



H120 Histopathologic Changes in Placental Tissue Following Misoprostol Administration

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Learning Overview: After attending this presentation, attendees will be able to identify the histopathologic placental findings associated with misoprostol administration and utilize the information for the investigation of cases with clandestine misoprostol use.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by demonstrating the methods necessary for recognizing and diagnosing cases of clandestine misoprostol administration.

Background: Misoprostol is a prostaglandin analog commonly used alone or in conjunction with other medications to induce abortion.¹ Although misoprostol is only intended for medical abortion in the clinical setting, there is now greater access to the drug through online websites.^{2,3} Women may visit these websites and purchase the drug without a prescription, allowing for self-abortions to be performed at home without the supervision of a medical doctor. In one survey, 1.2% of roughly 9,500 patients reported home misoprostol use to terminate a pregnancy, although this number was likely underestimated due to confusion over what misoprostol is and reluctance to report what is considered a crime in some states.³ In the forensic setting, this fear of committing a crime may likewise contribute to a history of misoprostol use being withheld, leading to death certification as intrauterine fetal demise of unknown etiology in the absence of significant gross or histologic findings, as is often the case. Currently, the literature on the identification of clandestine misoprostol use is limited; however, there is some evidence suggesting tablet preparations of misoprostol when administered vaginally may leave refractile deposits within the placenta.⁴

Purpose: The aim of this study is to correlate microscopic placental findings in cases with known misoprostol administration.

Methods: A retrospective review of placental cases submitted for surgical pathologic examination over the period of a year was performed. Clinical data was collected through the electronic medical record, including maternal age, gestational history, current pregnancy data (e.g., complications, trimester), and misoprostol administration (i.e., whether administered, dose/formulation, and route of administration). The cohort was then divided into cases with no misoprostol administration, low-dose misoprostol administration, and high-dose misoprostol administration. Surgical pathology slides were reviewed for histopathologic changes, including presence or absence of refractile material, qualitative volume of refractile material present on a scale of 0 (none) to 5 (greater than 50% of tissue with deposits), histopathologic qualities (cotton fibers, amorphous material, etc.), and location of deposits (maternal or fetal surfaces, membranes, or placental disc).

Results: Cases with vaginal misoprostol administration were more likely to have refractile, polarizable amorphous material present. The refractile material was commonly associated with purple, dense coral-shaped deposits. The refractile material and deposits when identified were predominantly in the placental membranes and on the maternal surfaces. Refractile material consisting of cotton fibers and other debris were present in nearly all cases at varying volumes.

Conclusions: Microscopic examination of the placenta in cases with misoprostol administration consistently show the presence of refractile polarizable amorphous material and/or purple, dense coral-shaped deposits. The deposits described are similar in appearance to that reported for microcrystalline cellulose and crospovidone, both of which represent material used in the manufacture of tablets.^{4,5} No standardized toxicological testing procedure is available in the United States for the identification of misoprostol due to its rapid half-life; future study of this data set will include microanalysis of unstained slides containing the refractile deposits with the goal of specific identification of the material and developing a method for confirming the presence of misoprostol in placental tissues.

Reference(s):

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Misoprostol, Placental Histology, Abortion