Medical abortion: A safe and effective alternative to surgical methods

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WRITER’S COMMENT: When I was first assigned to do a review paper I had no idea what I was going to write about. There were so many topics I was interested in that trying to decide on just one that was specific enough for the paper was tough. I was reading some old scientific news articles to see if anything appealed to me when I came across an article on RU-486, also known as medical abortion. As I read the article, I decided that this was something that not only interested me but also seemed to be a topic of great importance to the general public. For these reasons I decided to investigate medical abortion’s effectiveness compared to the more traditional surgical methods. With so much recent negative publicity, I was surprised and relieved to come to the conclusion, through my research on the topic, that medical abortion is indeed a safe alternative. I enjoyed writing this paper because it allowed me the opportunity to research extensively a topic that intrigued me while improving my researching techniques at the same time.

—Alison Santana

INSTRUCTOR’S COMMENT: This fine paper reviewing the literature on medical abortion was written in English 104E (Science Writing), in response to my standard assignment to write a scientific review article. Very often, students write papers on topics that would be somewhat obscure to an audience of general readers. Interestingly, Alison chose to write on a topic that is regularly in the news: the effectiveness and safety of medical abortion. As a writer concerned with the science, not the politics, of abortion, Alison wisely sidesteps
the controversy, focusing instead on assessing the latest research on the effectiveness and safety of the procedure. This is a paper that has multiple appeals: its discussion of the pros and cons of mifepristone vs. gemeprost (for example) appeals to an audience of researchers, but its analysis of clinical studies—including some that look at the extent to which women are satisfied with their experiences—appeals to anyone with an interest in women’s health. All in all, this is an extremely interesting, balanced analysis of the research.

—Pamela Demory, University Writing Program

Abstract

Medical abortion in the U.S. currently consists of a combination of two drugs, mifepristone and misoprostol. Several studies have shown that medical abortion is effective and that most women have been satisfied with its results. In some countries, gemeprost is used instead of misoprostol, which some studies have shown is less effective. Most side effects of medical abortion are relatively mild; they include nausea, vomiting, and dizziness. Current studies also indicate that a medical abortion has no effect on the birth weight or the occurrence of malformations in future wanted pregnancies. Still other researchers in the field have conducted studies to compare medical abortion with the surgical method. They found that both methods are effective and acceptable, although at this time which one is the best is unclear. Instead, these reports have emphasized the importance of allowing women to choose which method suits them best. In addition to offering an alternative to surgical abortion, medical abortion is a possible solution in rural areas that do not have access to or cannot afford surgical abortion. Future research on medical abortion should focus on perfecting dosages to further improve this already effective option.

Introduction
Mifepristone use in medical abortions with gestational age less than 49 days was approved for use in the United States in September 2000 (1); since then, millions of women in the U.S. have had medical abortions. Mifepristone works by blocking progesterone receptors necessary for the continuation of the pregnancy. It is most often used in conjunction with misoprostol or gemeprost, prostaglandin E₁ analogues, which help stimulate contractions in the smooth muscle of the uterus (2). As medical abortion becomes an increasingly popular choice among women, it is necessary to study the effectiveness and the side effects associated with this method.

Some of the current research involves studying medical abortion drugs to find the most efficient dose and method of administration that maximizes the effectiveness and minimizes the side effects. Some of these potential side effects include nausea, vomiting, and diarrhea (2–5). Since medical abortion is offered as an alternative to surgical abortion, much of the current research has compared the costs and benefits of the two options. Some researchers have chosen to perform studies that compare the effectiveness, the occurrence of side effects, and the satisfaction with the different procedures (9,10). Other research concerns the effects that a medical abortion may have on future wanted pregnancies (7,8).

