

Permanent Occlusion of Uterine Arteries in Management of Abnormal Uterine Bleeding

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Abstract: Objectives: To assess the effectiveness of permanent bilateral occlusion of uterine arteries as a treatment modality of abnormal uterine bleeding.

Design: prospective single arm study.

Setting: Done in Mansoura university hospital, department of Obstetrics and gynecology and private center (Mansoura Integrated Fertility Center- MIFC) Mansoura- Egypt from October 2011to October 2015 including the study and follow up period.

Patients: The study includes One hundred eighteen (118) premenopausal patients followed up for thirty six months. All of them completed their families and needing to preserve their uteri. 68.6 % of them experienced failed medical treatment.

Intervention: permanent bilateral uterine arteries occlusion in management of abnormal uterine bleeding.

Measurements: The primary outcome measures were patient satisfaction, Quality of life and improvements of pain and bleeding compared with pretreatment one. Secondary outcome measures included postoperative pain, complications, secondary interventions, and failures.

Results: One hundred and nine patients completed follow up for three years 109/118 (92.4%) reported their satisfaction as indicated by reduction in days of menstrual flow per cycle (3.7 ± 2.8 vs. 8.8 ± 6.2 days, $p < 0.0001$) also, significant improvement in quality of life scores (9 ± 1.2 vs. 2.6 ± 1.8 $p < 0.0001$). with a variable failure rate varies from 5.6% at 6 months to 3.9% at 36 months follow up.

Conclusion: permanent bilateral uterine arteries occlusion may be a good alternative to radical surgery in management of abnormal uterine bleeding.

Keywords: Abnormal uterine bleeding, Management, Uterine artery, Permanent occlusion, Non absorbable.

INTRODUCTION

Abnormal uterine bleeding is a common problem [1] and its management can be complex [2]. Menstrual disorders are a common indication for medical visits among women of reproductive age [3] and heavy menstrual bleeding affects up to 30% of women throughout their reproductive lifetime [4]. These complaints may significantly affect quality of life [5] result in time off work [6] lead to surgical intervention including hysterectomy [7] and ultimately have a significant impact on the health care system [8].

There are 9 main categories, which are arranged according to the acronym PA LM-COEIN. In general, the components of the PALM group are discrete [structural] entities that can be measured visually with imaging techniques and/or histopathology, whereas the COEIN group is related to entities that are not defined by imaging or histopathology [non structural], the two most common causes are structural

abnormalities of the reproductive system and ovulation disorders [9].

Although Hysterectomy is the definitive treatment for excessive uterine bleeding in women who no longer wish to conceive but carry many disadvantages include increased number of adverse effects, longer recovery time, and higher initial health care costs compared with uterine sparing procedures [10, 11]. Hysterectomy also may be associated with ovarian failure nearly four years earlier than expected [12].

Alternate minimally invasive techniques have emerged because advantages of these procedures over hysterectomy as they do not involve surgical removal of the uterus; therefore, the operative and recovery times are shorter and the complication rates seem to be lower and some may be performed as outpatient procedures, avoiding the hospital stay required after hysterectomy [13]. One of these techniques is permanent uterine occlusion either by laparoscopic clips or uterine artery embolization, both laparoscopic occlusion of the uterine vessel and embolization appear to improve symptoms associated with uterine leiomyomata in the majority of patients [14]. In this study we tried other technique to perform

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permanent uterine arteries occlusion avoiding highly skillful laparoscopic maneuver or costly, invasive uterine artery embolization and also, it's many disadvantages as deep venous thrombosis or pulmonary embolism [15] and post embolization syndrome [16].

PATIENTS AND METHODS

This study was carried out in Mansoura university hospital, department of Obstetrics and Gynecology and private center (Mansoura integrated fertility center) including one hundred eighteen (118) patients in the period from October 2011 till October 2015 and follow up for 36 months including the period of the study. Inclusion Criteria includes premenopausal with abnormal uterine bleeding and completed their families having non pathologic endometrium (biopsy in preceding 6 months) and may have uterine intramural myoma/s the largest one not exceeding 150 ml in volume and away from uterine cavity by at least 1cm and /or adenomyosis. Exclusion Criteria includes patients wishing future fertility, endometrial sampling not done or more than 6 months or myoma encroaching or distorting cavity or larger than 150 ml in volume. The primary outcome measure was patient satisfaction, Quality of life and improvements of bleeding compared with pretreatment one. Secondary outcome measures included postoperative pain, complications, secondary interventions, and failures. All eligible patients attended a consultation by a gynecologist, which included a gynecological examination, ultrasonography and office hysteroscopy in suspected uterine cavity lesion(s). Patients were informed about the possible risks and benefits of the treatment and a written consent was obtained from each patient. The study was approved by the local research ethics committee. History taking, clinical examination, body mass index (BMI), and vaginal examination were undertaken as well as abdominal and transvaginal ultrasound scans. Basic investigations included urine analysis, complete blood count, liver and kidney functions, and fasting and postprandial plasma glucose levels. The procedure was carried out in the operating theatre under regional spinal or local infiltration anesthesia plus sedation and analgesics. Uterine artery ligation was performed during laparotomy. The uterus was pulled up to expose the lower part of the broad ligament. Pulsations of the uterine artery were felt near the junction of the body and the cervix. Nylon tape which is white polyester 5mm non-absorbable permanent occlusion suture (UNISTER®, UNIMED KINGDOM OF SAUDIA

ARABIA) was passed around the artery and through 1–2cm of the myometrium at the level where a transverse lower uterine segment incision would be made, and the procedure was repeated on the other side. Uterine arteries Doppler was performed 48 hours later to ensure complete occlusion. A standardized questionnaire was used at all appointments. The questionnaire explored their menstrual pattern, dysmenorrhea and satisfaction before and after the procedure using a 10 cm visual analogue scale (VAS) with a “0, much worse” and “10, much better” at opposite ends and the mid-point representing no change. Participants were asked to grade changes in amount of bleeding, pain and satisfaction as better, worse, or unchanged. Adverse events were recorded for each patient intra-operatively, during the hospital stay and during outpatient visits till 36 months. All subsequent surgical and medical interventions, as well as readmission to the hospital or prolonged hospitalization were recorded. Total improvement of symptoms at the 36-month follow-up was defined as no, little or moderate bleeding. Clinical failure was defined as persistent bleeding requiring secondary treatment or no improvement at the 6-month follow-up.

