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Treatment of peroperative hemorrhage during operative hysteroscopy using bipolar energy with intrauterine tranexamic acid: a case report

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Abstract Operative hysteroscopy is an efficient alternative treatment of leiomyoma-associated menorrhagia. This manuscript describes a typical case of uterine leiomyoma that was treated using a bipolar resectoscope and saline as a distension medium. This allowed completion of a difficult resection with a lower risk of hemodilution and hyponatremia, compared to the use of a monopolar resectoscope with glycine as a distension fluid. Moreover, we describe an original treatment of peroperative uterine bleeding using intrauterine instillation of tranexamic acid through a Foley catheter.

Keywords Operative hysteroscopy · Bipolar energy · TURP syndrome · Bleeding · Tranexamic acid

Introduction

Abnormal uterine bleeding constitutes a frequent problem in gynecology. Many of these patients present with uterine leiomyoma, which are often a cause for hysterectomy [1, 2]. Transcervical resection of the endometrium and of the myomas, performed by operative hysteroscopy, has been demonstrated to be an efficient [3, 4, 5, 6] and cost-effective alternative in the treatment of these disorders [7, 8]. However, the efficacy of this technique is limited in large uteri with numerous leiomyomas [2, 8].

Preoperative treatment of large leiomyoma using GnRH agonists has been advocated [9, 10, 11], but the cost-effi-

cacy ratio of this strategy has been discussed [12]. Use of glycine as a distension medium with this technique is associated with risks of fluid overload, hyposmolality and hyponatremia, first described as the transurethral resection of the prostate (TURP) syndrome [13, 14, 15, 16, 17, 18, 19]. This constitutes a risk of potentially fatal hyponatremic encephalopathy [20]. Recently, bipolar resectoscopes have been developed [21]. These devices allow the use of saline as a distension medium, which reduces the risk of fluid overload compared to glycine. Transcervical resection of intracavitary leiomyoma can be the source of peroperative bleeding by opening of radial veins around the myomas [3]. This event can be handled by careful coagulation of these veins and systemic use of antifibrinolytic agents such as tranexamic acid [22].

In this paper, we describe the case of a patient who underwent transcervical resection of the endometrium and of submucous leiomyoma using a bipolar resectoscope whose peroperative uterine bleeding was controlled by intrauterine instillation of tranexamic acid.

Case report

Mrs D.D., aged 50 years, para 1, complained of regular menorrhagia with abundant blood clots occurring approximately 9–10 days every month. She previously had been diagnosed with sideropenic anemia and was prescribed oral iron supplementation. A previous trial of medical treatment using norgestrel acetate (Lutenyl) was only transiently efficacious to reduce menorrhagia. Her medical history was uneventful.

The clinical examination revealed type-2 cystocele. Pap smears were negative. Vaginal examination showed an enlarged uterus. Transvaginal sonography highlighted an enlarged anteverted uterus (97×77×85 mm) with multiple intramyometrial leiomyomas (diameter from 7 to 30 mm). Three posterior myomas were submucous (classification of the European Society for Gynecological Endoscopy, type 1 and 2), with diameters ranging from 15 to 35 mm.

Hysterectomy and correction of the cystocele were proposed to the patient, but she refused this surgical alternative. Operative hysteroscopy was then proposed. The patient was informed that this was a borderline indication because of the large size of the uterus and the numerous leiomyomas. However, she chose the latter surgical option. Preoperative chest X-ray and electrocardiogram were normal.

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Operative hysteroscopy was performed using a 9-mm (27-Fr) double-flow, bipolar Versapoint resectoscope using the loop electrode (Johnson & Johnson Medical, Gynecare, Dilbeek, Belgium) under rachianesthesia. Dilatation was progressively performed using Hegar dilators to 10 mm. Sterile saline was used as the distension medium. Fluid balance was monitored using an Uteromat system (Olympus, Omnilabo, Aartselaar, Belgium). Intrauterine pressure was set at 130 mm Hg, and the flow rate at 350 ml/min. A hysteroscopic view of the uterine cavity confirmed the presence of the two posterior submucous leiomyomas (diameters of 40 and 25 mm) and of another 25 mm submucous myoma located on the right side of the cavity. Resection of the leiomyomas and of the endometrium was carried out using the bipolar loop of the resectoscope. The total resection volume was 20 cc, and the operative time was 80 min. A total of 2.1 l of saline was used. Monitoring of the fluid balance revealed a loss of 500 ml. The end of the procedure was characterized by abundant intrauterine bleeding, not easily controlled by the resectoscope. At this very moment, the patient reported intense pain in the cubital side of the left arm and the left side of the mandibula. Heart monitoring showed a slightly lowered ST segment, suggestive of coronary heart disease, which precluded systemic administration of tranexamic acid for the peroperative bleeding. After discussion with the anesthetist, we decided to administer tranexamic acid in loco and introduced a Foley catheter inside the uterus, inflated the balloon and injected two vials of 500 mg tranexamic acid inside the uterine cavity. The drug was left in place for 2 h, then the catheter was removed. No uterine bleeding was observed. Blood testing 1 and 6 h after the procedure showed slight hemodilution (serum proteins, 61 and 54 g/l, normal range 66–83; albumin 30 g/l, normal range 38–49) without perturbation of the ions. At 6 h postoperatively, D-dimers were increased at 386 µg/l (normal, <200), suggesting that tranexamic acid only had local inhibitory effect on fibrinolysis. Total and MB-type creatine kinase and T troponin were in the normal range. Cardiological examination and electrocardiography were negative.

Postoperative follow-up was uneventful, and the patient was discharged the day after the procedure. Pathological examination of the resected endometrial chips confirmed the diagnosis of uterine leiomyoma and of irregularly developed endometrium, with both proliferative and secretory endometrial glands. Postoperative control was performed 8 weeks after hysteroscopy. The patient did not experience any abnormal uterine bleeding.

Discussion

This case constitutes a good example of the use of conservative hysteroscopic surgery for the treatment of menorrhagia associated with uterine leiomyomatosis [3, 4]. The patient refused hysterectomy. Operative hysteroscopy using a monopolar hysteroscope and glycine as a distention medium was not an adequate choice because of the size of the uterus and the numerous leiomyoma, hence the risk of fluid overload and hyponatremia. Thus, a bipolar resectoscope and saline as a distention fluid were used. The procedure was difficult, with peroperative uterine bleeding. Intravenous tranexamic acid was not administered as the patient presented with signs suggestive of coronary heart disease. We thus decided to instill tranexamic acid where it should be active, i.e., in the uterus. Although this clinical history does not constitute a proof for the efficacy of this strategy, it could certainly be remembered as an alternative treatment of peroperative bleeding.

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