



CURRENT PLACE OF ENDOMETRIAL RESECTION - A REVIEW

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ABSTRACT

Introduction and background: One of the most common entities we come across in Gynecology is abnormal uterine bleeding. In this condition parameters like frequency, duration & regularity of flow of menstrual cycle are altered. In the recent years for the removal of complete endometrial lining of uterus a minimal invasive procedure named Trans cervical Resection of endometrium has been developed. In order to reduce the menstrual bleeding the complete endometrium including deep endometrial basal gland along with superficial myometrium are required to be removed. The basal endometrial layer is removed in order to avoid endometrial proliferation in future.

Methods: A review of literature on endometrial ablation was undertaken using Google search, various studies describing endometrial resection and its advantages, disadvantages and its role in clinical practice were included in this study.

Results: In our study we reviewed different articles available on endometrial resection and results were analysed to assess the current place of hysteroscopic transcervical endometrial resection. All the studies that we reviewed showed good level of patient satisfaction in improving their menstrual blood loss.

Conclusion: In the cafeteria approach of treatment proffered to patients with abnormal uterine bleeding of benign pathology who have normal to just bulky uterus, endometrial resection has its own place and should be offered to women who have completed child bearing but desirous of conserving uterus or hysterectomy is contraindicated. Gynaecological surgeons should be taught this procedure and in proper skilled hands one may avoid many a hysterectomy.

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INTRODUCTION

One of the most common entities we come across in Gynecology is abnormal uterine bleeding (AUB). In this scenario the parameter like frequency, duration & regularity of flow of menstrual cycle are altered. [1] Quality of life is greatly influenced by the effect on emotional, physical & mental health [2,3]. Women of reproductive age in their extremes of age especially in menarche & perimenopause due to heavy menstrual bleeding, suffertiredness and are often unable to do their daily chores [4,5]. The removal of complete endometrial lining of uterus a minimal invasive procedure named trans cervical resection of endometrium (TCRE) has been developed [6]. In order to reduce the menstrual bleeding the complete endometrium including deep endometrial basal gland along with superficial myometrium are required to be eliminated [6,7]. Via endometrial resection the basal endometrial layer is separated in order to avert endometrial proliferation in future.

Background

In 1976 Neuwirth first described operative Hysteroscopy, he used modified urological resectoscope for submucosal myoma

resection [8]. In 1981 Goldrath first described Laser ablation but it was found to be costly and unreliable hence lost approval [9]. Later in 1983 DeCherney and Polan introduced rollerball and loop electrode ablation techniques using electrosurgery in the form of monopolar and bipolar radiofrequency following which in 1988 Lin *et al* delineated various ablative techniques [10].

The prerequisite of endometrial ablation is to determine the cause of AUB to provide appropriate treatment. The international federation of gynecology & obstetrics (FIGO) proposed a globally accepted taxonomy for the classification of AUB by the acronym PALM COEIN where PALM stands for structural causes such as polyp, adenomyosis, leiomyoma and malignancy and hyperplasia and COEIN represents the nonstructural causes such as coagulopathy, ovulatory disorders, endometrial factors, iatrogenic and not otherwise classified [11]. Patients should be of AUB without having fibroids, structural abnormality or adenomyosis. Typically endometrial / hormonal caused AUB responds best to resection of endometrium.

The structural abnormalities can be diagnosed via saline infusion sonogram, hysteroscopy or tranvaginal ultrasound.

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Endocrinological abnormalities, bleeding diathesis like von Willebrand disease, medication like anticoagulant therapy and different contraceptive methods can lead to nonstructural causes of AUB [11]. The basal and functional layer comprised to form the endometrial lining of uterine cavity. The basal layer is useful in regeneration of functional layer. The maintenance of pregnancy, proliferation of endometrium and menstruation are because of functional layer of endometrium [12, 13]. There are different ablation techniques which destroy the functional and basal layer thus removing the complete endometrial lining [14]. Endometrium loses its ability to regrow due to destruction of these layers and thus leading to decrease blood loss during menses [15]. The common histological findings after the ablation of endometrium are inflammation, fibrosis and necrosis of the uterine cavity [16].

The endometrial lining is injured by resectoscopic and non resectoscopic method of endometrial ablation in which a device is inserted into uterine cavity and different energy sources and methods are used [16]. Resectoscopic ablation techniques are called as first generation whereas non resectoscopic methods are second generation technique. The first generation techniques are performed under the guidance of hysteroscopy which uses rollerball, bipolar loop or monopolar electrode. Its main drawback is; it needs operator expertise and safety [14,15]. The second generation techniques are universal and treat the full endometrial lining of uterine cavity. This includes microwave, thermal fluid, laser thermotherapy or bipolar radiofrequency electric energy and cryoablation [17]. These are commonly used due to same results as first generation with more safety and efficacy [17].

