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# ROLE OF PREOPERATIVE VAGINAL DINOPROSTONE VERSUS MISOPROSTOL IN REDUCING BLOOD LOSS DURING ABDOMINAL MYOMECTOMY

By

**Aml Atef Mohammed, Ahmed Ali M. Nasr and Mahmoud Ahmed M. Badawy**

Department of Obstetrics and Gynecology, Faculty of Medicine, Al-Azhar University (Assiut), Egypt

**Corresponding author:** Aml Atef Mohammed, **E-mail:** dr_aml@yahoo.com

## ABSTRACT

**Background:** Myomectomy is a common gynecological procedure that can be approached, depending on fibroid location, hysteroscopically or abdominally. The impact of excessive blood loss can range from anemia and blood transfusion to hysterectomy, prolonged hospital stay and potentially death. In addition to preoperative patient optimization, it is crucial to be proactive to minimise intraoperative blood loss.

**Objective:** To compare the efficacy of preoperative administration of dinoprostone 21 mg versus 400 ug misoprostol vaginally in reducing the amount of blood loss during abdominal myomectomy.

**Patients and methods:** The current study was a prospective randomized double blind controlled study. The study included 90 patients complaining of uterine myoma and indicated for myomectomy selected from the outpatient clinic of Al-Azhar and the outpatient clinic of Al-Eman General Hospital- Assiut. Patients were divided into three equal groups: Group I received 21 mg of Dinoprostone vaginally 2 hours before surgery, Group II received 400 ug of Misoprostol vaginally 2 hours before surgery, and Group III received a placebo vaginally 2 hours before surgery.

**Results:** Estimated intra-operation blood loss was highest among the control group as compared to the Dinoprostone and Misoprostol groups. However, the estimated intra-operation blood loss difference between Dinoprostone and Misoprostol groups was statistically non-significant. Need for intra-operative blood transfusion was significantly highest in the control group (9 cases vs. 3 cases in Dinoprostone and 3 cases in Misoprostol groups). The number of transfused blood units ranged from one to three units without a statistically significant difference between the three studied groups. Post-operative hospital stay ranged from one to three days with non-statistically significant differences between the three studied groups.

**Conclusion:** The use of vaginal misoprostol or dinoprostone is an effective method to reduce intraoperative hemorrhage during abdominal myomectomy. Also, a single, preoperative dose of dinoprostone administered intravaginally could be safe and a reliable method to help decrease blood loss during abdominal myomectomy.

**Keywords:** Vaginal Dinoprostone, Misoprostol, Blood Loss during Abdominal Myomectomy.

## INTRODUCTION

Uterine fibroids (also known as leiomyomas and myomas) are benign lesions or neoplasms of the uterus that are composed of smooth muscle cells and fibroblasts and are rich in extracellular matrix (ECM). Fibroids are common and occur in >70% of women based on data from ultrasonography-screening studies and pathology data *(Turner et al., 2021).* However, fibroids can be asymptomatic with clinical symptoms reported in 25–50% of women. Self-reported rates of clinical diagnoses (which include the more-severe cases that lead to hysterectomy) offer estimates of women affected by the symptoms of fibroids. It is likely that women experience fibroid symptoms for several years before being diagnosed *(Al-Hendy et al., 2021).*

Symptoms of fibroids can include gynecological, urinary and gastrointestinal problems. Heavy menstrual bleeding is the most common symptomatic complaint from women with fibroids, but other gynecological symptoms include prolonged menstrual bleeding, pelvic pressure and pain, as well as bleeding between menstrual periods. The diagnosis of uterine fibroids is complicated by numerous factors: diversity in the size, location and number of fibroids between patients, and fibroid symptoms can be variable. The International Federation of Gynecology and Obstetrics (FIGO) has established a classification system of the causes of abnormal uterine bleeding in women of reproductive age, based on data obtained from imaging. The system uses an 8 point numerical system to describe the location of fibroids relative to the endometrium (submucosal surface) and the serosal surface, with low numbers indicating a central location *(Sabre et al., 2021).*

Myomectomy is one of the curative treatment options for many uterine fibroids, but substantial intraoperative blood loss and the requirements for blood transfusion remain major considerations for abdominal myomectomy *(Imai et al., 2018).*