**Effectiveness of mifepristone in combination with either misoprostol or gemeprost**

Multiple studies conducted all over the world have shown that the use of mifepristone along with either gemeprost or misoprostol in medical abortion is effective in terminating early pregnancies. After women were admitted into these studies, the gestational age of the embryo was determined by calculations based on their last menstrual period, a pelvic examina-
tion, a blood sample (5), an ultrasound (3,4,5) or some combination of these (2). In all of these studies, 200 mg of mifepristone was given orally, while the dose and method of administration for the prostaglandin varied (2–5). Effectiveness in these studies was measured as the percentage of complete abortions, which is defined as the passing of the placenta without the need for further surgical intervention. In these trials, effectiveness rates ranged from 90% to 98.7%, with variations often being attributed to the different doses and methods of administration of the prostaglandin analogue (2–5).

Currently the prostaglandin used most often in other countries is gemeprost (2). However, misoprostol, which is relatively new to the market, is becoming an increasingly popular choice because, unlike gemeprost, it is cheap, can be taken orally, and can be stored at room temperature (2,4,11). These factors are especially important in rural and economically disadvantaged areas where women may not have easy access to surgical abortion and must therefore rely on an affordable medical abortion alternative. Also of importance are the results of a large study by Bartley et al. (2001), which showed that the rate of complete abortion was higher in the treatment with misoprostol (98.7%) than with gemeprost (96.2%) (2). This same study showed that women who used gemeprost suffered more repeated episodes of both diarrhea and vomiting, two of the relatively common side effects associated with medical abortion (2).

In addition to comparing the different prostaglandins available, researchers also wanted to compare the effectiveness of the different modes of administration of misoprostol, including oral, sublingual, and vaginal administration. A study by Tang et al. (2003) found that complete abortion occurred more often in women who received sublingual misoprostol than among those who received vaginal misoprostol (98.2%
vs. 93.8%), although the differences were not statistically significant. One potential explanation for this difference is that in sublingual administration it is easier to detect whether or not the drug has been dissolved, which must occur for misoprostol to enter the body (4). Another benefit of the sublingual administration is that it is often less physically uncomfortable for the woman. Also, because it does not require medical personnel to administer it, women can take it in the comfort of their home and avoid the additional costs of returning to a clinic. Even so, a different study, conducted by Schaff et al. (2001), found that oral administration of misoprostol was only 95% effective, while the vaginal administration was 99% effective, a statistically significant difference. Although the FDA currently recommends using oral misoprostol, the researchers of this study suggest that the vaginal method is more effective and should therefore be the recommended procedure (5). While the different methods of administration all seem to be successful, the different rates of effectiveness for different methods show that more research must be done to pinpoint the best dosage.

**Comparison to surgical abortion**

Since medical abortion is a newer alternative to surgical abortion, many recent studies have been done to compare both the effectiveness and satisfaction of one method versus the other. The purpose of these studies is to gain valuable information not only of the effectiveness and satisfaction of both methods, but also information about why certain women choose certain methods (9,10). This information can be extremely useful to health care providers, allowing them to provide better counseling to their patients. Two studies, by Harvey et al. (2001) and Rørbye et al. (2004), exemplify this trend. As these stu-
dies show, medical and surgical abortions were both effective and acceptable, as determined by questionnaires that patients filled out both before and after their procedures. There was a statistically significant difference in the success rate of surgical abortion, which was over 97% effective (10). However, as the questionnaires showed researchers, other factors are involved in making the decision of which method to use besides just the effectiveness.

As determined in both the Harvey et al. and the Rørbye et al. studies, about 80% of women who underwent medical abortion answered that they were very satisfied or at least somewhat satisfied with the overall procedure (9,10). The Harvey et al. study, which was conducted in the U.S. in 1998, found that satisfaction with the surgical option was similar to that for the medical option (~82%) (9). However, the study by Rørbye et al., conducted in 2001 in Denmark, found that the satisfaction rates for surgical abortion were significantly higher than those for medical abortion (92% vs. 79%) (10). There were slight differences in the methods of the studies, including the use of gemeprost instead of misoprostol in the Rørbye et al. study, which other studies have shown to be less effective than misoprostol, and this therefore may have had an effect on the study’s overall satisfaction rating for medical abortion (2). The fact that the study took place in another country with different values and lifestyles may also play a part in the Rørbye et al. study’s results. For example, the acceptability of abortion in any given country may have a strong influence on the number of abortions performed as well as the methods used for the procedure. Regardless of these discrepancies, researchers in both studies agree that it is very important for women to have a choice of various methods. As the questionnaires showed, women wanting an abortion have many different views on life and have had varying past experiences.
that may cause them to prefer one method over the other, regardless of effectiveness and satisfaction rates of past studies (9,10). Factors such as education level, occupation, age, and previous abortions may be influential in these decisions.

