

## ORIGINAL STUDY

## Endometrial Ablation in the Women's Hospital, HMC, Doha, Qatar- A retrospective cohort.

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### Abstract:

To study the outcome of various methods of endometrial ablation as a treatment of heavy vaginal bleeding, the records and post-operative histories were reviewed of 122 women with a mean age of 47 years who attended the Women's Hospital, Doha, Qatar, between January 2002 and December 2005. Post-operative amenorrhea, oligomenorrhea, or a normal flow plus a satisfied patient were considered evidence of success; a need for further medical or surgical intervention was considered failure. Fifty-eight women (47.5%) had Thermachoice Balloon Ablation with a success rate of 83%; 37 (30%) had Microwave Endometrial Ablation (MEA) with 71% success; and 27 (22%) had Transcervical Resection of Endometrium (TCRE) with 74% success. Apart from the duration of the procedures there were no statistically significant differences in age, parity, pre-operative haemoglobin and platelets, presence of fibroids, pre-operative endometrial preparation by hormones, or final satisfaction level. It is concluded that Balloon Thermal Ablation, MEA and TCRE are equally effective for the treatment of abnormal vaginal bleeding.

**Keywords:** Menorrhagia, Balloon Thermal Ablation, Microwave Endometrial Ablation and Transcervical Resection of Endometrium.

### Introduction:

Menorrhagia affects 20–30% of women and accounts for 12–22% of gynaecology referrals<sup>(1,2)</sup>. The medical management of menorrhagia is the first line of treatment, but it is usually ineffective and at best it reduces menstrual blood loss by only 50%<sup>(3-5)</sup>. Iron deficiency anaemia is the main complication of abnormal uterine bleeding. Therefore up to 60% of women with menorrhagia undergo hysterectomy within five years of their referral to a gynaecologist.<sup>(6,7)</sup>

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Hysterectomy for menorrhagia has a primary success of 100% and is associated with a patient satisfaction rate of approximately 95% but mortality and morbidity rates after hysterectomy are high, and many studies reported that about 35% to 50% of uterine specimens taken demonstrated no histological abnormality<sup>(8-10)</sup>. This led to a shift in the philosophy and practice of healthcare providers who explored alternative therapies including endometrial ablation.<sup>(11-13)</sup> The elimination of the endometrium by thermal energy or resection<sup>(14)</sup>, a procedure appropriate for women with abnormal uterine bleeding who do not wish to preserve fertility and in whom neoplastic processes of both the cervix and uterus have been excluded<sup>(15-17)</sup>.

Endometrial ablation has a 70–90% success rate, rapid recovery, return to work, decreased cost, shorter hospital stay and fewer complications compared to total abdominal hysterectomy.<sup>(18,19)</sup> The surgery is more efficient and effective when it is performed on a thin endometrium and so many surgeons advise that it be done either immediately in the postmenstrual phase or using hormonal preparations to optimise the outcome and ease of the procedure.<sup>(14-17, 20-24)</sup>

Endometrial ablation methods were divided into first and second generations. The first generation of endometrial ablation were carried out under hysteroscopic control; they included neodymium YAG laser, loop electro coagulation of the endometrium, transcervical resection of the endometrium (TCRE), Roller ball electro-coagulation of the endometrium and Versa point. The success rate reported for these procedures was that 30–50% of women had amenorrhea and 35–65% experienced a significant reduction in bleeding<sup>(25,26)</sup>.

The second generation of endometrial ablation was introduced to overcome some of the difficulties, risks and complications associated with the first generation. It included hot liquid balloons as thermachoice, hydrotherm ablation, cryoablation, microwave endometrial ablation (MEA) and Impedance controlled ablation (Nova sure)<sup>(12-14,27)</sup>. There are limited data about the safety and long term efficacy of the second generation techniques.<sup>(14)</sup>



For the first time we have reviewed the experience, results, and complications of endometrial ablation at the Women's Hospital, Qatar.

### Material and methods:

Between January 2002 and December 2005 one hundred and twenty-two endometrial ablations were carried out in the operating theatre settings under general, regional or local anaesthesia using first-generation Transcervical Resection of Endometrium (TCRE) by Loop Diathermy and Roller Ball or second-generation Thermal Ablation (Therma choice) and Microwave Endometrial Ablation.(MEA).