Numerous strategies to reduce blood loss during abdominal myomectomy have been reported *(Kongnyuy et al., 2014).* Prostaglandins increase myometrial contractions and lead to a reduction in myometrial hemorrhage *(Dwivedi, 2018).* Misoprostol, a PGE1 analog, apparently reduces uterine artery blood flow when used in early pregnancies *(Creinin and Grossman, 2020).*

Misoprostol, which is employed in the induction of birth and abortus and the treatment, and prevention of postpartum hemorrhages in obstetrics, may decrease intraoperative hemorrhage in myomectomies when hemorrhage constitutes an important problem *(Alhalaby et al., 2021).* This property of misoprostol can facilitate every surgical operation on myometrium, limiting blood loss to minimum. Misoprostol has been used for reducing bleeding during myomectomy. It could increase myometrial contraction and decrease hemorrhage *(Chen et al., 2021).*

**The aim of the present study was to** compare the efficacy of preoperative administration of dinoprostone 21 mg versus 400 ug misoprostol vaginally in reducing the amount of blood loss during abdominal myomectomy.

## PATIENTS AND METHODS

This was a prospective randomized double blind controlled study. The study included 90 patients complaining of uterine myoma and indicated for myomectomy, selected from the outpatient clinic of Al-Azhar and the outpatient clinic of Al-Eman General Hospital- Assiut during the period between May 2020 and July 2021.

**Inclusion criteria:** Age 30-50 years, solitary myomas, preoperative Hb ≥ 10g/dl, ultrasound diagnosis of fibroids, and women who wish to preserve their fertility.

**Exclusion criteria:** Any contraindication to misoprostol or dinoprostone, including mitral stenosis, glaucoma, sickle cell anemia, severe asthma, or known allergy to prostaglandin, patients having hypertension, cardiac and pulmonary disease, chronic endocrine or metabolic diseases such as diabetes, patients unfit for operations, patients receiving preoperative hormonal therapy that can affect Intra operative bleeding as (GnRH analoge), patients with history of previous myomectomy, and women who did not wish to participate in the study.

**Patients were divided into three equal groups:**

**Group (I):** received a single preoperative dose of vaginal dinoprostone 21 mg (dinoglandin3mg, Rotabiogen), about 2 hours before the operation.

**Group (II):** received a single preoperative dose of vaginal misoprostol 400ug (misotac200ug, sigma) about 2 hours before the operation.

**Group (III):** received a single preoperative dose of placebo vaginal suppository about 2 hours before the operation.

The double blinded randomized controlled clinical study was approved by the ethical committee of Al-Azhar University. The selected cases were subjected to proper counseling and a very clear explanation of both procedure and an informed oral and written consents were taken from all patients included in study.

**All patients were subjected to:**

I. History taking: Menstrual, obstetric, past- and family history.

II. Clinical examination:

**General examination:**

- **Full general examination with special concern to:**
  - Vital signs: Blood pressure, pulse, temperature, and respiratory rate.
  - Pallor and signs of anemia.
  - Chest and heart.

**Abdominal examination:**

- Inspection for abdominal contour and scar of previous operations if any.
- Palpation: Superficial for tenderness and rigidity or palpable superficial masses. Deep for organomegally and size of the uterus and mobility of masses and their consistency.
- Percussion.
- Auscultation.
- PV exam: For site, size, and mobility tenderness of fibroid.

**III. Investigation:**

**1. Routine laboratory investigations:**

- Complete blood count (CBC): to evaluate; hemoglobin level (HB gm/dl) and hematocrit value (Hct %).
- Urine analysis.
- Coagulation profile.
- Fasting and postprandial glucose level.
- Liver and kidney functions tests.

**2. Ultrasound study:** Abdominal and transvaginal ultrasound (Vaginal probe, Mindray Ultrasound Transducer Probe 20 mhz) were done to confirm the diagnosis of uterine leiomyoma (number, size, location, whether submucous, subserous or intramural and the volume of the dominant leiomyoma), and any adnexal masses.

