

**A COMPARATIVE STUDY OF THE ENDOMETRIUM BY
ASPIRATION AND HYSTEROSCOPY DIRECTED BIOPSIES IN
ABNORMAL UTERINE BLEEDING IN PERIMENOPAUSAL
WOMEN**

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CERTIFICATE

This is to certify that this dissertation entitled “**A COMPARATIVE STUDY OF THE ENDOMETRIUM BY ASPIRATION AND HYSTEROSCOPY DIRECTED BIOPSIES IN ABNORMAL UTERINE BLEEDING IN PERIMENOPAUSAL WOMEN**” has been done by Dr.L.Nalini ,Post Graduate in M.D(Obstetrics and Gynecology) under my overall supervision and guidance at Govt.Kasturba Gandhi Hospital, Madras Medical College, Chennai in partial fulfillment of regulations of TamilNadu Dr.M.G.R. Medical University for the award of M.D.Degree in Obstetrics and Gynecology.

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INTRODUCTION

A significant proportion of the surgical workload of a gynecological department involves the exclusion of sinister endometrial pathology in middle –aged and older women, who present with abnormal uterine bleeding. Abnormal uterine bleeding is one of the most common problems in the perimenopausal age group. The major concerns include endometrial hyperplasia and carcinoma and other abnormalities are chronic endometritis and endometrial polyps. However, in the majority of cases, no organic pathology would be found.

The traditional method of assessing the endometrium of a women is by dilatation & curettage, but over the years, a number of other procedures have been developed, which require expensive equipment and expertise. Hence the need for a relatively simple, quick, safe and inexpensive method for assessment of endometrium arises. Abnormal uterine bleeding (AUB) warrants a thorough evaluation in perimenopausal women and hence it is our bounden duty to perform it in a cost effective manner with the available resources.

Endometrial sampling as an outpatient using a flexible plasticized curette (eg. Pipelle, Endosurgical Ltd, Guildford, U.K.) has been found to be

as accurate as formal curettage, and is a well-tolerated procedure and hence obviates the need for ward admission, operating theatre time and anesthesia.

Hence this study was conducted at Government Kasturba Gandhi Hospital for Women and children to analyze the role of Pipelle's endometrial sampling and its accuracy in the assessment of endometrial pathology and its validity has been compared to hysteroscopy-guided biopsy and further to the gold standard hysterectomy.

REVIEW OF LITERATURE

DYSFUNCTIONAL UTERINE BLEEDING

Dysfunctional uterine bleeding (DUB) is defined as abnormal bleeding from the uterus in the absence of organic disease of the genital tract.

Novak et al defines it as an abnormal bleeding from the uterus unassociated with tumor, inflammation or pregnancy.

According to American College of Obstetrics and Gynecology, Dysfunctional uterine bleeding is considered as bleeding from the uterine endometrium unrelated to anatomic lesions of uterus.

ETIOLOGY:

The abnormal bleeding can be caused by a wide variety of disorders. It may represent a normal physiological state, and observation alone may be warranted. Alternatively, the bleeding can be a sign of a serious underlying condition necessitating aggressive treatment that could include a major procedure.

The causes for the bleeding in the perimenopausal period are hormonal, in majority of the cases, secondary to estrogen withdrawal – a physiological state or minimal endocrine dysfunction arising in the ovary, pituitary or hypothalamus. Other causes include dysfunction of the thyroid

gland, bleeding diathesis, pregnancy complications and more importantly local pathology including infection, benign polyps and malignancy.

Hence the need to embark upon a diagnostic procedure for the assessment of endometrium can be over emphasized definitely.

Abnormal and excessive uterine bleeding without structural pathology occurs in women of all ages but is more common in adolescent and perimenopausal women. In the perimenopausal years, menstrual cycles become irregular due to the decreased number of ovaries follicles and their increased resistance to gonadotrophic stimulation, resulting in a low level of estrogen, which cannot keep pace with the endometrial growth.

