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Efficacy and Safety of Para Cervical Block in Manual Vacuum Aspiration (MVA) - in Low Resource Setting

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Abstract:

Objective (s): *To determine the safety and effectiveness of para-cervical block for cervical dilatation and uterine evacuation by MVA.*

Materials and methods: *This descriptive (cross-sectional) study was conducted in a low resource set-up at Homna, Upzilla Health Complex Comilla between January 2016 and June 2016. Forty five patients of 1st trimester incomplete abortion of 12 weeks gestation were the target population for manual vacuum aspiration (MVA) for this study. All patients received para cervical block before MVA procedure. Three minutes after application of block, suction and evacuation of uterus was done. Perioperative oral analgesic (Ibuprofen) and anxiolytic (diazepam) were used 30 minutes before procedure in all patients.*

Before the procedure, all the women were asked to evaluate the level of pain on a visual analog scale ranged from 0-10. Thirty minutes after the procedure, the patient was asked to describe the pain that she had been feeling during MVA by using the same visual analog scale. Visual analog scale was described by: no pain (0 points), slight pain (1-3 points), moderate pain (4-6 points) and severe pain (7-10 points).

Patients were followed up for 7 days and were evaluated for complications before leaving the facility and on the 7th day after procedure. A routine USG of lower abdomen was done on 7th post-evacuation day in all patients, which revealed completeness of the procedure. Informed consent was taken from all the patients.

Results: *All were first trimester incomplete abortion cases. MVA was performed with para cervical block. Para cervical block reduced pain sensation on cervical dilatation. According to VAS 30 (66.67%) patients had mild pain, 3(6.67%) patients had moderate pain and 12(26.67%) patients had no pain during the procedure. Six (13.33%) patients had mild pain and others had no pain after the procedure. There was no severe pain before or after the procedure. Thirty (75.56%) patients discharged before 4 hours and 11 (24.44%) patients discharged after 4 hours of the procedure. No patients had any complications like pervaginal bleeding, infection or retention of product. The cost was minimum and patient's satisfaction was high.*

Conclusion: *Paracevical block is effective in reducing pain sensation during MVA with a reasonable cost of the procedure.*

Introduction:

Abortion is the expulsion or extraction of an embryo or fetus weighing 500 gm or less from its mother [1]. This 500 gm of fetal development is attained approximately by 22wks (154 days) of gestation[1]. The expelled embryo or fetus is called abortus. When the entire product of conception is not expelled, instead a part of it is left inside the uterine cavity; it is called incomplete abortion[1]. In Bangladesh, maternal mortality resulting from abortion complications has fallen significantly from 13% of all maternal mortality in 2001 to less than 1% in 2010 [2,3]. However, the number of abortions still remains considerably high, ranging from 523803 to 769269 with an estimated 280000 women having been treated for complications of either spontaneous or induced abortion in 2010 [4,5]. This imposes a preventable burden on the health system[4]. It is anticipated that, if post abortion care

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(PAC) services can be started in a systemic manner at all levels of the health system; it would result in a significant reduction in maternal mortality and morbidity[6]. There are different methods used in post abortion care (PAC). Dilatation and Curettage (D & C) is the most commonly used technique in our country. It uses metal surgical instruments to empty the uterus, usually under general or local anesthesia or deep sedation. It is time consuming and there is chances of incomplete evacuation, hemorrhage and uterine perforation. It also requires operating theatre facilities and staff skilled in surgical techniques.

As an alternative, Manual Vacuum Aspiration (MVA) is one of the most effective techniques of uterine evacuation in incomplete abortion. It removes the contents of the uterus using controlled suction. MVA is safer and less costly than D & C. The procedure is brief, lasting only for a few minutes. It can be performed even in rural settings where electricity is not available. While D&C is generally provided only by physicians, vacuum aspiration may be performed by advanced practice clinicians such as physician assistants and midwives. So, considering the advantages mentioned above, the MVA procedure is safe, effective and potential for reducing health care costs and improving treatment of incomplete abortion.

