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CLINICAL ARTICLE

The effect of post-cesarean rectal misoprostol on intestinal motility

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ABSTRACT

Objective: To determine whether rectally administered misoprostol can induce intestinal motility compared with oxytocin infusion when used to prevent primary postpartum hemorrhage after cesarean delivery. *Methods:* In a prospective randomized double-blind study in Nigeria, 218 parturients undergoing cesarean delivery who had risk factors for primary postpartum hemorrhage were enrolled between July 1, 2010, and March 31, 2011. Participants received 600 μg of rectal misoprostol or 20 intravenous units of oxytocin for 4 hours after surgery. The primary outcome was time until passage of flatus. Adverse effects, need for additional analgesic, and length of hospital stay were also assessed. *Results:* The misoprostol group had a significantly shorter mean postoperative interval to passage of flatus (20.27 ± 7.77 hours versus 38.34 ± 10.98 hours; $P<0.001$) and commencement of regular diet (21.08 ± 7.69 hours versus 39.13 ± 10.94 hours; $P<0.001$). Gastrointestinal adverse effects were more frequent, albeit not significantly, in the misoprostol group: nausea, 6.4% versus 1.8%; vomiting, 7.3% versus 2.8%; and abdominal distension, 3.7% versus 2.8%. The need for additional analgesic was the same in the 2 groups. *Conclusion:* After cesarean delivery, rectal misoprostol had the added benefit of inducing intestinal motility. Misoprostol might be considered in a clinical setting where postoperative ileus is anticipated.

1. Introduction

The current trend toward early discharge from hospital has led to a growing interest in patient management that allows more rapid recovery and resumption of normal activities [1,2]. After abdominal surgery, normal bowel motility is abolished in the immediate postoperative period, and the onset of the return of bowel function is influenced by the type of surgery performed [3]. Traditionally in postoperative care, patients who have had uncomplicated abdominal surgery are maintained initially on "nothing by mouth" for 24–48 hours, and then on sips of clear liquid on the first postoperative day if bowel sounds are present and there is no abdominal distension. After the flatus or stool is passed, the diet is accelerated as rapidly as can be tolerated to a regular diet [2].

In contrast to this norm, studies have shown that early oral feeding improves the intake of energy and protein needed to maintain a positive caloric and nitrogen balance, reduces protein store depletion, improves wound healing, and aids faster recovery, leading to earlier hospital discharge and reduced costs [2–6].

Misoprostol, an analog of prostaglandin that has uterotonic properties, has also been demonstrated to be beneficial at a high dose of 1200 μg per day for a week or more in the treatment of chronic refractory constipation [7,8]. Although misoprostol is not used at such a high dose or for such a long duration in obstetric treatments, there are few studies on the possible effect that a statim rectal dose might have on intestinal motility after surgery, which may favor early commencement of oral feeding and confer benefit on wound healing [2].

As a result, the aim of the present study was to determine whether rectally administered misoprostol has the additional benefit of inducing intestinal motility compared with oxytocin infusion when used for the prevention of primary postpartum hemorrhage after cesarean delivery.

2. Materials and methods

In a prospective randomized double-blind study at the Department of Obstetrics and Gynecology at the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), Ile-Ife, Nigeria, women undergoing cesarean delivery who had risk factors for primary postpartum hemorrhage were enrolled between July 1, 2010, and March 31, 2011. The study protocol was approved by the Medical Ethics Committee of the hospital, and all participants provided informed consent.

The primary outcome variable of the study was the time until passage of postoperative flatus. In a pilot study comparing rectal misoprostol

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with a control in inducing intestinal motility after hysterectomy, Demirci et al. [9] reported a mean postoperative flatus pass time of 23.8 ± 14.6 hours for the misoprostol group and 19.3 ± 7.1 hours for the control group. These data were to calculate the study sample size via a formula derived by Kirkwood and Steme [10]. It was determined that a sample size of 206 patients (103 in each group) would have 80% power to detect a clinically important difference of 14.6 hours for the misoprostol group versus 7.1 hours for the oxytocin group as observed by Demirci et al. [9]). Although unlikely, a 5% allowance was made for attrition. Thus, 109 patients were recruited to each group, resulting in a total of 218 patients (Fig. 1).

Women who were scheduled to undergo cesarean delivery with risk factors for primary postpartum hemorrhage—such as grand-multipara, multiple gestations, and polyhydramnios—were enrolled in the study after informed consent was obtained. Patients with altered serum electrolytes, gross peritonitis, inevitable sepsis, a previous history of bowel surgery, thyroid disease, inflammatory bowel disease, or complaints of chronic constipation (defined as 2 or fewer bowel movements per week) were excluded from the study.

Participants were allocated to the rectal misoprostol or oxytocin infusion group via an allocation sequence developed by 1 researcher (O.O.) using a computer-generated table of random numbers with varied permutated blocks and sealed opaque envelopes. The same researcher administered the drugs intra-operation and set up the infusions in the operating room; he was the only person who was not blind to the drug allocation and he did not take any further part in the active running of the study.