ASSESSMENT OF ENDOMETRIUM

1) ENDOMETRIAL CYTOLOGY

Pap smear – it is an unreliable diagnostic test because only 30-50% of patients with endometrial carcinoma have abnormal Pap test results.

2) ENDOMETRIAL SAMPLING BY ASPIRATION:

It allows more thorough evaluation of the endometrium as it can be used to diagnose or exclude many types of endometrial disease as an outpatient procedure.

Of the available in-office endometrial sampling devices, the pipelle suction aspirator is perhaps the most convenient for many office-based physicians.

A diagnostic biopsy of the endometrium, under certain circumstances as an office procedure without anesthesia was introduced in 1924 (Kelly HA et al)

Later in 1970, the vacuum curettage was introduced, which contains a stainless steel cannula with a curved tip and a wide slit attached to plastic aspiration chamber and a vacuum for use in office (Jenser JG et al in 1970)

In 1977, a prospective study of 100 women among high-risk category for endometrial carcinoma was undertaken, using Vabra aspirator without anesthesia. The procedure took less than 2 minutes and there were no complications.

Today, many instruments are commercially available for sampling the endometrial cavity, some made of plastic and others made of stainless steel.

The Pipelle suction Aspirator was the prototype for the plastic devices that have followed. This self-contained device removed the requirement of early devices with external means for generating the necessary negative pressure for aspirating endometrial tissue into the cannula.

The Pipelle endometrial Aspirator was recently compared with the well-established Vabra aspirator and Tis-u-trap. It was concluded that Pipelle aspirator obtained comparable amount of tissue like that of Vabra Aspirator and that the cost of Pipelle was 40% less than that for Vabra Aspirator.

ADVANTAGES:

1. It can be used as an office procedure.
2. It needs no anesthesia
3. It needs no prior cervical dilatation.
4. It has negligible risk of sepsis, perforation and hemorrhage.
5. It causes less uterine cramping.
6. It is cost effective.
7. Greater patient acceptance.

The technique involves gentle insertion of the device through the cervix into the uterine cavity until the fundus is reached. Uterine length can be recorded. The device is then rotated a few times through 360° that is around all cavity wall with gentle back and forth abrasive movements to achieve a high and representative tissue yield. Multiple passes of the suction cannula may be required.

So the choice of an endometrial sampler should be based on the following.

- 1) Ease and convenience of use.
- 2) Obtaining adequate specimen for histology.
- 3) Minimal discomfort and pain
- 4) More economical
- 5) Comparable efficacy and accuracy.

The Pipelle endometrial aspirator fulfills the above-mentioned criteria and hence office endometrial sampling using Pipelle was chosen as the first step in evaluating our patients with abnormal uterine bleeding in this study.

The diagnostic accuracy of office based endometrial assessment using pipelle is 90 – 98% when compared with subsequent findings of dilatation & curettage and for hysterectomy (Grimes DA et al in 1982

3)ENDOMETRIAL BIOPSY TECHNIQUES:

i) Office Endometrial biopsy

It refers to incomplete diagnostic curettage carried out in an anaesthetized woman, by means of a narrow biopsy curette. One or two strips of endometrium are obtained and sample sent for histopathologic examination. Prior cervical dilatation is not necessary. Uterine perforation occurs in 1-2 per 1000 procedures

ii) Dilatation and curettage

The blind nature of the procedure has every chances of missing the diagnosis of small endometrial polyps, sub mucous fibroids and focal areas of malignancy. Its advantages are that it may be curative in few cases of DUB, that too which now has a questionable significance and it could obtain adequate specimen for histopathological diagnosis.

The disadvantages are the need for anesthesia, infection, perforation, and synechiae formation with excessive curettage. The risk of perforation ranges anywhere between 0.6% and 1.3%. The risk of hemorrhage is about 0.4% .It is also associated with significant sampling errors. In 10.25% of the procedures, it does not uncover the endometrial pathology.

iii) Directed hysteroscopic biopsies

iv) Semi directed hysteroscopic biopsy

- Blind curettage following a diagnostic hysteroscopy.

v) Endometrial resection biopsy at open hysteroscopy.