**Side effects**

As the Harvey et al. study shows, a proportion of the women who chose surgical over medical abortion did so because of the potential side effects associated with medical abortion. Some of these potential side effects include cramping, heavy bleeding, nausea, vomiting, diarrhea, fever/chills, and dizziness (4,5,10). The most common side effects are cramping and abdominal pain, which are caused by the body’s expulsion of the placenta (4,5). While vomiting and diarrhea were also relatively common side effects, most women suffered only a single episode. However, in the study where gemeprost was used, reoccurring episodes were more common (2). Although the contraction of the uterus caused by misoprostol and gemeprost is very important in the expulsion of the placenta, unfortunately it can also affect the rest of the body in some of the ways listed above (2).

Other severe but infrequent side effects include prolonged heavy bleeding and pelvic infection (2,11). Women who at any point in their lives suffered ectopic pregnancies were excluded from most studies due to the increase in complications that often occurs if a woman with an ectopic pregnancy undergoes medical abortion treatment (2,10). Other issues such as asthma, liver or kidney impairment, anemia, heavy smoking, or coagulant problems also excluded women from the study due to the increase in the occurrence of serious side effects (2,5,10). Medical abortion is rarely recommended for women who are not in good health.
Some women fear that medical abortion may adversely affect future pregnancies. Two large studies were conducted in China to determine whether medical abortions or surgical abortions affected future wanted pregnancies. This was especially of interest to researchers there because medical abortion has been legal since 1988 and yet very little research has been done on this issue (7,8). The focus of both the Chen et al. study (2004) and the Yimin et al. study (2004) was to identify the effects of previous abortions on the birth weight of future children. Both studies confirmed that a previous medical abortion or a previous surgical abortion had no effect on the birth weight of future pregnancies (7,8). The majority of women who underwent previous medical abortions received mifepristone and misoprostol regimens similar to the regimens given to the women in the other studies reviewed in this paper. Surprisingly, the Chen et al. study also found that the mean birth weights of babies from women who had previously undergone medical abortion were higher than those babies whose mothers had not undergone previous abortions, although the differences were not statistically significant (7). The same study also found that women who had undergone either a medical or surgical abortion in the past were less likely to go into labor early, and it found no difference in the rates of malformation between the groups (7). These are extremely important and reassuring results for women who are considering having (or have already undergone) a medical abortion, yet who later in life might want children.

Conclusion

The use of mifepristone and misoprostol in medical abortions has become an increasingly popular alternative to surgical abortion all over the world. As millions of women choose this
abortion method, the question of effectiveness and side effects becomes extremely important. Current research has shown that not only is medical abortion effective, but that most women who choose this method are satisfied with the results (2–5,10,11). While there are some side effects associated with medical abortion, many of them are mild and may seem unimportant in comparison to the benefits, such as the comfort of being in your home during the procedure (4,5,10). As medical abortion increasingly replaces surgical abortions, researchers interested in studying the differences between the two methods have found that both methods are effective, although the satisfaction rates vary somewhat between the studies (9,10).

While studies have shown that medical abortion is effective, the actual percentages vary rather interestingly between studies, from 90% to 98.7%. This is often due to the different drugs or dosages used. Some studies used mifepristone and misoprostol, while others replaced misoprostol with another prostaglandin, gemeprost. Also, the drugs used were administered in a variety of ways, including orally, sublingually, and vaginally. Given the many variations seen in these procedures, current research should be focused on finding the best dosage and method of administration for medical abortion, one that yields high and consistent effectiveness rates with a low occurrence of side effects. This will allow women all over the world to have a safe and reliable alternative to the more invasive surgical abortion procedure.

**Literature Cited**


