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Manual Vacuum Aspiration for Treatment of Early Pregnancy Loss

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Educational Objective:

After completing this lesson, the participant should be able to identify the advantages of outpatient management for early pregnancy loss; describe how to use manual vacuum aspiration (MVA) for uterine aspiration; and describe pain management for MVA in early pregnancy loss.

Introduction

Dilatation and curettage (D&C) for women undergoing early pregnancy failure is one of the most common procedures in gynecology. Traditional management of early pregnancy loss involves D&C under general anesthesia, often as an inpatient. This practice is based on protocols established more than a century ago, and although medicine has advanced enormously, miscarriage management has not.[1] For instance, despite the relatively common usage of the curet,[2,3] it is associated with higher rates of uterine perforation, increased blood loss, and more frequent blood transfusions.[4,5] Before the widespread availability of ultrasound and safe induced abortion with vacuum aspiration, pregnancy losses were not diagnosed until women were symptomatic: hemorrhaging or infected. Therefore, women often were sicker and even unstable at the time of presentation. Appropriately, women were managed with immediate uterine evacuation under general anesthesia in an operating room. Today, women often are diagnosed by ultrasound

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prior to hemorrhage or infection and can be safely managed by office-based manual vacuum aspiration (MVA).

Manual vacuum aspiration is a method of uterine evacuation that enables women with early pregnancy loss to be treated safely in the office or emergency department rather than the operating room. The manual vacuum aspirator consists of a hand-held 60-cc aspirator attached to a cannula (Ipas, Chapel Hill, NC) and can generate vacuum pressure identical to an electric suction generator until the aspirator is almost full.[6] Its uses include endometrial biopsy, uterine evacuation in cases of pregnancy failure, and pregnancy termination. The Ipas aspirator is reusable after appropriate processing.[7] An instrument set used for office-based MVA is shown in Figure 1.

Office-based treatment reduces costs for both the client and the health system, makes it possible for women to avoid the operating suite, substantially decreases waiting time, and enables women to return home sooner. Further, a well-designed clinic-based program can better optimize privacy, improve loss counseling, enhance the client's sense of autonomy, and maintain continuity of care with clinic staff. Office management may be preferable by many women because it offers a less institutional environment compared to the operating room.

Much clinical experience and many studies support the safety and efficacy of MVA for early pregnancy loss. This lesson will review published evidence on the advantages and disadvantages of miscarriage management in a clinic setting compared with traditional management in operative suites. Further, pain management options for MVA use will be summarized. Finally, the suggested technique using MVA will be outlined.

Evidence Supporting Manual Vacuum Aspiration for Early Pregnancy Loss

Safety and Efficacy

Manual vacuum aspiration has been shown to have the same efficacy and safety for uterine evacuation as electric vacuum aspiration (EVA).[3-5,8-10] In a review of more than 5,000 women undergoing early pregnancy loss, MVA was successful in 98% of uterine aspirations.[11] Other studies also have demonstrated the efficacy and safety of MVA compared with EVA or sharp curettage in elective abortions,[8,9] and in the management of incomplete abortions.[3-5,10] Table 1 summarizes the safety and efficiency of MVA in uterine evacuation.[4,5,9,10,12-14]

Several studies have specifically compared the use of MVA utilizing local anesthesia or intravenous sedation in a clinic setting to suction dilatation in an operative suite using general anesthesia. Again, these studies have shown comparable effectiveness and safety of MVA in office or ambulatory settings compared with formal operative suites for the management of incomplete abortions.[5,10,12] Thus, office-based management of early pregnancy loss utilizing MVA appears equal in terms of efficacy and safety to operating room management with EVA.