**Methods:**

- The misoprostol administration was performed 120 minutes before the operation and the dinoprostone admininstration was performed 120 minutes before the operation.
- The study recorded all of the patients' sociodemographical characteristics, as well as size and number of preoperative myoma examination; operation time; preoperative and postoperative hemoglobin values; intraoperative blood loss; need for intraoperative and postoperative blood transfusion; preoperative, intraoperative, and postoperative blood pressure and pulse values; febrile morbidity; need for postoperative additional analgesic; and period of hospitalization.
- The number and localization of myomas and the largest myoma diameter were established by ultrasonography and magnetic resonance imaging (MRI).The amount of blood that accumulated in the aspiration equipment, towels and blood in the intrapretoneal drain was taken as the basis for calculating the patient's blood loss during the operation.
- To calculate the effect of blood loss on hemoglobin and hematocrit values, the patient's hemoglobin (g/dL) and hematocrit (%) values were measured 1 hour before, and 1 and 24 hours after the operation.
- Preoperative blood preparation: Two units of whole blood were prepared for each patient.
- Preoperative antibiotic in the form of 2 grams of 3rd generation cephalosporin.

**Measurement of intraoperative blood loss:**

- Blood losts in towels was calculated by the following formula: Postoperative soaked towels weight (g) minus preoperative dry towels weight (g) divided by 1.06 g/mL (the density of blood).
- Blood collected in the suction apparatus was measured at the end of the operation. All irrigation fluids were premeasured, and subtracted from the total contents of the suction container.
- Blood collected in the drain was calculated after removal of the drain.

**Statistical analysis:**

The data had been coded to fit the program of statistical analysis (SPSS) Statistical Package for the Social Sciences version 22 under windows 7. Description of qualitative variables was by frequency and percentage. Description of quantitative variables in the form of mean and standard deviation (mean ± SD) and range. Cross tabulation and Chi Square test was for comparison between categorical variables. One-way analysis of variance Kruskal-Wallis test was used to elucidate significance among group means, followed by Tukey's post-hoc test to compare mean values pair-wise. Differences were considered significant at $p < 0.05$. Total p. value for Kruskal-Wallis was calculated, then p-values of post hoc analysis were written and expressed as small letters (a, b, c). P value < 0.05 was considered significant.

## RESULTS

All included women were matched regarding their ages, residences, educational levels, BMI, parity, previous abdominal surgery, and types of previous delivery without statistically significant differences. Cesarean section delivery was the most prominent in the three studied groups without statistically significant difference (p-value= 0.985) **(Table 1)**.

**Table (1): Socio-Demographic and Clinical Characteristics of the Studied Population**

| Parameters \ Groups | | Dinoprostone Group N= 30 | Misoprostol Group N= 30 | Placebo Group N= 30 | p-value |
|---|---|---|---|---|---|
| **Age** | **Mean ±SD** | 34.6 ±5 | 33.6 ±3.5 | 34.6 ±4.7 | 0.355[a]<br>0.371[b]<br>0.977[c] |
| | **(Min – Max)** | 28 - 44 | 30 - 42 | 28 - 44 | |
| **Residence** | **Rural** | 21 (70.0%) | 21 (70.0%) | 17 (56.7%) | 0.999[a]<br>0.455[b]<br>0.455[c] |
| | **Urban** | 9 (30.0%) | 9 (30.0%) | 13 (43.3%) | |
| **Education** | **Read and write** | 15 (50.0%) | 13 (43.3%) | 11 (36.7%) | 0.782[a]<br>0.581[b]<br>0.460[c] |
| | **Educated** | 15 (50.0%) | 17 (56.7%) | 19 (63.3%) | |
| **BMI** | **Mean ±SD** | 29.4 ±2.2 | 28.5 ±3.3 | 29.5 ±4.6 | 0.339[a]<br>0.304[b]<br>0.339[c] |
| | **(Min – Max)** | 23 – 34 | 23 - 35 | 20 - 38 | |
| **Parity** | **Mean ±SD** | 2.1 ±0.8 | 2 ±0.8 | 2.1 ±0.9 | 0.651[a]<br>0.651[b]<br>0.999[c] |
| | **(Min – Max)** | 0 – 4 | 0 - 3 | 0 - 4 | |
| **Type of previous delivery** | **No previous delivery** | 1 (3.3%) | 1 (3.3%) | 1 (3.3%) | 0.837[a]<br>0.837[b]<br>0.999[c] |
| | **Normal** | 13 (43.3%) | 15 (50.0%) | 15 (50.0%) | |
| | **C.S.** | 16 (53.3%) | 14 (46.7%) | 14 (46.7%) | |
| **Previous Abdominal Surgery** | **Yes** | 8 (26.7%) | 5 (16.7%) | 8 (26.7%) | 0.872[a]<br>0.851[b]<br>0.999[c] |
| | **No** | 22 (73.3%) | 25 (83.3%) | 22 (73.3%) | |