4)IMAGING TECHNIQUES

i).TRANSABDOMINAL ULTRASONOGRAPHY

A full bladder is a must, which provides the acoustic window. Transabdominal ultrasonography can detect endometrial thickness, uterine pathology such as fibroid and polyps.

ii) TRANS VAGINAL SONOGRAPHY

Endovaginal sonography is performed employing an endovaginal transducer probe. A probe of acoustic frequency of 5 to 7.5MHz is used. Due to improved resolution of the high frequency transducer and the proximity of the probe to the organ imaged, endovaginal sonography has been found to provide better visualization of the pelvis and perfect clarity of hollow organs as well as adjacent structures.

Limitations:

- 1) Intact hymen
- 2) Very narrow vagina
- 3) Congenital anomalies of the genital tract where introduction of the probe is difficult.
- 4) Pedunculated myoma or ovarian masses, which are larger in size, may not be delineated properly.

iii) SALINE INFUSION SONOGRAPHY

This involves performing a transvaginal ultrasound during or after introduction of sterile saline with any of the variety of available catheters. Also known as hydrosonography and saline infusion sonography –this sharply defines cavity contours and readily demonstrates even small

intrauterine lesions, the sensitivity and specificity of which exceed that of standard transvaginal sonography.

iv) HYSTEROSCOPY

History and development:

The hysteroscope that is being used today has evolved over the past 175 years. Pantaleoni described the first hysteroscopy in 1869.

In 1895, Ernest Bumm from Germany reported to Vienna congress of his uterine endoscope. In 1914, Alfred Heineberg presented a new hysteroscope. In 1925, Dr. Herold Seymour used a hysteroscope with a light at the proximal end.

In 1934, Carl Schroeder offered the first pictures taken through hysteroscope.

Marleschki in 1965 presented the contact hysteroscope. The Hamou Microhysteroscope in 1980 consisted of a 25 cm long 4mm diameter sheath endoscope with a 90-field angle, called a microcolpo hysteroscope.

Instrumentation in Hysteroscopy:

There are three main types of rigid hysteroscopes in use today.

1. Panoramic Hysteroscope

It consists of a telescope and an outer sheath made of stainless steel. The outer sheath contains side channels for the introduction of distension

media or instruments. An obturator fits into the sheath to facilitate passage through the cervix. The telescope ranges from 4 – 6mm in diameter and outer sheath 5-8mm in diameter. The optical systems are designed to give a direct view (0 degree) or a range of oblique views (30 degree).

2. Contact Hysteroscope

First reported by Marleschki, this consists of an optical glass stem that serves both as a conductor of light and as the conduit for returning image. They range from 4mm – 6 or 8 mm in outer diameter. It consists of 3 components (i) lens system in which the tissue is in focus when touching the distal surface of the objective lens. (ii) Cylindrical chamber – acts as a light collector & (iii) Eyepiece for magnification.

Light Source

A directed light

Advantages

- (i) Cavity can be examined without interference by blood and debris.
- (ii) No need for special light source or distension medium.
- (iii) 4mm endoscope requires no cervical dilatation in nulliparous patient and 6mm instrument can be used without dilatation in a multiparous patient.

Disadvantages:

Decrease in visual field preventing panoramic examination.

3. Micro – Colpohysteroscopes:

The micro – colpohysteroscope utilizes 4mm telescope- magnification range between 1x, 30x, 60x and 150x. Ancillary equipments required include a cold light source of 150 watts, flexible fiber optic cable for light transmission, and a hysteroflator for CO₂ distension. Advantage of micro-colpohysteroscope is that it can be used to examine the squamo-columnar junction also.