The major sources of discomfort and pain during uterine evacuation with MVA are-anxiety, cervical pain due to dilatation, uterine cramping due to manipulation. There is a broad spectrum of pain management, ranging from psychological support in the absence of analgesics, to the exclusive use of local anesthesia or general anesthesia. The three categories of medications used for pain control:

1. Analgesics

   Analgesics alleviate the sensation of pain in the receptors of the spinal cord and brain. Suggested doses of oral analgesics are-

   - Paracetamol (Acetaminophen) 500 mg
   - Ibuprofen 400-800 mg

2. Anxiolytics

   Anxiolytics depress the functions of central nervous system and are used to decrease anxiety and to induce relaxation and sometimes amnesia.

   - Diazepam (Sedil) 5-10 mg

3. Anesthetics

   Anesthetics numb all physical sensation locally, regionally or generally.

   - Local anesthesia interrupts the awareness of pain from a small area in the body.
   - Regional anesthesia is delivered through the spinal or epidural route and blocks all sensation below a particular point on the spinal column.
   - General anesthesia affects the pain receptors in the brain and keeps the woman completely unconscious.

The purpose of pain management during MVA procedure is to help the woman remain as comfortable as possible, while minimizing medication- induced risks and side effects.

The term para cervical block refers to the injection of local anesthesia into the cervix. Usually 10-20 ml of 0.5%-1.0% plain lidocaine solution (always less than 200 mg/person, as toxicity occurs at that level). Lidocaine is the most common local anesthetic agent with a characteristic of easy abailability, low cost, stability and low risk of allergic/adverse reaction.

In comparison general anesthesia requires the increased complexity of care and the associated costs. It requires some degree of preoperative patient preparation. It causes the greatest number of side effects and complications even stroke. It requires a special team of a doctor and technicians. Spinal and epidural anesthesia also needs anesthetist. On the other hand local anesthesia can be managed by clinician him/her self.

So to popularize the MVA with local anesthesia in remote areas where facility and economic condition the people are poor I tried to explore the efficacy of MVA with local anesthesia

Materials and methods:

It was a descriptive (cross-sectional) study, conducted in a low resource setup at Homna, Comilla. 45 patients of 1st trimester incomplete abortion were studied from January 2016 to June 2016. All the patients received para cervical block before MVA procedure. Women attending the set-up who were diagnosed as having an incomplete abortion and who fulfilled all the selection criteria were recruited for this study.

Selection criteria :

- Incomplete abortion cases up to 12 weeks of gestation.
- Failed medical abortion cases up to 12 weeks of gestation.
- Incomplete MR.
- Women aged 18-45 years.
- Haemodynamically stable.

Perioperative oral analgesic (Ibuprofen) and anxiolytic (diazepam) were used 30 minutes before procedure in all patients.

Lidocaine is the most available drug. The technique for applying the para cervical block following WHO 2015 guideline[8] was as follows.

- 1% lidocaine was filled in a 20 ml syringe using an aseptic technique. Then 2 ml injected at 12 o'clock position and tenaculum is placed.
- Then each 4 ml are injected slowly into cervico vaginal junction at 2 & 4 o'clock positions and each 5 ml are injected slowly into cervico vaginal junction at 8 & 10 o'clock positions.

Always aspiration was done before injection. Three minutes after application of block, suction and evacuation of uterus was done.

Before the procedure, all the women were asked to evaluate the level of pain on a visual analog scale[9]. Thirty minutes after the procedure, the patient was asked to describe the pain that she had been feeling during MVA by using the same visual analog scale. The pain expressed by the patient measured by: no pain (0 points), slight pain (1-3 points), moderate pain (4-6 points) and severe pain (7-10 points).

All patients followed up for 7 days. Patients were also evaluated for complications before leaving the facility and on the 7th day after procedure. A routine USG of lower abdomen was done on 7th day follow up in all patients, which revealed completeness of the procedure. Informed written consent was taken from all patients.

Results :

During the study period MVA was done with para cervical block in 45 patients of incomplete abortion. Table 1 shows the characteristics of patients. Majority (95.56%) were due to incomplete abortion and only 2(4.44%) were due to incomplete evacuation of previous procedure. The mean age was 29.71 ±6.36 years, mean gestational age was 9.31±1.70 weeks. Twenty (44.44%) women were primiparous. On the basis of monthly income, economic status were divided into below average income (3,000 Tk.), average income (3,000-10,000 Tk.) and above average income (>10,000 Tk.). Twenty four (53.33%) patients belonged to below average group. Table II shows that four (8.89%) women felt severe pre procedure pain but after giving para cervical block no one felt severe pain during or after the MVA procedure. Only three (6.67%) women felt moderate pain during procedure. The mean procedure time was 9.67 minutes (SD 2.38 minutes). Thirty four (75.56%) women discharged within 4 hours of procedure. None of the 45 women had any complication due to para cervical block like allergic reaction, metallic taste, dizziness, disorientation, convulsion, respiratory distress (Table III).