Aims and objectives

1. To review the literature available on endometrial resection
2. To assess the current place of endometrial resection in clinical practice

MATERIAL AND METHODS

A review of literature on endometrial ablation was undertaken using Google search and various studies describing endometrial resection and its advantages, disadvantages and its role in clinical practice were included in this study.

In this study we have reviewed all the published articles regarding endometrial resection technique that are used to treat abnormal uterine bleeding (AUB). These articles deal with positive and negative aspects of endometrial resection technique and have been reviewed and discussed.

RESULTS & DISCUSSION

In our study we reviewed different articles available on endometrial resection and results were analyzed to assess the current place of hysteroscopic transcervical endometrial resection. Regarding success rate on the basis of level of satisfaction by analysing the change in blood loss pattern in terms of amenorrhea and reduction in bleeding (hypomenorrhea) studies were reviewed and results were analyzed as shown in table 1. A study conducted by O'Connor H *et al.* [18,19] showed a satisfaction rate of endometrial resection between 85 % and 87 % and improvement in symptoms in form of amenorrhea up to 40 % and 46 % respectively. Bhattacharya S *et al.* [20] in their study showed success rate up to 91 % and women getting relief from

abnormal uterine bleeding in form of amenorrhea 49 %. Hunter DC *et al.* [21] in their study showed that 82 % of the patients were satisfied with transcervical endometrial resection out of which 38 % patients became amenorrhoeic. Vercelleni P *et al.* [22] in their study reported amenorrhea upto 48 %. Duggal *et al.* [24] in their study of 2 years post TCER showed amenorrhea was seen in 44.4 % patients. The patient satisfaction rate on 2 year follow up was found to be 88.8 % and in 6.6 % failure was experienced. Elbareg AM *et al.* [26] in their study among Libyan women showed the success rate of endometrial resection was 92.8 % on 24 months follow up. A study conducted by Chandel *et al.* [27] reported success rate of TCER as 85.5 % which was based on patient satisfaction and improvement in symptoms. Vineet Mishra *et al.* [28] in their study showed 82.6 % women getting relief from abnormal uterine bleeding in form of amenorrhea and 4.35 % women had hypomenorrhea. Kishorkumar V. Hol *et al.* [29] in their study showed that after 12 months of TCER and LNG IUS treatment decreased bleeding was found to be 85.7 % and 87.6 % respectively. Mishra *et al.* [30] in another study over patients with abnormal uterine bleeding with CKD and Renal transplant recipients reported 81.81 % amenorrhea while 2 % developed oligomenorrhea post treatment with TCER. It has been noted that endometrial resection is superior over hysterectomy when it is done by experienced surgeon for reducing morbidity related to surgery [32,33]. Lately endometrial resection has come into focus again for localized carcinoma where resection is done to preserve fertility and a close follow up is mandatory. Some papers have also emerged contrary to the age-old belief for localized adenomyosis resection, which along with medical management shows some promise.

The operative time of procedure, post-operative recovery and hospital stay for TCER is substantially less as compared to hysterectomy. This is a major advantage of endometrial resection [34]. Hysteroscopic resection although is minor surgery in hands of a skilled surgeon, it is associated with few minor and major complications, hence one must use this method judiciously. Its usefulness with decreased morbidity and faster recovery makes it superior to hysterectomy [18,19]. When medical treatment is ineffective, endometrial resection is advocated and it should be advised as a substitute for hysterectomy in women who have completed child bearing but are desirous of conserving uterus or in whom hysterectomy is contraindicated due to comorbidities. Risks associated with endometrial resection do occur [35-42]. They are intraoperative haemorrhage, fluid overload, uterine perforation and long term complication in form of intra uterine adhesion formation and/or complete destruction of uterine cavity. In order to avoid complications associated with conventional TCER procedure to treat AUB effectively, modified technique has been suggested that differ from conventional one in the form that endometrium over uterine fundus and cornual areas are not destroyed. According to study done by Vineet Mishra *et al.* in 2018 and 2021 showed 13.04 % and 18.18 % TCER patients had intraoperative haemorrhage respectively [28, 30] which was controlled using foley's balloon tamponade in uterine cavity. Chandel *et al.* [27] in their study noticed 0.6 % uterine perforation which was comparable to study conducted by Hunter DC *et al.* [21] 1.6 % while Duggal *et al.* [24] had 10 % uterine perforation in their study which he reported as commonest complication.