**Pre-Operative hemoglobin** showed non-statistically significant differences between the three studied groups, while the post-operative hemoglobin was lowest in the control group as compared with the Dinoprostone and Misoprostol groups. Post-operative hemoglobin was significantly lower in the control group compared with Misoprostol group (9.39 ±0.90 vs. 10.16 ±0.76), significantly lower in the Dinoprostone group compared with Misoprostol group (9.63 ±0.98 vs. 10.16 ±0.76), but the difference between Dinoprostone and control groups was statistically non-significant (9.63 ±0.98 vs. 9.39 ±0.90).

Differences between preoperative and postoperative (24 h after surgery) Hb levels were calculated. The drop in hemoglobin concentration was significantly lower in the Dinoprostone and misoprostol groups compared with the control (placebo) group (0.88 ±0.53 vs. 0.77 ±0.41 vs. 1.22 ±0.42, in the three groups respectively). However the difference between Dinoprostone and Misoprostol groups was statistically non-significant (0.88 ±0.53 vs. 0.77 ±0.41).

**Pre-Operative hematocrit** showed non-statistically significant difference between the three studied groups in the current study. While the post-operative hematocrit was lowest in the control group as compared with the Dinoprostone and Misoprostol groups. Post-operative hemoglobin was significantly lower in the control group compared with Misoprostol group (36.4 ±2.38 vs. 38.2 ±1.98), significantly lower in the control group compared with Dinoprostone group (36.4 ±2.38 vs. 38.7 ±2.20), but the difference between Dinoprostone and Misoprostol groups was statistically non-significant (38.7 ±2.20 vs. 38.2 ±1.98).

Difference between preoperative and postoperative (24 h after surgery) hematocrit percentage were calculated, the drop in hematocrit concentration was significantly lower in the Dinoprostone and misoprostol groups compared with the control (placebo) group (2.2 ±1.97 vs. 1.4 ±0.70 vs. 3.7 ±2.12, in the three groups respectively). However the difference between Dinoprostone and Misoprostol groups was statistically non-significant (2.2 ±1.97 vs. 1.4 ±0.70).

**Estimated intra-operation blood loss** was highest among the control group as compared to the Dinoprostone and Misoprostol groups, (634.4 ±131.24 vs. 490.6 ±25.08 vs. 483.1 ±50.16). However, the estimated intra-operation blood loss difference between Dinoprostone and Misoprostol groups was statistically non-significant 490.6 ±25.08 vs. 483.1 ±50.16).

Need for intra-operative blood transfusion was significantly higher in the control group (9 cases vs. 3 cases in Dinoprostone and 3 cases in Misoprostol groups). The number of transfused blood units was ranged from one to three units without a statistically significant difference between the three studied groups **(Table 2)**.

**Table (2): Assessment & blood loss by hematological changes, estimation of blood loss and need for blood transfusion among the studied groups; (N= 90)**