Advantages

Managing early pregnancy failure in a clinic setting provides the opportunity for significant resource

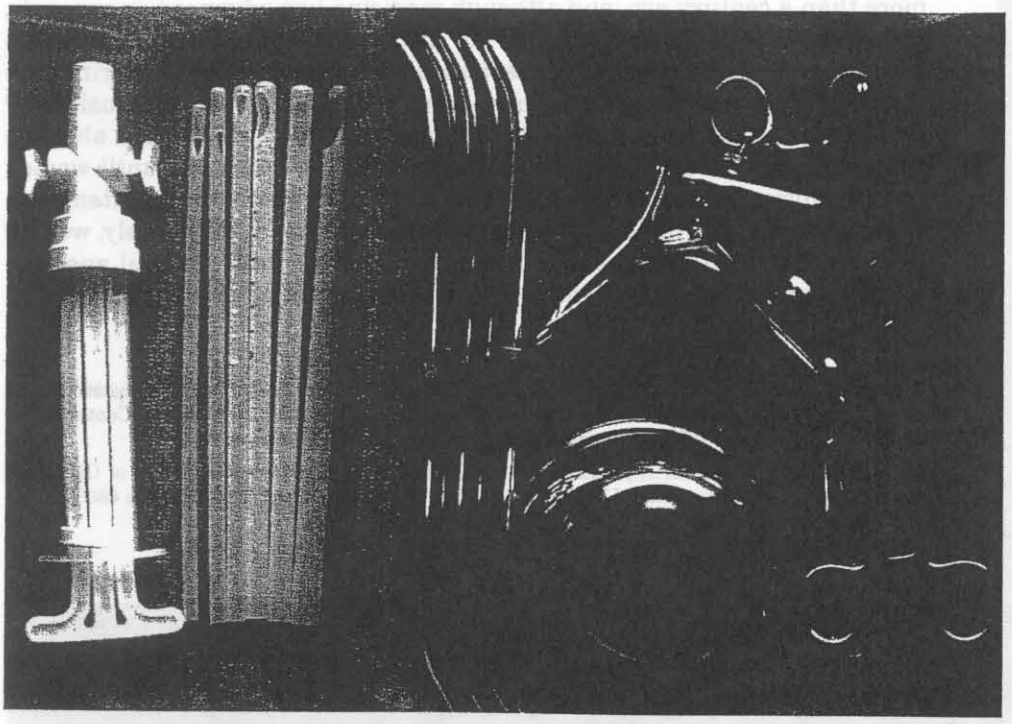

Figure 1
Manual vacuum aspiration instruments for office uterine evacuation.

Table 1. *Safety and Efficacy of Manual Vacuum Aspiration*

Study	Design	Diagnosis	Treatment	Control	Conclusions
Mahomed et al. (1994[12])	Cohort	Incomplete abortions	MVA under local (n=834)	Sharp curettage with general anesthesia (n=589)	Equal safety and effectiveness of MVA
Lukeman and Pogharian (1996[13])	Case-control	Incomplete abortions	MVA (n=432)	Sharp curettage (n=869)	Equal safety and effectiveness of MVA
Verkuyl and Crowther (1993[4])	Randomized controlled trial	Incomplete abortions	MVA (n=179)	Sharp curettage (n=178)	MVA had lower rate of excessive bleeding MVA was shorter procedure
De Jonge et al. (1994[5])	Randomized controlled	Incomplete abortions	MVA (n=73)	Sharp curettage (n=68)	MVA group had fewer transfusions than the sharp curettage group (17% vs 35%)
Kizza and Rogo (1990[10])	Cohort	Incomplete abortion	MVA (n=300)	Sharp curettage (n=285)	Equal safety and effectiveness of MVA (incomplete evacuation)
Hemlin and Möller (2001[9])	Randomized	Induced abortion	MVA (n=99)	Electric vacuum (n=98)	MVA and EVA had equivalent efficacy and safety
Westfall et al. (1998[14])	Retrospective	Induced abortion	MVA (n=1677)	None	MVA was 99.5% effective. Postoperative infections infrequent (0.5%) and rare uterine perforations (0.05%)

savings. Surgical management with general anesthesia requires an operating room suite, anesthesia staff, as well as other operating room personnel—an expensive management protocol which is time intensive for both clients and providers. For instance, a review of 25 women presenting with incomplete abortion in Baltimore found that moving treatment from the operating room to labor and delivery reduced hospital stay by 71% and cost by 41%.[15] Client waiting time was reduced by 52%, and procedure time also was reduced significantly. A key component in this transition was taking the procedure out of the operating room.