Table 1 Post-Operative Follow Up success rate on basis of level of Satisfaction and improvement in symptoms

Study	Type of study	Sample size	Follow up	Success rate on basis of level of satisfaction	The changed bleeding pattern (improvement in symptoms)
O'Connor H, Magos A (1996) [18]	Observational	525	5 years	87 %	Amenorrhea 40 %
O'Connor H, Broadbent JA, Magos AL <i>et al</i> (1997)[19]	RCT	172 (116)	1 year	87 %	Amenorrhea 46 %
			2 years	86%	Not reported
			3 years	85 %	21 %
Bhattacharya S, Cameron IM, Parkin DE <i>et al</i> (1997)[20]	RCT	372 (184)	1 year	91 %	Amenorrhea 49 %
			Hunter DC 1998[21]	78 (61)	82 %
Vercelloni P, Oldani S, Yaylayan L <i>et al</i> (1999)[22]	RCT	91 (44)	1 year	Not reported	Amenorrhea 48 %
Pellicano M, Guida M, Acunzo G <i>et al</i> (2002)[23]	RCT	82	1 year	63 %	Not reported
			2 years	60.5 %	Not reported
			Duggal <i>et al</i> (2003)[24]	Prospective study	60 (56)
Perino A, Castelli A, Cucinella G <i>et al</i> (2004)[25]	RCT	116 (58)	1 year	Not reported	Amenorrhea 23 %
			3 years	Not reported	Amenorrhea 24 %
Elbareg AM <i>et al</i> (2014)[26]	Prospective study	120 (70)	2 years	92.8 %	Amenorrhea 40 % Hypomenorrhea 52.8 %
Chandel <i>et al</i> (2015) [27]	Prospective Therapeutic study	179	2 years	85.5 %	Amenorrhea 36.3 % Hypomenorrhea 49.20 %
Vineet Mishra <i>et al</i> (2018)[28]	Prospective study	55 (46)	5 years	86.9 %	Amenorrhea 82.61 % Hypomenorrhea 4.35 %
Kishorkumar V. Hol <i>et al</i> (2019)[29]	Prospective observational study	32 (28)	1 year	88.4 %	Amenorrhea 90%
Vineet V. Mishra <i>et al</i> (2021)[30]	Prospective study	11	5 years	100 %	Amenorrhea 81.81 % Hypomenorrhea 18.18 %

Table 2 Intra & Post-Operative follow up

Study	Operative parameters		Complications		Post-Operative Follow up	
	Mean time of operation	Mean hospital stay	Intra-operative	Post-Operative	Underwent Hysterectomy	Reason for hysterectomy
Chandel <i>et al.</i> [27]	43.4 min	1.4 days	Uterus Perforation 0.6 % Fluid overload 1.1 %	Recurrence Bleeding 11.2% Haematometra 1.7 % Recurrence Bleeding 13.04 % Pain 17.3 %	3.9%	Not reported
Vineet Mishra <i>et al.</i> [28]	Not reported	Not reported	Bleeding 13.04 % Uterus Perforation 0 %	Chronic White discharge 2.17 % Haematometra 2.17 % Chronic White discharge 9.09 %	17.39 %	Persistent menorrhagia 75 % Persistent dysmenorrhea 12.5 % Endometrial Ca 12.5 %
Mishra <i>et al.</i> [30]	21.5 +-8.02 min		Bleeding 18.18 %	Haematometra 9.09%	Not reported	Not reported
Duggal <i>et al.</i> [24]	40.16 min	2.7 days	Bleeding 3 % Uterus Perforation 10 %	Not reported	Not reported	Not reported
Hunter DC <i>et al.</i> [21]	Not reported	Not reported	Bleeding 3.27 % Uterus Perforation 1.6 %	Not reported	16 %	Persistent dysmenorrhea 15 %
Scottish study group [31]	Not reported	Not reported	Uterus Perforation 1 % Fluid overload 1 %	Toxic Shock syndrome 0.1 %	Not reported	Not reported

Perforation of uterus was noticed mainly during cervical dilatation for resectoscope introduction and during cornual resection. Fluid overload was noticed in 1.1 % [27] which was comparable to study conducted by Scottish Hysteroscopy Audit Group [31]. In follow up after the procedure in two studies persistence of bleeding in 11.2 % , 13.04 % was noticed for which patient had undergone hysterectomy as final measure in 3.9 % , 17.39 % cases respectively [27, 28]. In post-operative events haematometra was noticed in 1.7 % and 2.17 % for which ultrasound guided drainage was done [27, 28].

Skilled operator who understands the anatomy and technique is very important for good results as well as to avoid complications. In a good operators' hands the results are good. The procedure can help preserve many a uterus and avoid the morbidity and mortality associated with hysterectomy. Of course the patients should be selected well and operator should have requisite expertise.

Because of the above two conditions not being fulfilled this procedure has fallen into disrepute. In addition with the advent of second-generation ablation techniques, which are simpler and give as good results, it has further dented the popularity of this procedure.

CONCLUSIONS

In the cafeteria approach of treatment recommended to patients with abnormal uterine bleeding of benign pathology who have normal to just bulky uterus, endometrial resection has its own place and should be offered to women who have completed child bearing but desirous of conserving uterus or hysterectomy is contraindicated. Endometrial resection is a skill-based procedure. Patients must be selected well in order to get a good result. Gynaecological surgeons should be taught this procedure and in proper skilled hands it may avoid many a hysterectomy. Let us hope this dying art gets revived enough so that it remains alive in the armamentarium of the general gynaecologist.

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