| Variables \ Groups | | Dinoprostone Group N= 30 | Misoprostol Group N= 30 | Placebo Group N= 30 | p-value |
|---|---|---|---|---|---|
| **Pre-operative Hb (g/dL)** | **Mean ±SD** | 10.51 ±1.07 | 10.93 ±0.71 | 10.61 ±1.05 | 0.094[a]<br>0.688[b]<br>0.200[c] |
| | **(Min – Max)** | 9.00 - 12.00 | 8.90 - 12.00 | 9.00 - 12.20 | |
| **Post-operative Hb (g/dL)** | **Mean ±SD** | 9.63 ±0.98 | 10.16 ±0.76 | 9.39 ±0.90 | **0.023[a]*** <br>0.289[b]<br>**0.001[c]*** |
| | **(Min – Max)** | 8.00 - 11.00 | 8.00 - 11.20 | 8.00 - 11.00 | |
| **Hb decrease (g/dL)[#]** | **Mean ±SD** | 0.88 ±0.53 | 0.77 ±0.41 | 1.22 ±0.42 | 0.370[a]<br>**0.005[b]***<br>**0.001[c]*** |
| | **(Min – Max)** | 0.10 - 2.10 | 0.20 - 2.00 | 0.50 - 2.00 | |
| **Pre-operative HCT (%)** | **Mean ±SD** | 41.0 ±2.94 | 39.6 ±1.97 | 40.1 ±3.30 | 0.063[a]<br>0.211[b]<br>0.533[c] |
| | **(Min – Max)** | 37.00 - 47.00 | 37.00 - 45.00 | 34.00 - 48.00 | |
| **Post-operative HCT (%)** | **Mean ±SD** | 38.7 ±2.20 | 38.2 ±1.98 | 36.4 ±2.38 | 0.357[a]<br>**0.001[b]***<br>**0.002[c]*** |
| | **(Min – Max)** | 35.90 - 45.00 | 33.50 - 43.20 | 30.00 - 40.90 | |
| **HCT decrease (%)[#]** | **Mean ±SD** | 2.2 ±1.97 | 1.4 ±0.70 | 3.7 ±2.12 | 0.063[a]<br>**0.002[b]***<br>**0.001[c]*** |
| | **(Min – Max)** | 0.50 - 9.20 | 0.20 - 3.50 | 1.20 - 9.00 | |
| **Estimated blood loss (ml)** | **Mean ±SD** | 490.6 ±25.08 | 483.1 ±50.16 | 634.4 ±131.24 | 0.725[a]<br>**0.001[b]***<br>**0.001[c]*** |
| | **(Min – Max)** | 450.00 - 543.00 | 400.00 - 650.00 | 60.00 - 815.50 | |
| **Need for blood transfusion** | | 3 (10%) | 3 (10%) | 9 (30%) | 0.999[a]<br>0.052[b]<br>0.052[c] |
| **Blood transfusion, No. of units** | **Mean ±SD** | 1.7 ±0.58 | 1.7 ±0.58 | 2.4 ±0.53 | 0.999[a]<br>0.053[b]<br>0.053[c] |
| | **(Min – Max)** | 1.00 - 2.00 | 1.00 - 2.00 | 2.00 - 3.00 | |

#Difference between preoperative and postoperative (24 h after surgery) Hb and HTC levels.
*p-value ≤0.05 is considered statistically significant., a P-Value between Dinoprostone and Misoprostol.
b P-value between Dinoprostone and Control., c P-value between Misoprostol and Control.

The duration of the operation was significantly shorter in Misoprostol group compared with the Dinoprostone and control (placebo) groups (73.93 ±5.02 vs. 80.07 ±2.41 vs. 86.23 ±5.57 min in the misoprostol, Dinoprostone and placebo groups respectively). The duration of the operation was significantly shorter in Dinoprostone group compared with the control (placebo) groups (80.07 ±2.41 vs. 86.23 ±5.57 min in the Dinoprostone and placebo groups respectively). Also, the duration of operation was significantly shorter in misoprostol compared with the Dinoprostone groups.

Post-operative hospital stay ranged from one to three days with non-statistically significant differences between the three studied groups. The rate of conversion from an abdominal myomectomy to a hysterectomy in the current study was highest among the control group (three cases) compared with one case in the Dinoprostone and one case in the Misoprostol group, but without a statistically significant difference.

Postoperative blood loss significantly reduced in patients among Dinoprostone and Misoprostol groups as compared to control group. However, there were non-statistically significant differences between Dinoprostone and Misoprostol groups regarding the post-surgical blood loss measured by catheter inside pelvis for 24h (ml) **(Table 3)**.

**Table (3): Comparison between the three studied groups regarding the operation time, postoperative hospital stay, incidence of unplanned hysterectomy and post-operative blood loss in suction drain**