Light Sources:

Most light sources for hysteroscopy utilize halogen or xenon lamps with power output ranging from 100-300 watts. The light is transmitted from the lamp to the endoscope by a fiber optic cable. With that, portion of light in the infrared spectrum (and thus the heat) filtered, resulting in what is termed ‘cold’ light. The length of the cable, the number of interphases at junctions between fibre bundles, the diameter of the endoscope and the condition of the cable influence the amount of light transmitted from the source to the object.

Flash generators are used for still photography and are capable of supplying 500 watts per second. Video hysteroscopy can be accomplished with a light source of 300 watts. Single lens reflex cameras with automated exposure are probably the earliest to use for still photography. Generally, lenses larger than 100mm are required for 35mm film. Instant photography is also possible using reading available commercial cameras.

Distending Media for Hysteroscopy

The uterine cavity constitutes a potential space that can be created by distension. Rubin first introduced the use of CO₂ as a distending medium. Agents that have since been utilized frequently are dextran 70 and low viscosity fluids.

Carbon Di-Oxide

CO₂ insufflation of uterine cavity is often achieved utilizing a cervical suction cup to minimize the egress of gas. The cup is fixed to the cervix by vacuum pump attached to hysteroscopic insufflators. The hysteroscope is inserted through the sheath. Using CO₂ as the cervical dilator, under direct vision, the scope is slowly advanced into the uterus. The continuous flow of CO₂ compensates for loss of gas through the fallopian tube and by

absorption. Maximum pressure reached by these instruments is 200mmHg and a flow rate is <100ml/min usually 70-80 ml/min. The normal levels for hysteroscopy are 100mmHg and 40-60ml/min. Use of CO₂ as a distending media is safe. There is practically no alteration in ECG, pCO₂ or pH during CO₂ hysteroscopy. Shoulder pain can occur which can be minimized by placing the patient in a slight Trendelenberg position.

The CO₂ should be introduced using only a hysteroflator so that the pressure and flow are maintained at optimal levels. The insufflators used for laparoscopy should never be used for hysteroscopy.

Dextran – 70 – Hyskon

Hyskon is composed of 32% dextran in 10% dextrose. This mixture is optically clear, electrolyte free, non-conductive, biodegradable and immiscible with blood. After placing the hysteroscope inside the uterine cavity Hyskon is introduced from a filled 50ml syringe through IV tubing to the inflow channel. This does not require any special instruments. The main advantage is the immiscibility of Hyskon with blood. During cervical dilatation endometrium gets dislodged which gets anchored to one pole and may be misinterpreted as polyp or adhesions.

High viscosity of Hyskon causes stickiness on drying leading to jamming of

instruments. These are some of the disadvantages encountered when Hyskon is used. Very rarely it can cause anaphylactic reactions.

Low – Viscosity Fluids

Low viscosity fluids such as 5% or 10% Dextrose in water, 4% and 6% dextran, ringer lactate and normal saline provide adequate distension of the uterine cavity. The fluid is placed in a plastic container wrapped in an inflatable cuff. The cuff is inflated to 80-120mmHg in order to maintain a constant pressure and flow. Usual intrauterine pressure reached with these media is 40mmHg. The field becomes obscured rapidly due to egress of fluid through the cervix. Since dextrose and saline are miscible with blood view becomes impaired and constant rinsing is necessary. These are less expensive and readily available. Risks due to media extravasations are minimal.

Endometrial study by Hysteroscope

When the hysteroscope is introduced into the cervical canal under vision, the cervical canal is seen as a circular or oval structure. The antero-posterior diameter is smaller and has a smooth mucous membrane. The whitish appearance of the mucous membrane differentiates it from the lining of the uterine cavity. By steady and slow progress in the cervical canal, it is

possible to assess the cervical mucus. The length, morphology and pathologic features can be studied. The isthmus, details about the glandular and papillary structure of the mucosa can also be studied.

Proliferative Endometrium

- ❖ The surface is smooth and the color is white or yellow.
- ❖ Height of the endometrium is 2.5mm.
- ❖ Pores of endometrial glands are seen and are situated regularly.
- ❖ Superficial vasuclarisation forms are relatively poor and are seen as interrupted and punctuate lines.
- ❖ Tubal ostia are normal.

