioners to provide abortion, improving patient confidentiality and adding further legal grounds to permit abortion without restriction.⁶

According to a study, abortion services tend to be proportionately less available in the areas where the majority of women live. For example, in six Indian states just 5–34% of health facilities that provide induced abortions are located in rural areas, even though 49–87% of the population of reproductive-age women in these states lives in rural areas.⁷ All such factors lead patients towards unsafe abortion practices. Between 10-50% of women who undergo unsafe surgical abortions need medical care for complications. The most common complications are incomplete abortions, infections (sepsis), haemorrhages and injuries to internal organs such as perforation of the uterus. Long term health problems include chronic pain, pelvic inflammatory disease and infertility.⁸

In present study most of the women who came for termination of pregnancy were from the age group of 26-30 (39%), Bamniya A et al, Shrivastava et al, Patel et al, in their studies found the same.^{8,9,10} Urban patients (62 %) were more than from rural areas(38 %). Gupta S et al¹¹ noted that 24.34% women were from rural and remaining 75.66% women were from urban area. Majority of urban area patients were due to urban locality of tertiary care centres. Women from rural area reported late for MTP, as women from rural area have poor knowledge about medical care and MTP services. This also underlines need of MTP services at peripheral areas.

Majority of women were gravida 2 and above (67 %). This indicates now most women who want to limit family size and decrease opted for MTP services rather than contraceptive measures. This enforces health care providers to focus on unmet need of family planning services as majority were preventable by contraceptives. Shivkumar C et al¹² noted that majority patients 63.3% were having 1-3 deliveries followed by 22.7% women with 4-7 deliveries and only 14% cases came for termination of pregnancy without having any single delivery.

In present study 46 % women were not using any contraceptives 1 year before MTP. After MTP 83% accepted post-abortion contraceptives. In study by Bamniya A et al,⁸ post-abortion 42% accepted temporary contraception and 53% did not accept any method of contraception. Many studies have been published about the efficacy of MVA. Samal et al.,¹³ Paul et al.¹⁴ & Begum et al.¹⁵ noted efficacy of MVA in as 97%, 98% & 98% respectively with very low post procedure complication rate.

World Health Organisation and Family Welfare, government of India and FOGSI, based on a pilot training project recommend MVA as the first method of evacuation of first trimester abortion even in Primary Health Centres.¹⁶ In a qualitative study at Malawi, in two hospitals with a declining use of MVA, suggested that several factors influenced post-abortion care and MVA use; lack of training, and shortage of equipment and human resources were mentioned as major limiting factors.¹⁷ Present study provides evidence for safety of MVA, still larger comparative trials are needed for additional research.

Government of India with help of NGOs like IPAS trying to train medical officers for MVA, to increase safe abortion services at peripheral centres. Government providing hands on training, study material, equipments to them, also arranging follow up meetings , so as to improve safe abortion services. Contraception & safe abortion facilities are backbone of family planning services, useful to limit unsafe abortion related maternal morbidity & mortality .

CONCLUSION

MVA is a safe, simple, inexpensive method for first trimester induced/spontaneous/incomplete abortions. MVA is a promising method which can be practiced widely in rural areas where access to medical facilities are limited. Reach of safe abortion services can be extended in peripheral centres by training health professionals to provide abortion, this can certainly reduce unsafe abortions.

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