The patient's face was screened from the surgeon during surgery, and each patient received an intravenous bolus of 5 IU of oxytocin before delivery of the placenta. In addition, immediately after the operation and while still on the operating table, patients assigned to the oxytocin infusion group received 20 IU of oxytocin in 500 mL of 5% dextrose saline infused at a flow rate of 20 drops per min for 4 hours after surgery, whereas the misoprostol group received 600 μg of rectal misoprostol and 500 mL of 5% dextrose saline infused under the same conditions as the oxytocin group. For both groups, the infusion was similarly labeled with instructions only on the rate of infusion. Separate intravenous access was used for normal postoperative fluid therapy in both groups. Both the patients and the researcher who was the outcome assessor (A.A.I.) were blind to the study medication.

Bowel sounds, possible adverse effects of misoprostol, and the need for additional analgesic were evaluated by the outcome assessor. The time interval between surgery and passage of flatus was also recorded. After bowel sounds were present, the patients were first given clear liquids and were then allowed to commence a regular diet as soon as could be tolerated after flatus was passed. Serum electrolyte and hematocrit were checked before and 2 days after surgery. The duration of hospital stay was also noted.

Study data were analyzed via SPSS version 15 (IBM, Armonk, NY, USA). Frequency tables were generated and the results were tested

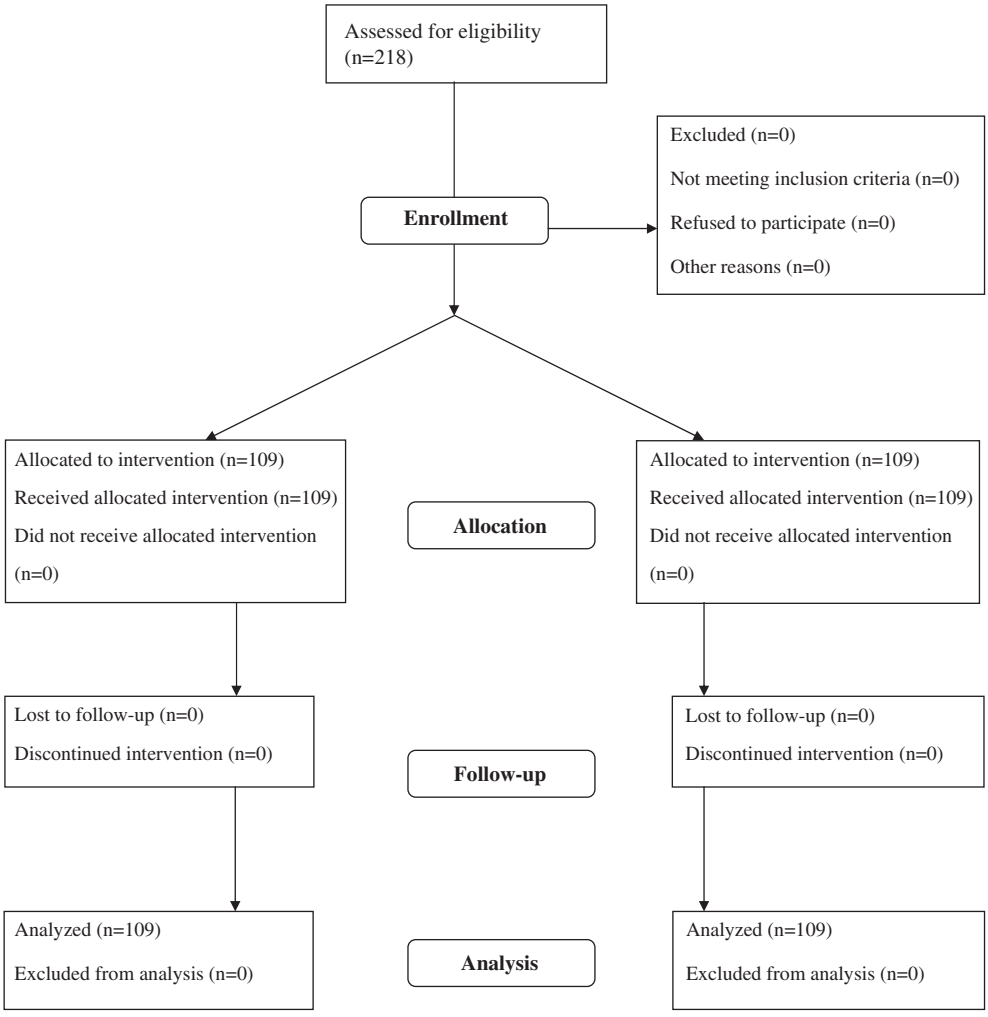

Fig. 1. Flow of participants through the study.