Metronidazole Prophylaxis Before Surgical Abortion: Retrospective Review of 51 330 Cases

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Abstract

Objective: To determine the effectiveness of a simple prophylactic antibiotic protocol in preventing postoperative infections, and to determine the risk factors most effective in predicting the presence of intercurrent *Chlamydia* infection.

Methods: A retrospective cohort review of postoperative infection was carried out among women undergoing surgical abortion at four Canadian clinics from 2001 to 2006. All women received antibiotic prophylaxis using uniform observed single-dose metronidazole, with additional observed single-dose azithromycin for those meeting criteria for higher risk of infection.

Results: The records of 51 330 women who underwent surgical abortion using this protocol were reviewed; 38% met criteria predicting a higher risk of infection, and 3.4% were *Chlamydia*-positive. Risk-factor screening correctly identified 69% of women with *Chlamydia*. Follow-up was available for 13 999 women (27%). Among these women, 17 (0.12%) developed postoperative infection requiring hospital admission.

Conclusion: Antibiotic prophylaxis prior to surgical abortion using universal metronidazole, with selective azithromycin for women meeting criteria for a higher risk of infection, was associated with a low rate of postoperative infection among those for whom follow-up information is available. This regimen offers the advantages of observed single-dose treatment. Prospective evaluation including outcome assessment for a higher proportion of the study population is warranted.

Résumé

Objectif : Déterminer l'efficacité d'un simple protocole d'antibioprophylaxie dans la prévention des infections postopératoires et identifier les facteurs de risque les plus efficaces pour ce qui est de prévoir la présence d'une chlamydiose intercurrente.

Méthodes : Une analyse de cohorte rétrospective de l'infection postopératoire a été menée auprès de femmes ayant subi un avortement chirurgical entre 2001 et 2006 dans quatre cliniques canadiennes. Toutes les femmes ont reçu une antibioprophylaxie au moyen d'une seule dose uniforme observée de métronidazole, laquelle s'accompagnait d'une dose unique observée additionnelle d'azithromycine pour les femmes qui répondaient aux critères déterminant la présence d'un risque accru d'infection.

Résultats : Les dossiers de 51 330 femmes qui ont subi un avortement chirurgical utilisant ce protocole ont été analysés; 38 % d'entre elles ont répondu aux critères permettant de prédire un risque accru d'infection et 3,4 % présentaient une chlamydiose. Le dépistage des facteurs de risque a permis d'identifier correctement 69 % des femmes présentant une chlamydiose. Des données de suivi étaient disponibles pour ce qui est de 13 999 femmes (27 %). Parmi ces femmes, 17 (0,12 %) ont vu apparaître une infection postopératoire nécessitant une hospitalisation.

Conclusion : La mise en œuvre, avant la tenue d'un avortement chirurgical, d'une antibioprophylaxie faisant universellement appel au métronidazole (et, dans certains cas, à l'azithromycine pour les femmes qui répondaient aux critères déterminant la présence d'un risque accru d'infection) a été associée à un faible taux d'infection postopératoire chez les femmes pour lesquelles nous disposions de données de suivi. Ce schéma posologique offrait les avantages d'un traitement à dose unique observée. La tenue d'une analyse prospective comprenant l'évaluation des issues pour une plus grande proportion de la population d'étude s'avère indiquée.

Key Words: Abortion, gynaecology, postoperative infection, primary care, prophylactic antibiotics

Competing Interests: None declared.

Received on November 2, 2011

Accepted on November 21, 2011

J Obstet Gynaecol Can 2012;34(7):648–652

INTRODUCTION

Surgical abortion is a common therapeutic procedure, with 93 755 reported in Canada for 2009[1] and an estimated 42 million procedures worldwide in 2003.[2] Meta-analysis has shown that antibiotic prophylaxis is beneficial at the time of surgical abortion and that its benefits extend to women with no detectable risk factors for infection.[3] Surgical guidelines for pregnancy termination in Canada, the United Kingdom, and the United States currently recommend provision of antibiotic prophylaxis, although there is no consensus on a single most appropriate protocol.[4–6]