Secretory Endometrium

- ❖ The surface is smooth or slightly rough. The color varies from yellow to ochre.
- ❖ Height of the endometrium is 4mm – 5mm
- ❖ Superficial vessels have typical geometrical pattern mimicking a net.
- ❖ Tubal ostia are normal.

Natural Atrophy

- ❖ Surface is smooth and appears as white or yellow.
- ❖ Height of the endometrium is less than 1mm.
- ❖ Visible glandular openings are absent.
- ❖ There is complete absence of superficial vessels though deeper vessels of stroma can be seen.
- ❖ The tubal ostia are either completely obliterated or seen as fibrous folds.

Induced Atrophy

- ❖ The surface is rough and the color is ochre.
- ❖ Height is 1mm – 2mm.
- ❖ Visible glandular pores are absent.
- ❖ Superficial vessels are inadequate but deeper stromal vessels are seen.
- ❖ Tubal ostia show characteristic atrophy.

Complex Hyperplasia

- ❖ This presents with a rough surface and the color is variable from white to yellow or even pink.
- ❖ The height of the endometrium is uneven and usually very thick.
- ❖ Rich superficial vascularisation with no specific pattern is seen.
Endoscopic examination easily provokes hemorrhage.

- ❖ Though some glandular orifices can be seen, they are no longer well delineated and the regular disposition is lost.
- ❖ Tubal ostia are normal.

Simple Hyperplasia

- ❖ As in complex hyperplasia, the surface is rough and the color varies from white to yellow or even pink.
- ❖ The height of the endometrium is uneven and thick. Rich superficial vascularisation with network appearance is seen.
- ❖ Trapped in the meshes of the net are several transparent cysts, which often attain a diameter of several mm. Some are filled with brown liquid suggesting intra cystic hemorrhage.

Pseudo – Decidualisation

- ❖ The surface is rough.
- ❖ Height of the endometrium is variable and has pseudo polypoidal appearance.
- ❖ Rich Congestive vascularisation is noted as seen in secretory phase.
- ❖ Visible glandular pores are absent.
- ❖ Tubal ostia are normal.

Indications for Hysteroscopy

1. Unexplained abnormal uterine bleeding
2. Evaluation of endometrial cavity after abnormal hysterosalpingogram.
3. Evaluation of developmental anomalies
4. Evaluation of intra uterine adhesions.
5. Location of displaced intrauterine devices and foreign bodies.
6. Unexplained infertility
7. Recurrent pregnancy loss.

Contraindication for Hysteroscopy

1. Pregnancy
2. Active or recent endometrial infection
3. Menstruation – a relative contraindication.
4. Patients with cardiac & pulmonary disease-a relative contraindication.

Advantages

1. It allows accurate diagnosis.
2. It provides a sample from site which is most likely to yield a positive diagnosis.
3. Therapeutic procedures can be carried out.

Disadvantages

1. Expensive
2. An invasive procedure requiring anesthesia and theatre set up.
3. Risk of perforation, bleeding and fluid overload cannot be ruled out.
4. Electrolyte imbalance and gas embolism.
5. Delayed complications include infection, secondary hemorrhage, hematometra and cyclical pain.
6. Needs specialized training

REVIEW OF STUDIES ON HYSTEROSCOPY AND ENDOMETRIAL ASPIRATION

Dangal G in 2003 performed a description study of 84 women who have had abnormal vaginal bleeding and concluded that a thorough work up is needed for the perimenopausal / postmenopausal woman presenting with abnormal vaginal bleeding especially to rule out malignancies.

It was observed in the study that malignant disease was found in 7.7% cases in pre-menopausal ladies while it was 24.3% (three times higher) in postmenopausal women.