Statistical analysis was performed using SPSS 12.0, IL, Chicago and the questionnaire were entered into a Microsoft Access Database. Results were analyzed using frequency tables, Student's t test and Chi-squared test, the data are presented as mean values for normal distributed data and as median values for skewed data. A significance level of 0.05 was used for all tests. To achieve the power of the study and sample size we use PASS 2008, and a sample size of 118 patients give power 94 % [17-19].

RESULTS

During the study and follow up period (2011–2015), 118 women underwent permanent uterine occlusion using unister® 5mm; their mean age was 40.6 ± 3.16 years (range 34-45). The procedure was performed under regional anesthesia in 97 cases (82.2%) and 21cases (17.8%) done with local infiltration anesthesia plus analgesics (Table 1). All 118 women were seen or have returned a completed questionnaire, giving a response rate of (100%) after 6 months and 109 women only completed 36 months follow up. 81 women (68.6%) had undergone a trial of medical treatment before the procedure (Table 1). Quality-of-life (QOL) scores and the menstrual bleeding pattern were measured before and at 6, 12, 24 and 36 months following treatment. The mean QOL scores before treatment was 2.6 ± 1.8 compared with 9 ± 1.2 at 36

months after treatment ($p < 0.0001$) as shown in Table 2. There was also a significant improvement in menstrual pattern from 8.8 ± 6.2 days before treatment to 3.7 ± 2.8 at 36 months after treatment ($p < 0.0001$) and also, number of pads/day changed from 12.6 ± 6.2 before treatment to 3 ± 2.7 after treatment ($p < 0.0001$) as shown in Table 2. Also, there was an observed improvement in the bleeding, pain and patients' satisfaction rate by 88.9 %, 92.4 % and 92.5 % respectively at 36 months as shown in Table 3, also, (5.6%) patients reported clinical failure (no improvement) At 6-months follow up, and (3.9%) at 36 months follow up.

Table 1: Baseline Parameters of the Studied Group (n = 118 Patients)

Item	Parameter
Age (years)	40.6 ± 3.19
BMI	24 ± 3.15
Parity	3 ± 1.9
Preoperative haemoglobin concentration (g %)	10.5 ± 0.5
Patients with bleeding	89 (75.4 %)
Patients with pain (dysmenorrhea)	29 (24.5 %)
Patients with pain + bleeding	53 (44.9 %)
Type of anaesthesia	
(a) spinal anaesthesia	97 (82.2 %)
(b) Local infiltration anaesthesia + analgesia	21 (17.8 %)
Attempted medical treatments before procedure	81 (68.6 %)

Table 2: Change in Menstrual Bleeding and Quality of Life (QOL) Scores 36 Months after the Procedure

Menstrual Bleeding	Before Procedure	After Procedure	P value
Days/cycle			
Mean \pm SD	8.8 ± 6.2	3.7 ± 2.8	<0.0001
Pads/day			
Mean \pm SD	12.6 ± 6.2	3 ± 2.7	<0.0001
QOL scores			
Mean \pm SD	2.6 ± 1.8	9 ± 1.2	<0.0001

Table 3: Clinical Outcome at Different Follow up Intervals

Item	Six Months (n =118)	Three Years (n = 109)
Bleeding	49.7 %	88.9%
Pain (dysmenorrhea)	58.7%	92.4%
Patient's satisfaction	66.7%	92.5%
Clinical failure	5.6%	3.9%

DISCUSSION

This study aims to provide a novel modality in permanent uterine arteries occlusion which is not difficult, not costly, needs no highly expert personnel and devoid of serious complications like the other famous methods like uterine arteries embolization or laparoscopic uterine arteries occlusion. Our study revealed an encouraging and satisfactory result although 81 women (68.6 %) tried medical treatment before the proposed procedure. There is improvement in amount of bleeding and this manifested by reduction in duration of the cycles from 8.8 ± 6.2 days to 3.7 ± 2.8 days with p value < 0.0001 , also by reduction in numbers of pads /day from 12.6 ± 6.2 to 3 ± 2.7 with p value < 0.0001 and improvement in quality of life and patient satisfaction with rising score from 2.6 ± 1.8 to 9 ± 1.2 with p value < 0.0001 and these results come in agreement with Jun [20], Gupta [21] and Panagiotopoulou [22]. While our results come superior than the results of Matteson [23]. Also, failure rate of the technique after 36 months in our study appears comparable with that of Martin [24] and Toor [25] however their series included larger number of cases.

CONCLUSION

Permanent uterine arteries occlusion using non-absorbable 5mm tape suture is an effective, not difficult and promising procedure which considered a good alternative to highly expert, highly complicated and costly other famous permanent uterine arteries occlusion procedures.

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CONFLICT OF INTEREST

No conflict of interest in this study.

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