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Review article

The accuracy of using last menstrual period to determine gestational age for first trimester medication abortion: a systematic review☆,☆☆

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Abstract

Objective: We sought to evaluate the accuracy of assessing gestational age (GA) prior to first trimester medication abortion using last menstrual period (LMP) compared to ultrasound (U/S).
Study Design: We searched Medline, Embase and Cochrane databases through October 2013 for peer-reviewed articles comparing LMP to U/S for GA dating in abortion care. Two teams of investigators independently evaluated data using standard abstraction forms. The US Preventive Services Task Force and Quality Assessment of Diagnostic Accuracy Studies guidelines were used to assess quality.
Results: Of 318 articles identified, 5 met inclusion criteria. Three studies reported that 2.5–11.8% of women were eligible for medication abortion by LMP and ineligible by U/S. The number of women who underestimated GA using LMP compared to U/S ranged from 1.8 to 14.8%, with lower rates found when the sample was limited to a GA <63 days. Most women (90.5–99.1%) knew their LMP, 70.8–90.5% with certainty.
Conclusion: Our results support that LMP can be used to assess GA prior to medication abortion at GA <63 days. Further research looking at patient outcomes and identifying women eligible for medication abortion by LMP but ineligible by U/S is needed to confirm the safety and effectiveness of providing medication abortion using LMP alone to determine GA.

Keywords: Pregnancy dating; Menstruation; Medication abortion; Gestational age

1. Introduction

While the number of abortions worldwide has remained stable in recent years, the proportion of unsafe abortions has increased [1]. Each year, it is estimated that 47,000 women die, and over 8 million women experience complications from unsafe abortion [2,3]. Medical methods of abortion hold promise to improve access to care in areas with limited resources, reducing maternal morbidity and mortality. Prior research has greatly simplified the process of mifepristone–misoprostol abortion. Alternative methods of follow-up [4–9] and self-administration of misoprostol [10–12] have allowed first trimester medication abortion (MAB) to be provided with fewer visits to a health care facility. Further demedicalization of the process will allow more women to access safe abortion care in areas with limited resources. Previous research has called into question the need for routine ultrasound (U/S) for gestational dating prior to MAB and has demonstrated the feasibility of simplifying the abortion process for women by using ultrasonography only when needed [13,14]. We undertook this systematic review of published literature to evaluate the accuracy of using last menstrual period (LMP) compared to U/S for assessing gestational age (GA) prior to first trimester MAB.

2. Methods

We searched the Pubmed, Ovid Medline, Embase and Cochrane databases for peer-reviewed articles in all languages published from database inception through

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October 2013, including evidence on the use of LMP for GA dating in abortion care (Appendix A). Reference lists from included articles identified by the search as well as key review articles were hand searched to identify additional articles. We did not attempt to identify unpublished articles or abstracts from scientific conferences.

We included articles comparing GA dating by LMP to dating by U/S. We included only articles related to abortion care and not those related to obstetrical care. Articles were excluded if they lacked the necessary comparative data or if they did not pertain to abortion care at a GA less than 63 days. We also excluded case reports, letters and review articles.

Our main outcome of interest was the accuracy of LMP to determine GA for MAB at GA less than 63 days. We focused on the number of women who underestimated their GA as well as the proportion of women eligible for a MAB by LMP but ineligible by U/S examination. We also report data on ectopic pregnancies, missed abortions and the clinical implications of inaccurate menstrual dating if available in articles included in the review.

All five investigators independently reviewed all article titles and abstracts for possible study inclusion. After the first round of exclusion, the investigators divided into two teams (DS, LFW and EJ and MG, AB and EJ); each team was responsible for reviewing half of the remaining articles. Using standardized data abstraction forms, each investigator independently extracted and summarized data from the articles assigned to their team. The senior investigator (EJ) abstracted all articles and ensured consistency between the two teams. The two teams met regularly to review the abstraction process. At all stages, differences were resolved by consensus.

We sent an email to article authors to request additional data if an article mentioned collecting both LMP and U/S data but did not present those data in the manuscript. Data acquired via author request were reviewed independently by each member of the research team, and consensus on the quality of data and appropriateness for inclusion was reached through discussion.

We used the system for grading evidence developed by the US Preventive Services Task Force (USPSTF) [15] and the Quality Assessment of Diagnostic Accuracy Studies (QUADAS)-2 system [16]. Following the USPSTF guidelines, the internal validity of each study was judged based upon use of a relevant screening test (LMP) reliably administered to an appropriate sample of adequate size and compared to a credible reference standard (U/S). The risk of bias and applicability concerns identified in the QUADAS system were used to inform a decision on the overall quality of each study. Of note, we assessed data quality only as it applied to our specific research question; therefore, grading is not a reflection on the article as a whole.

3. Results

A total of 462 articles were retrieved via database searches; after adjusting for duplicates, 289 unique articles remained. An additional 29 studies were identified after reviewing the citations of key articles, for a total of 318 articles for review. After excluding case reports, reviews, letters, editorials and articles not relevant to the topic question, 86 articles remained, and the full text of each article was reviewed (see Fig. 1). Five articles met inclusion criteria (Table 1); we were able to assess four articles as diagnostic accuracy studies [17–20] and one secondary analysis of a clinical trial [21]. Two of the included articles [18,21] cite additional publications for details on methodology [22,23]. Heterogeneity of data prevented meta-analysis, and lack of data presented in each article precluded the calculation of statistical measures including sensitivity and specificity.

We attempted to contact the authors of 28 articles for additional data; 11 authors responded and three provided data. After review, it was agreed by all investigators that the data were not appropriate for inclusion in this review.

3.1. LMP compared to U/S

Of the five articles included in the review, three articles [17–19] studied the number of women considered eligible for a MAB based upon LMP who were found to be ineligible based upon U/S. Bracken [17], in an article rated to be of "fair" quality, enrolled women seeking MAB at 10 clinics in the US. Bracken found that only 2.5% (76/3041) of women certain of their LMP would have been offered a MAB based upon LMP despite subsequent transvaginal U/S showing a GA above 63 days. When including women uncertain of their LMP, the number increased to 3.3% (142/4257) [17]. Blanchard, in an article rated to be of fair quality, studied women seeking first trimester abortion in three provinces in South Africa. The provider conducting the U/S was blinded to LMP. Blanchard found a higher rate of women, 11.8% (72/608), who were <56 days by LMP but >56 days by U/S [18]. In a study rated to be of "poor" quality, McGalliard

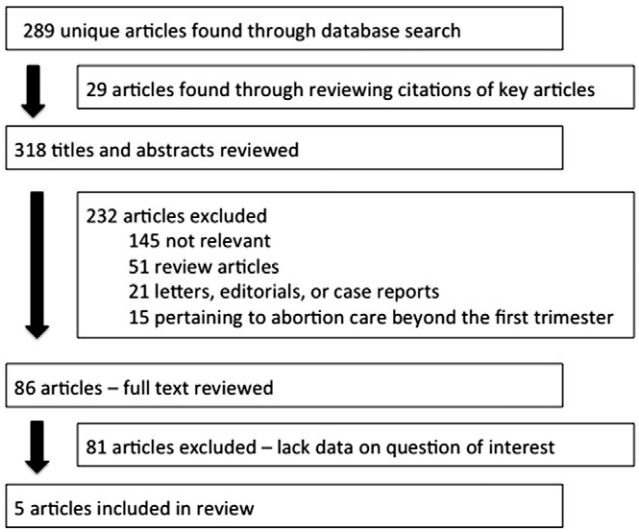

Fig. 1. Flowchart of the systematic review.