| Variables \ Groups | | Dinoprostone Group N= 30 | Misoprostol Group N= 30 | Placebo Group N= 30 | P-value |
|---|---|---|---|---|---|
| **Operation time (min)** | **Mean ±SD** | 80.07 ±2.41 | 73.93 ±5.02 | 86.23 ±5.57 | **0.001[b]*** **0.001[c]*** **0.001[d]*** |
| | **(Min – Max)** | 75.00 - 85.00 | 69.00 - 90.00 | 75.00 - 97.00 | |
| **Postoperative stay** | **Mean ±SD** | 2.0 ±0.61 | 1.8 ±0.63 | 1.9 ±0.74 | 0.123[a] 0.333[b] 0.560[c] |
| | **(Min – Max)** | 1.00 - 3.00 | 1.00 - 3.00 | 1.00 - 3.00 | |
| **Hysterectomy** | | 1 (3.3%) | 1 (3.3%) | 3 (10.0) | 0.754[a] 0.306[b] 0.306[c] |
| **Post-operative blood loss in drain (ml)** | **Mean ±SD** | 52.00 ±10.95 | 48.60 ±5.12 | 118.60 ±18.35 | 0.302[a] **<0.001*[b]** **<0.001*[c]** |
| | **(Min – Max)** | 39.00 - 80.00 | 40.00 - 60.00 | 90.00 - 150.00 | |

*p-value ≤0.05 is considered statistically significant. a P-Value between Dinoprostone and Misoprostol.
b P-value between Dinoprostone and Control. c P-value between Misoprostol and Control.

Nausea, abdominal pain and diarrhea were significantly higher among Dinoprostone and Misoprostol groups as compared with control group, (p-values= 0.010, 0.026 and 0.012 respectively). However, the difference between Dinoprostone and Misoprostol groups were statistically non-significant. Vomiting was significantly higher in the Misoprostol group as compared with control group. However, the difference between Dinoprostone and Misoprostol groups were statistically non-significant. Regarding incidence of fever, no statistically significant differences were found between the three studied groups **(Table 4)**.

**Table (4): Comparison between the three studied groups regarding the post-operative complaint**

| Groups / Variables | Dinoprostone Group N= 30 | Misoprostol Group N= 30 | Placebo Group N= 30 | p-value |
|---|---|---|---|---|
| **Nausea** | 4 (13.3%) | 8 (26.7%) | 0 (0.00%) | 0.167[a]<br>0.056[b]<br>**0.002*[c]** |
| **Vomiting** | 2 (6.7%) | 5 (16.7%) | 0 (0.00%) | 0.212[a]<br>**0.026*[b]**<br>0.246[c] |
| **Pain** | 7 (23.3%) | 5 (16.7%) | 1 (3.3%) | 0.374[a]<br>0.097[b]<br>**0.026*[c]** |
| **Fever** | 4 (13.3%) | 2 (6.7%) | 2 (6.7%) | 0.335[a]<br>0.694[b]<br>0.335[c] |
| **Diarrhea** | 6 (20.0%) | 2 (6.7%) | 0 (0.00%) | 0.127[a]<br>0.264[b]<br>**0.012*[c]** |

a P-Value between Dinoprostone and Misoprostol. b P-value between Dinoprostone and Control.
c P-value between Misoprostol and Control.

The average cost in Egyptian pounds for dinoprostone and misoprostol were 385 and 8 respectively.

## DISCUSSION

The current study was designed with an aim to compare the efficacy of preoperative administration of dinoprostone 21 mg versus 400 ug misoprostol vaginally in reducing the amount of blood loss during abdominal myomectomy. The study was a prospective randomized double blind controlled study, included 90 women with uterine myoma matched in their age, BMI, gravidity, parity, uterine size and myoma size.

All the included women were indicated for myomectomy, and allocated randomly into three equal groups (Dinoprostone, Misoprostol and Placebo groups) to compare the effect of a single preoperative dose of vaginal prostaglandin E1 (misoprostol 400 ug) versus vaginal Prostaglandin E2 (PGE2; dinoprostone 21mg) suppository on reducing intraoperative blood loss and the need for subsequent blood transfusion during abdominal myomectomy for symptomatic leiomyomas.

In the current study, the estimated intra-operation blood loss was highest in the control group as compared to the Dinoprostone and Misoprostol groups. However, the estimated intra-operation blood loss difference between Dinoprostone and Misoprostol groups was statistically non-significant, also we found that postoperative blood loss was significantly reduced in patients among Dinoprostone and Misoprostol groups as compared to control group, however, there

was non-statistically significant difference between Dinoprostone and Misoprostol groups regarding the post-surgical blood loss measured by catheter inside pelvis for 24h (ml). Similar to this finding, *Alhalaby et al. (2021),* in their study to evaluate the effect of using a single dose of vaginal misoprostol (400 Microgram) one hour before abdominal myomectomy on intraoperative blood loss, reported high statistically significant low intraoperative blood loss among misoprostol group (308 ± 32.66 ml) than control group (404 ± 87.18 ml).