All charts from medical records and operative reports were reviewed to assess the frequency of the various types of endometrial ablations performed during the study period with a focus on the pre-operative preparation and the post-operative pain control, pre- and post-operative stay, and admission to the hospital. The study included all women with heavy vaginal bleeding with or without dysmenorrhoea.

Follow up was done through the medical records and by telephone interviews at six months, one year, 18 months and two years after the procedure.. The postoperative development of amenorrhea, oligomenorrhea, normal amount of flow in addition to patient satisfaction were considered indications of success. Failed cases were those who continued heavy periods with the presence or absence of dysmenorrhoea and who needed further intervention in the form of hysterectomy, repeat endometrial ablation, or insertion of Mirena intrauterine system or hormonal treatment.

### Statistical methods:

Data were tabulated and checked in an Excel spreadsheet before analysis by an SPSS 14.0 statistical package to obtain descriptive statistics, mean and standard deviation for interval data. and frequency and percentage for the categorical variables. To see significance differences in mean levels, OneWay ANOVA with post-hoc Bonferroni analysis was used for interval variables and chi-square tests for categorical variables;  $p=0.05$  was considered significant.

### Results:

Of the 122 patients who underwent endometrial ablations, 58 (47.5%) had Thermachoice Balloon Ablation, 37 (30%) had MEA and 27 (22%) had Transcervical Resection of the Endometrium by Loop Diathermy and Roller Ball (TCRE). The highest frequency of MEA compared to others was in 2005 but the Balloon procedure was performed more than MEA and TCRE. in 2002-2004 [Fig.1].

The overall mean age of patients at treatment was 47 years and their mean parity was five. Apart from the duration of the operation, which was significantly longer in the TCRE group,

there were no significant differences in mean and standard deviations of age, parity, pre-operative haemoglobin and platelets in the groups treated by Balloon, MEA and TCRE [Table1]

Pre-operatively 12 cases (10%) (n=12) had hypothyroidism on L-thyroxin with a normal thyroid function test. Previous surgical histories of caesarean section, myomectomy and tubal ligation were recorded (Fig.2). Pre-operative endometrial preparation using Danazol (Danol:Sanofi-Synthelabo), Triptorelin(Decapeptyl:Ipsen) or Goserelin (Zoladex:AstraZeneca) was used in 36 (29%) patients and specifically 22 of 37 cases in the MEA group received pre-operative preparation.

Ultrasonographic evaluation was performed in all cases with uterine fibroids being detected in 27 of 58 cases in the balloon thermal ablation group, 20 of 37 cases in the MEA group and 9 of 27 cases in the TCRE group. Three of five cases with previous caesarean section in the MEA group had an ultrasound indicating the scar thickness. Only fourteen cases of MEA received intra-operative antibiotic prophylaxis against infection.

Post-operative pain was controlled well by simple analgesia using NSAIDS. None of the cases required prolonged hospital stay or re-admission for pain control or complications. Apart from one case of MEA that was abandoned for the sake of patient safety as the probe was too hot, there were no major complications during the procedures, no uterine perforation, cervical laceration, fluid overload or electrolyte imbalance and no reported cases of post-operative endometritis, intra-uterine pregnancies or death.

Satisfaction in Balloon and TCRE groups appeared to be high compared the MEA group but it was not statistically significant at any time (i.e. 6 month, 12 months, 18 months and 24 months)[Table 2]. One case of failed balloon thermal ablation underwent MEA, and seven of 24 cases of failed endometrial ablation had received hormonal treatment or an inserted mirena device; The rest 14 cases underwent hysterectomy. There were no statistically significant differences in the variables of uterine fibroids, previous histories of tubal ligation or dysmenorrhoea, and pre-operative preparation in the satisfaction and failure groups [Table 3].

Histopathology of the uteri post-hysterectomy in 11 cases of the failed group showed four specimens with fibroids and adenomyosis together, three specimens with fibroids alone, one case of adenomyosis, one case with proliferative endometrium, one case with secretory endometrium and one case of adenocarcinoma (Fig.3).