Focus groups exploring what women value in health care reveal that women want privacy, good communication with their physician, and efficient services without waiting.[16] Women with early pregnancy loss are no exception. Privacy and client autonomy are easier to establish in the clinic than in an operating room, and clinic-based protocols can offer more continuity of care with providers, including nursing staff. Additionally, women going through a pregnancy loss often need emotional support such as loss counseling.

A variety of other advantages of MVA have been suggested. For instance, some women prefer that MVA is quieter than EVA and even suggest that the noise of electric suction devices increases pain perception.[17] Additionally, tissue identification may be easier after MVA compared with EVA,[18] which can be especially important in the evacuation of very early pregnancies that fail. Therefore, not only can safety and efficiency be maintained, a comprehensive treatment protocol utilizing MVA in an office setting could improve many other areas of care for women with early pregnancy loss.

Pain Management in Clinic Settings

Many providers express concern about effective pain control in a clinic setting. Traditionally, women with early pregnancy loss have been treated with uterine evacuation by sharp curettage under general anesthesia. However, uterine aspiration without sharp curettage may incur less pain. Women undergoing MVA appear to experience a level of discomfort that is similar to women undergoing an endometrial biopsy. Like an endometrial biopsy, most women undergoing uterine evacuation with MVA will find adequate pain relief with approaches that enable them to remain awake and alert during the procedure. Typically, MVA takes several minutes, during which most women will feel a moderate amount of cramping. This cramping decreases rapidly after the procedure has ended.

Paracervical block combined with oral nonsteroidal anti-inflammatory agents provide satisfactory pain relief for most women undergoing MVA.[18] Alternatively, some women, especially those who are very anxious, may prefer intravenous sedation analgesia. However, there is no clear consensus as to whether intravenous sedation analgesia is clinically helpful. In a randomized controlled trial comparing intravenous fentanyl to placebo for pain control, 825 women undergoing uterine evacuation in the first trimester were asked to rate their pain on an 11-point scale.[19] Women who received fentanyl rated their pain 1 point lower than those treated with placebo. Although this difference in pain reduction was found to be statistically significant, women stated they wanted a 2-point reduction in order to achieve clinical significance.

Recent studies have noted that many women want to avoid general anesthesia. A Swedish study of 179 women allowed participants to choose either general or local anesthesia during elective pregnancy terminations with MVA in the operating room.[19] Of the 40% of women who selected local anesthesia, none chose to convert to general anesthesia. The Population Council conducted a study in which women were given the option of general anesthesia versus paracervical block during induced abortions.[20] Similar to the previous

study, about half chose local anesthesia. Cited reasons included convenience, faster discharge, and avoidance of drug side effects. Upon questioning after the procedure, 95% of those who chose local anesthesia said they would do so again and would recommend this method to a friend.[20]

Manual Vacuum Aspiration Techniques

Most healthy women are candidates for an office procedure with MVA. Contraindications to MVA use include the presence of acute purulent cervicitis or pelvic infection until infection is controlled.[7] Caution should be used in women with bleeding disorders, hemodynamic instability and/or an inability to tolerate a pelvic examination, and uterine anomalies. Complications from MVA are rare, and are similar to those that occur from EVA. These include infection, uterine or cervical injury, hemorrhage, hematometra, and retained products of conception.[11]

A brief summary on how to perform MVA is provided as follows. The approach to sterility is similar to that employed during an office endometrial biopsy. Drapes are not necessary. However, the provider must adhere strictly to the "no-touch" technique in order to minimize risk of infection. This means that any instrument that is going to be introduced into the uterine cavity should be sterile. It requires careful observation of the instruments to avoid contamination (see Fig. 2).