Table-I

Patients' characteristics

Parameters	Mean	±SD
Age (Yrs)	29.71	±6.36
Gestational Age (Weeks)	9.31	±1.70
Parity	N	%
0	20	44.44
1	10	22.22
≥2	15	33.33
Socioeconomic status		
Below average income	24	53.33
Average income	13	28.89
Above average income	8	17.78
Indication of MVA		
Incomplete abortion	43	95.56
Incomplete evacuation	2	4.44

Table-II

Level of Pain sensation of patient

Visual analog scale (VAS)	Pre-procedure N (%)	During procedure N (%)	After procedure N (%)
None	5 (11.11)	12 (26.67)	39 (86.67)
Slight	23 (51.11)	30 (66.67)	6 (13.33)
Moderate	13 (28.89)	3 (6.67)	00 (00)
Severe	4 (8.89)	00 (00)	00 (00)

Table-III
Outcome of the procedure

Variables	Mean	±SD
Procedure time (minutes)	9.67	±2.38
Discharge of patient (hours)	N	%
≤4 hours	34	75.56
≥4 hours	11	24.44
Complications		
No	45	100
Yes	00	00

Discussion:

Incomplete abortion is the commonest type met amongst women, hospitalized for abortion complications. The incidence of patients attending in the setting do not reflect the actual situation of the country. Because many people do not report and some patients remain at home without treatment. This is true even in case of USA where 19% women of 27-30 years failed to report with their fate of abortion[2].

This study showed that MVA is a safe, effective, brief procedure and it takes only few minutes to complete the procedure. The procedure was completed within 6-10 minutes in most of the cases. Mean duration was 9.67±1.70 minutes and it can be compared with the study of Blumenthal *et al*[10], it was about 10 minutes. In the study by Forna and Gulmezuglu[11] the mean duration was 6.1 minutes.

The intensity of pain caused by MVA is less than that caused by sharp curettage. This study demonstrated that para cervical block is safe and effective in decreasing patient reported pain at various steps throughout a MVA procedure. It significantly decreased cervical dilatation and uterine aspiration pain. Para cervical block is thought to provide pain control for cervical dilatation through parasympathetic fibres of S 2, 3, 4 innervating cervix and lower uterine segment. However, with respect to time spent waiting between the injection and MVA procedure, Phair *et al* [12] did not find any differences between starting the MVA procedure immediately and waiting for 3 to 5 minutes. In this study, the MVA procedure was initiated 3 minutes after the block was applied. Pain is a biopsychosocial experience, where previous experiences and the sociocultural perception of pain denote great differences in the development, severity, and control of pain[13,14]. Thus, measuring the degree of pain becomes a difficult task. The para cervical block used in this study and MVA are safe techniques in that they did not produce any complications.

This study revealed that MVA is not that much costly procedure. Most of the patients were discharged within 4 hours, it corresponds with the study of Blumenthal, *et al* [10]. Another study by Fonseca *et al* [15] showed that MVA needed less hospital staying time compared with D & C. Their inference is that, there is 41% reduction of cost in MVA case.

In this small study we found that the procedure was completed without any complications. As there was minimum or no pain and hospital stay was less patients were satisfied. Moreover, hospital cost was also low and there was less manpower involvement. There was no need of involvement of anesthetist.

Conclusion:

In conclusion it can be said that in properly selected cases MVA is safe, effective, quick to perform, less costly and less painful than sharp curettage and less chance to perforate the uterus. It can be performed outside the operation theatre, eg. in the treatment room of a clinic or in emergency unit. So, it reduces hospital costs and saves time for both patient and clinicians. It is a measure, which can greatly contribute towards the reduction of maternal morbidity and mortality. The generalizability of our data is limited because we only included women with a gestational age up to 12 weeks on a small study population. So, further study is necessary comprising a greater number of population including gestational age more than 12 weeks. As para cervical block can be given at low resource setting, service providers at grass root level should be trained to make it available.

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