To prevent postoperative infections, four Canadian surgical abortion clinics adopted a protocol previously described,[7] providing bacterial vaginosis prophylaxis for

all and *Chlamydia* prophylaxis for selected cases. Prevalence studies have found rates of BV at the time of abortion to be 17.5% to 29.3% and of intercurrent *Chlamydia trachomatis* infection to be 4.4% to 6.8%.[8,9] Larsson et al.[10] found a positive correlation between the identification of BV organisms and PID post abortion. Cultures from women with PID reveal polymicrobial BV organisms predominate in endometrial biopsy tissue and tubal swab specimens.[11] Evidence suggests a fivefold increase in the relative risk of post-abortion endometritis among women with BV.[9] Administration of BV prophylaxis alone, without treatment of *C. trachomatis,* has been shown to decrease the incidence of post-abortion PID in *C. trachomatis*-positive women.[9,12] Metronidazole provided for BV prophylaxis has the potential to be administered as a single observed dose and is inexpensive. A theoretical analysis has suggested a risk-based algorithm for prophylaxis may be cost-effective.[13] The present protocol employs universal coverage with a single observed dose of metronidazole, and a single observed dose of azithromycin prophylaxis in patients selected on the basis of a set of risk factors, combined with polymerase chain reaction testing at the time of abortion.[7]

Presence of any of the following risk factors met the criteria for a higher risk of infection: age ≤ 20, three or more sexual partners in the past year, past history of PID or an STI in the last 10 years, clinical cervicitis, a sexual partner who has other partners or has a history of STI or who has current or recent STI symptoms.

This retrospective review of six years' experience with this protocol was undertaken to determine its effectiveness in the prevention of postoperative infections and to identify the risk factors most effective in predicting the presence of intercurrent *Chlamydia* infection.

METHODS

This retrospective cohort study reviewed records at four Canadian surgical abortion clinics for the years 2001 to 2006 inclusive. The clinics included both outpatient clinics located within government-funded hospitals, and free-standing not-for-profit clinics supported with government funding. Each clinic participated in the development and implementation of the prophylaxis protocol. Whenever possible, women were tested for *Chlamydia,* gonorrhea, and BV before the day of surgical abortion and treated as indicated. All women not pre-treated received perioperative metronidazole (2 g orally). In addition, women also received azithromycin (1 g orally) if they were designated higher risk for infection because of any of the following risk factors: age ≤ 20; three or more sexual partners in the past year (changed in 2003 to "more than one sexual partner in the past year," in line with risk assessment guidelines);[14] past history of PID or an STI in the last 10 years; clinical cervicitis; a sexual partner who has other partners or has a history of STI or who has current or recent STI symptoms. Both medications were administered as a single observed dose.

All women had *Chlamydia trachomatis* and *Neisseria gonorrhea* PCR testing at the time of their procedure. BV testing was not part of the clinic protocols, as the chosen universal prophylaxis protocol provides complete treatment for BV. Contact tracing for cases of positive *C. trachomatis* or *N. gonorrhea* was undertaken by the public health service. Women who had an abortion at any of these clinics were given oral and written postoperative follow-up instructions, including a 24-hour telephone number to reach a clinic physician, and were advised to see any physician for follow-up two weeks after their procedure. Follow-up information recorded at each clinic relied chiefly upon completion of a form given to each woman at the time of discharge. This form was to be returned by mail or fax by any clinician performing a follow-up examination. Generic forms were distributed to every emergency room, public health unit, and youth clinic throughout the province with instructions for fax or mail return.

Data collected for each year over the study period included the number of surgical abortions, the number of cases with follow-up, and the number of cases with positive *C. trachomatis* at the time of abortion. At two of the clinics, summaries identified the number of cases designated high risk for the years 2002 to 2006 inclusive. At the other two clinics, to determine the proportion of high risk cases, all consecutive charts over a two-month period in 2006 were sampled for high risk status; then, between 200 and 300 charts were randomly sampled from each clinic for each study year to determine average risk status, age, and risk factors. At all four clinics, every chart with a positive PCR test and all cases reported to have had a postoperative infection were examined to identify risk factors.

Data extracted from each chart examined included the identity of the clinic, the year of the index abortion, age, presence of specified risk factors, occurrence of

ABBREVIATIONS

BV	bacterial vaginosis
PCR	polymerase chain reaction
PID	pelvic inflammatory disease
STI	sexually transmitted infection