Manual Vacuum Aspiration Steps

1. Conduct a medical history, physical examination, and any indicated laboratory tests.
2. Counsel the woman on what to expect, with an emphasis upon what she may feel at each step of the procedure. Obtain informed consent.
3. Administer oral pain medications such as 800 mg of ibuprofen.
4. Ensure that all instruments are assembled and ready, and that the aspirator maintains a vacuum effectively.
5. After performing a bimanual examination to determine the size and position of the uterus, place the speculum and cleanse the cervix with an antiseptic. If dilatation will be needed, administer the paracervical block. Apply the tenaculum.
6. Dilate the cervix as needed and then gently insert the cannula. Choose the appropriate cannula size based on dilatation and gestational age. The cannulas come in multiple sizes (outside diameter 4, 5, 6, 7, 8, 9, 10, and 12 mm), which roughly correspond to size in weeks since last menstrual period. Choose a cannula number at or 0 to 2 sizes below the gestational age. For instance, a 7-week-sized uterus could be approached with any cannula ranging in size from 5 to 7.
7. Place the cannula through the cervix to just past the internal os. Then, attach the prepared aspirator to the cannula, taking care to avoid moving the cannula forward into the uterus. Release the pinch valve to transfer the vacuum pressure into the uterus. Evacuate the uterine contents by rotating and moving the cannula gently back and forth within the uterine cavity.
8. Check for signs of completion, including:
   a. red or pink foam passing through the cannula
   b. a gritty sensation noted along the uterine walls
   c. contraction of the uterus around the cannula (the cannula will feel as if it was being gripped by the uterus)
   d. the products of conception are visible on tissue inspection
   e. the woman may report an increase in her cramping as her uterus contracts.
9. Withdraw instruments and monitor the woman during recovery. If she is Rh negative, administer Rh immune globulin.

The No-Touch Technique operates on the principle that microorganisms must not be transmitted accidentally via the tip of an instrument through the cervix and into the uterus. The No-Touch Technique requires that the tip of the cannula—and of every other instrument that is to be inserted into the uterus—should not come in contact with any contaminated surfaces before being inserted. The clinician should handle the cannula and other instruments only by the end that does not come in contact with the uterus. Additionally, the vagina is heavily coated with microorganisms and is considered "unsterile". The tip of the tenaculum, the cannula, and the cervical dilator should never touch the vaginal walls before insertion. The cannula should be inserted through the cervical os as few times as possible, ideally once. The risk of contaminating the tip of the cannula and the uterus increases with each pass through the os, increasing risks of infection. For example, if the syringe becomes full during an MVA procedure, leave the cannula in the uterus. Then detach the syringe, empty, recharge, and reattach the syringe to the cannula. Then resume evacuation.

Figure 2
No-Touch Technique recommended for the clinic-based use of manual vacuum aspiration.[7]

After the procedure, women can expect light bleeding and mild cramping. Women should be told to notify their clinician if they experience prolonged, worsening, or severe pain or bleeding, or fever. A woman can ovulate and conceive within 10 to 14 days after a first-trimester uterine evacuation. If the woman wishes to avoid pregnancy, contraception should be reviewed. Once the client is clinically stable, ambulatory without assistance, and has received necessary follow-up information, she may be discharged.

Summary

Early pregnancy loss is common. MVA in an office setting is a safe and effective treatment option and has the potential for substantial resource savings. Further, many women prefer treatment in a clinic setting using local anesthesia because this setting provides greater privacy, autonomy, and convenience than can be achieved in the hospital setting. Offering uterine evacuations with MVA in an office setting will expand treatment options available for women, enabling women to choose the approach that best meets their needs. Pregnancy loss is a highly personal experience, and women value the ability to make choices between different treatment options.

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