Our findings were in accordance with, *Rashed et al. (2014), Abdel-Hafeez et al. (2015*), Niroomand et al. (2015) and *Mohamed et al. (2019).* Dinoprostone led to reduction in blood loss by 124 ml in the study group. *El-Naggar et al. (2017)* showed a non-statistically significant difference in estimated blood loss between Dinoprostone and Misoprostol groups.

On the contrary, *Chai et al. (2011)* in which 64 patients were randomly showed that women who had misoprostol were found to have similar operative blood loss to those who had placebo (570.9 ± 361.3 ml for misoprostol group versus 521.4 ± 297.4 ml for placebo group). This study differed from our study as regards the route of administration of misoprostol and the time between administration and beginning of the study.

Regarding hemoglobin and hematocrit concentrations pre-and post-operatively among the studied groups, our study found that Dinoprostone and misoprostol groups had significantly higher hemoglobin and hematocrit levels than control group postoperative, while, there were no significant differences between the two groups regarding Hb and HCL pre-operative. Similar to our findings, there were statistical high significant differences between preoperative and postoperative hemoglobin and HTC changes in the three studied groups *(Rashed, 2014, El-Naggar et al., 2017* and *Mohamed et al., 2019).*

Our findings were contradictory with those reported by *Chai et al. (2011)* who stated that there were no observed differences in the change in hemoglobin level after the operation between misoprostol and placebo group. An unavoidable source of confounding in such clinical trials is the surgical skill and the operating room time. The duration of operation is a significant predictor of blood loss. Factors that may increase operative duration such as variations in normal uterine anatomy, extent of resection, and underlying pelvic adhesions from previous surgery, may also increase blood loss. Therefore, duration served as a surrogate marker for these factors. It is possible that the surgeon's experience may affect blood loss. In the current study, the duration of the operation was significantly shorter in the study (misoprostol) group compared with the Dinoprostone and control (placebo) groups as a result of the decrease in the blood loss and better surgical field and this was agreed with *(Abdel-Hafeez et al., 2015, El-Naggar et al., 2017* and *Mohamed et al., 2019).*

In our study, although the complications were relatively few, but all of them were side effects of the medicines used. Nausea and vomiting were significantly highest among the Misoprostol group, but without a

statistically significant difference, abdominal pain was highest among the Dinoprostone group, but without a statistically significant difference, no statistically significant difference regarding incidence of fever between the three studied groups, diarrhea was significantly highest among the Dinoprostone group. This agreed with the study by *Celik and Spamaz (2012),* the study explained that the reason for the insignificant differences observed for the misoprostol side effects may be that patients administered a single dose of misoprostol and after surgery the patients were either still anesthetized or under the effect of an analgesic. In the study by *Kalogiannidis et al. (2014)* the rate of side effects was similar between groups, which agreed also with the studies by *Biswas et al. (2013)* and *Shokeir et al. (2013).*

Dinoprostone, in comparison with misoprostol, was of higher cost for each patient, although we have information on obstetrical outcomes very few studies compare resource utilization and cost between prostaglandins for reducing blood loss during myomectomy *(Abdel-Hafeez et al., 2015* and *Mohamed et al., 2019).*

When comparing the results of our current study with previous studies, we did not find many studies on Dinoprostone, as is the case in Misoprostol, Dinoprostone is less affordable and less readily available than misoprostol. Importantly, unlike misoprostol, it should be used with caution in patients with asthma and its use in haemorrhage is not well established *(Wali et al., 2021).*

The current study clearly showed that the use of single preoperative dose of misoprostol (400 mcg) as effective as 21 mg of Dinoprostone vaginally 2 hours before surgery. It is easy to use, with minor or no side effects, low cost, good clinical outcomes and a simple applicable method for reducing intraoperative blood loss, operative time and postoperative drop in hemoglobin and hematocrit values in abdominal myomectomy operations.

## CONCLUSION

A single dose of (400 mcg vagina misoprostol) as well as a single dose of (21mg dinoprostone) two hours before abdominal myomectomy could significantly decrease intraoperative estimated blood loss, operating time, reduce postoperative hemoglobin decrease and so decrease the need for blood transfusion.

