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CLINICAL ARTICLE

Bilateral uterine artery ligation via minilaparotomy for heavy menstrual bleeding

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Abstract

Objective: To assess the safety and short-term efficacy of bilateral uterine artery ligation (UAL) via minilaparotomy for the management of heavy menstrual bleeding (HMB). *Methods:* A prospective study of 30 women with HMB who underwent UAL. The primary outcome was cumulative treatment failure 12 months after the procedure. Treatment failure was defined as the need for hysterectomy during the follow-up period. *Results:* At 12 months, 6 women had undergone hysterectomy for bleeding, for a cumulative failure rate of 20% (95% CI, 9%–38%). The number of bleeding days was significantly reduced by 11.9±1.5 days ($P<0.001$) and hemoglobin level significantly increased by 1.3±0.15 g/dL ($P<0.001$). Of the 30 women, 24 (80%) were satisfied with the results. No major complications were reported during the procedure or median follow-up period of 13.2 months. *Conclusion:* Bilateral UAL is a safe and effective minimally invasive procedure that can provide an alternative treatment for HMB.

1. Introduction

Heavy menstrual bleeding (HMB) is a common gynecologic problem that affects 1 in 3 women worldwide [1]. The management of HMB is tailored to the severity of bleeding, its impact on the woman's health and health-related quality of life, as well as her future fertility wishes [2]. Another important determinant in the selection of HMB treatment is the presence of other pathology such as fibroids, which affect the uterine cavity, or pathology such as adenomyosis, which may affect the response to treatment. Current available methods include medical treatment, surgical treatment, and minimally invasive alternatives to surgery [3]. The inconsistent efficacy, adverse effects, and low patient compliance with medical treatments hamper their long-term use [4]. Hysterectomy remains the definitive treatment for HMB, particularly in women who do not wish to conceive. However, hysterectomy has potential short- and long-term negative effects, both on psychological and psychosexual functions. This requires a comprehensive re-evaluation of its use in benign indications [5,6]. Hysterectomy can be followed by

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depression and immediate postoperative anxiety that can significantly affect a woman's quality of life [7]. In Egyptian women, conserving the uterus may be important for gender identity, sexuality, marital relations, and self-esteem [8]. Preoperative anxiety in these women has been related to an increased chance of postoperative anxiety and depression [8].

In women who wish to preserve their fertility the surgical options are limited [9]. Over the past 2 decades, uterine artery embolization (UAE) has become an established method to treat life-threatening postpartum hemorrhage, bleeding after gynecologic surgery, pelvic arteriovenous malformation, and cervical pregnancy [10]. Reported adverse effects included impairment of ovarian function and premature ovarian failure. These reports limit its use as a treatment for fibroids in women who wish to preserve their fertility [11].

Uterine artery ligation (UAL) is an effective, minimally invasive procedure that directly reduces uterine blood supply and menstrual blood flow. Indirectly it acts through reducing prostaglandin levels in the endometrium [9]. Despite its successful use to control postpartum hemorrhage, its efficacy in the treatment of HMB is, to date, still unclear. The procedure can be performed using minilaparotomy with basic laparotomy instruments. It can be performed with local anesthesia or light sedation [12,13]. These factors lower the cost, reduce anesthesia-related complications, and make UAL an appealing procedure in low-income settings. The objective of the present study was to investigate the safety and short-term efficacy of bilateral UAL using minilaparotomy for the management of HMB.

2. Materials and methods

We conducted a prospective study to evaluate the safety and efficacy of bilateral UAL for the treatment of HMB. The study was approved by the local Internal Review Board. All participants in the study gave their consent and were counseled regarding the risks and the experimental nature of the procedure. Inclusion criteria were women who had subjective heavy menstrual bleeding for more than 6 months with or without chronic symmetrically enlarged uterus who had received medical treatment for at least 6 months in the form of either a combined oral contraceptive (Microcept; Sedico, Egypt) for 21 days starting on the 5th menstrual day and then stopped for 7 days and repeated for at least 3 cycles, or 5 mg norethisterone acetate (Steronate nor; Sedico, Egypt) 3 times a day from the 5th day to the 25th day then stopped and repeated for at least 3 cycles. All patients had a poor response to treatment and there was no evidence of atypia at dilatation and curettage. Patients were excluded if they declined to participate, had a local organic lesion such as fibroids or adenomyosis, were younger than 35 years, or wanted to remain fertile. Organic lesions were identified via clinical and ultrasound examination, and hysteroscopic procedures where necessary.

The primary outcome measure was cumulative treatment failure within 12 months of UAL. Treatment failure was defined as the need for another operation during the 12-month follow-up period. Other outcomes measured were a change in menstruation or hemoglobin concentration (g/dL). Patients were asked to grade their satisfaction with the treatment on a scale from very satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, or very dissatisfied. Operative date and the occurrence of any major complication during or after the procedure were also recorded. Major complications included mortality, intestinal injury, bladder injuries, and any related postprocedural complication that required readmission.

All patients received 1 g amoxicillin intravenously 20 minutes prior to the procedure. The patients were placed in the dorsal lithotomy position with 55 degrees abduction of the thigh and 15 degrees flexion of the hip. The procedure was carried out under general anesthesia. Skin, subcutaneous tissue, and the anterior rectus sheath were opened via a 5-cm minilaparotomy incision, coinciding with the transverse suprapubic incision line. The 2 recti muscles were separated and the posterior rectus sheath opened. Gentle manipulation of the uterus was performed using a cervical elevator inserted vaginally. The loose peritoneum over the vesicouterine pouch was incised horizontally. Gentle blunt dissection of the peritoneum over the isthmus and cervix was done downward and extended laterally. Special care was used during mobilization of the peritoneum at the edges of the uterine angles to expose the ascending branch of the uterine artery and to avoid including the ureters in the sutures. The uterus was held and retracted upward and laterally by an assistant. The uterine artery pulsations were palpated digitally at the level of the internal os. A rounded needle holding a chromic catgut suture size 2-0 was passed from posterior to anterior, through the tissues of the cervix, and ligated as a simple stitch. This was followed by another stitch below it at a distance of not more than 1 cm (Fig. 1). The procedure was repeated on the

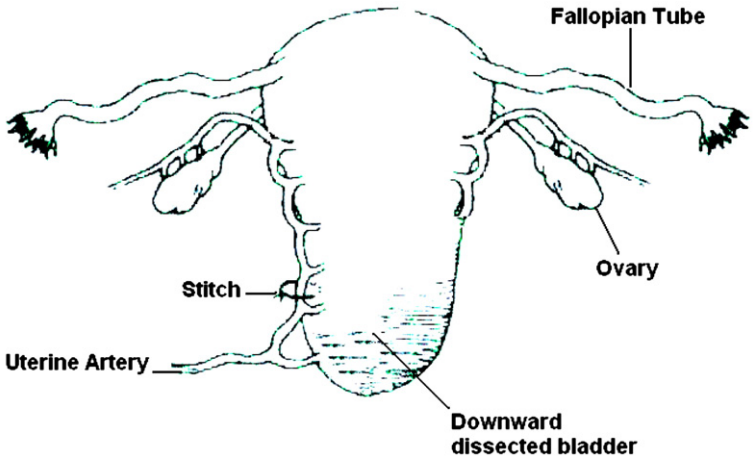

Figure 1 Uterine artery ligation (UAL) procedure: placing the stitch at level of the internal os.