### Discussion:

In comparing our results it should be borne in mind that all patients underwent endometrial ablation in the Women's Hospital, Doha, Qatar in OT settings while some other researchers



studied thermachoice in an office setting<sup>(28)</sup>.

The duration of the procedure was significantly higher in the TCRE group compared to MEA and balloon thermal ablation and results were similar to other studies<sup>(28,35)</sup>.

Patients who were satisfied at the six month follow up remained satisfied for the two years. No complications were found in our study group of endometrial ablation apart from one case of MEA that was abandoned because of machine error but other studies have reported intra and post-operative

complications of fluid overload, cervical laceration, perforation, endometritis, hematometra, and hydrosalpinx and re-admission for pain management or infection<sup>(28-31)</sup>.

As found in other studies, pre-operative hormonal preparation did not affect the outcome, and the success of endometrial ablation was not dependant upon age, gravidity, parity, duration of dysmenorrhoea or uterine size according to ultrasonography<sup>(29,33)</sup>. About 55% of uteri removed from our failure group showed fibroids or adenomyosis, roughly comparable to other studies<sup>(29, 31)</sup>.

**Table-1 Different pre and intra operative variables in the three modalities of endometrial ablation.**

Variable	Balloon (n=58)	MEA (n=37)	TCRE (n=27)	p value
	mean+/- sd	mean+/-sd	mean+/-sd	
age	47+/-6.0	48.7 +/-6.0	47.0 +/-5.0	0.29
parity	5.3+/-2.6	5.1 +/-3.0	4.6+/-2.9	0.55
pre-op Hgb	12.0+/-1.4	12.5 +/-1.4	11.7+/-2.0	0.11
pre-op platelet	306+/-102	328.7+/-93.9	345.7+/-115	0.41
operation duration	26.9+/-13.7	20.4+/-13.4	41.9+/-22.0	0.00

procedure	n of patients	Satisfied group		Failed group	
		amenorrhoea	oligomenorrhoea	normal flow	Menorrhagia +/- Dysmenorrhoea
Balloon	52	17(32%)	4(8%)	26(50%)	5(10%)
MEA	35	9(25%)	1(3%)	14(40%)	10(29%)
TCRE	19	7(36%)	0(0%)	9(47%)	3(16%)
Balloon	45	17(37%)	5(11%)	20(43%)	3(6%)
MEA	26	8(31%)	1(4%)	11(42%)	6(23%)
TCRE	11	5(45%)	0	5(45%)	1(9%)
Balloon	33	16(48%)	5(15%)	11(34%)	1(3%)
MEA	18	6(33%)	0	8(44%)	4(22%)
TCRE	9	2(22%)	2(22%)	4(44%)	1(11%)
Balloon	29	12(41%)	5(17%)	11(38%)	1(3%)
MEA	5	1(20%)	0	3(60%)	1(20%)
TCRE	3	1(33%)	0	2(67%)	0

**Table -2 satisfied (successful) cases and failed cases at six months, one year, eighteen months, and two years follow up.**

**Table-3 Association of different variables for the outcome of endometrial ablation.**

variable	category	successful outcome	failed outcome	p value
previous TL	not present	65(79.3%)	19(79.2%)	0.86
	present	16(19.5%)	5(20.8%)	
dysmenorrhoea	not present	69(84%)	18(75%)	0.3
	present	13(15.9%)	6(25%)	
fibroid by uss	not present	40(50.6%)	13(54.2%)	0.76
	present	39(49.4%)	11(45.8%)	
pre-op preparation	not present	59(72.8%)	17(70.8%)	0.847
	present	22(27.2%)	7(29.2%)	



## Conclusion.

The success rate and patient satisfaction in our three groups, Balloon thermal ablation (83%), MEA (71%), TCRE (74%)

were comparable with other studies in Scotland<sup>(34)</sup> and elsewhere<sup>(35,36)</sup> so we conclude that first generation TCRE and second generation Balloon thermal ablation and MEA are all effective treatments of abnormal vaginal bleeding.

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