The use of vaginal misoprostol or dinoprostone was an effective method to reduce intraoperative hemorrhage during abdominal myomectomy. Also, a single, preoperative dose of dinoprostone administered intravaginally could be safe and reliable method to help decrease blood loss during abdominal myomectomy.

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# دور الاستخدام المهبلى قبل الجراحة للدينوبروستون مقابل الميزوبروستول في تقليل فقدان الدم أثناء استئصال الورم الليفي الرحمي عن طريق البطن

**أمل عاطف محمد، أحمد علي محمد نصر، محمود أحمد محمد بدوي**

**قسم التوليد و أمراض النساء، كلية الطب، جامعة الازهر (أسيوط)**

**E-mail:** dr_aml@yahoo.com

**خلفية البحث:** إستئصال الورم العضلي هو إجراء شائع في أمراض النساء يمكن الاقتراب منه, إما عن طريق المنظار أو من خلال شق البطن. والمساهمات في فقدان الدم متعددة العوامل، ويمكن أن يتراوح تأثير فقدان الدم المفرط من فقر الدم إلي نقل الدم، إلى استئصال الرحم، والإقامة المطولة في المستشفى واحتمال الوفاة. هذا بالإضافة إلى تحسين حالة المريضة قبل الجراحة، ومن الضروري أن تكون استباقيًا لتقليل فقد الدم أثناء العملية.

**الهدف من البحث:** مقارنة فعالية إعطاء دينوبروستون 21 مجم قبل الجراحة مقابل 400 ميكروجرام من الميزوبروستول عن طريق المهبل في تقليل كمية الدم المفقود أثناء استئصال الورم العضلي البطني.

**المريضات وطرق البحث:** كانت الدراسة الحالية تجربة إكلينيكية عشوائية مزدوجة التعمية مع وجود مجموعة تحكم. واشتملت الدراسة على 90 مريضة تشتكين من ورم ليفي في الرحم والمخطط لاستئصال الورم الليفي، وتم اختيارهن من العيادة الخارجية بمستشفى الأزهر الجامعي والعيادة الخارجية بمستشفى الإيمان العام بأسيوط. وتم تقسيم المريضات إلى ثلاث مجموعات متساوية: المجموعة الأولى تناولن 21 مجم دينوبروستون عن طريق المهبل قبل الجراحة بساعتين، والمجموعة الثانية تناولن 400 ميكروجرام من الميزوبروستول عن طريق المهبل قبل ساعتين من الجراحة، والمجموعة الثالثة تناولن الدواء الوهمي عن طريق المهبل قبل الجراحة بساعتين.

**نتائج البحث:** كان فقدان الدم المقدر أثناء العملية أعلى بين مجموعة التحكم مقارنة بمجموعتي للدينوبروستون والميزوبروستول. ومع ذلك، فإن فرق فقد الدم المقدر

أثناء العملية بين مجموعات للدينوبروستون والميزوبروستول كان غير معتداً به إحصائياً. وكانت الحاجة إلى نقل الدم أثناء العملية أعلى بشكل ملحوظ في المجموعة الضابطة (9 حالات مقابل 3 حالات في للدينوبروستون و 3 حالات في مجموعات الميزوبروستول). وقد تراوح عدد وحدات الدم المنقول من وحدة إلى ثلاث وحدات دون وجود فرق معتد به إحصائياً بين المجموعات الثلاث المدروسة، كما تراوحت الإقامة في المستشفى بعد الجراحة من يوم إلى ثلاثة أيام مع وجود فرق معتد به إحصائياً بين المجموعات الثلاث المدروسة.

**الاستنتاج:** استخدام الميزوبروستول المهبلي أو الدينوبروستون طريقة فعالة لتقليل النزف أثناء الجراحة أثناء استئصال الورم العضلي في البطن. أيضًا، يمكن أن تكون جرعة واحدة قبل الجراحة من الدينوبروستون المعطاة داخل المهبل طريقة آمنة وموثوقة للمساعدة في تقليل فقد الدم أثناء استئصال الورم العضلي في البطن.

**الكلمات الدالة:** دينوبروستون عن طريق المهبل، ميسوبروستول، فقدان الدم أثناء استئصال الورم.