Alper Tanriverdi H, Aykut Barut et al in 2004 studied whether pipelle biopsy is really adequate for diagnosing endometrial disease, and concluded that the pipelle device is a limited endometrial sampling

technique. Risk for endometrial carcinoma, hyperplasia and polyps. Results of the study: in 79% of patients, the pipelle endometrial histology was in agreement with the D & C histology results. It was unable to diagnose only one of all the observed endometrial malignancies.

Christine Bain, David E, Kevin G et al did a randomized comparison on unselected premenopausal women to formally evaluate the clinical benefit of outpatient hysteroscopy over traditional vaginal examination and endometrial biopsy. They concluded that outpatient diagnostic hysteroscopy is an acceptable procedure and may give more reassurance, but it did not influence clinical management, especially with respect to hysterectomy rate. Outpatient hysteroscopy should be reserved for selected cases, but when performed in a non-selective manner, it has little influence on clinical management and increases costs.

Manganiello PD, Burrows LJ, Dain BJ et al in USA compared pipelle suction curette with vabra aspirating catheter in terms of their ability to obtain a sufficient amount of tissue. The pipelle obtained adequate sample in 78 of 79 cases (98.7%) and they concluded that Pipelle and Vabra have equal diagnostic accuracy. Vabra obtained adequate samples in 75 of 79 (94.9%) of cases.

In another study, Pipelle aspiration biopsy was performed in 135 premenopausal patients before curettage. 13 patients (10%) have different histological results on Pipelle as compared with curettage. Of those only 5 had polyps and Pipelle missed three. In total, 18 patients had hyperplasia, of which pipelle sampling missed seven (39%)

Guido and associates did Pipelle biopsy in patients with known carcinoma and undergoing hysterectomy and found that pipelle biopsy provided adequate tissue for analysis in 97%. Malignancy was detected in 83%, because tumors localized in a polyp or small area of endometrium may go undetected, the researches concluded that the “Pipelle is excellent for detecting global processes in the endometrium”.

Tahir MM, Bigrigg MA, Browning JJ et al in 1995 did a randomized controlled trial to compare the use of outpatient and inpatient procedures in the investigation of abnormal uterine bleeding in 400 women, above the age of 35 yrs and concluded as follows.

- 1) The quality of histological samples obtained by outpatient pipelle were comparable to these obtained by formal inpatient curettage.
- 2) TVS and endometrial biopsy can safely be used as the initial investigations in the management of AUB.

3) Hysteroscopy should be used as a second line investigation.

Krampl E, Soby B and Istre O et al in 1997 retrospectively analyzed 324 biopsies, which were followed by Transcervical resection of the endometrium or hysterectomy to evaluate the diagnostic accuracy of pipelle endometrial biopsies. The results were: The positive predictive value for endometrial malignancy was 100%. Insufficient tissue was obtained in four cases, in three there were sub mucous fibroids, one patient had atrophic endometrium. Adequate preoperative histological assessment of the endometrium was feasible with Pipelle biopsies, and they are highly accurate in detecting endometrial malignancy.

Petrozza J, Poley K, Curtis MG, Hopkins MP et al in 1999 systematically reviewed the outpatient biopsy devices and its efficacy. Pipelle, the most frequently evaluated device has a failure rate of 8%. Histologically inadequate samples occurred in 15% of samples overall and in 13% of pipelle samples. Failure rates and inadequate sampling rates are higher among postmenopausal women, around 12% and 22% respectively. The incidence of cancer and hyperplasia are seen in about 1% of inadequate specimens.

Paull HF, Dijkhuizen MD, Ben WJ Mol et al conducted a meta analysis to find the accuracy of endometrial sampling in the diagnosis of patients with endometrial carcinoma and hyperplasia and concluded that pipelle was the most sensitive technique with a sensitivity of 81% and the specificity of all devices was >98%

Ajit Kuruvilla, Karen Sohan and Samuel Ramewak in 2004 analyzed outpatient endometrial sampling as the sole primary method for assessing abnormal uterine bleeding in women over 35 years. 120 women were included in the study. In 32 cases (31.4%) the sample was inadequate or no sample was obtained. The very thin endometrium (atrophic <4mm) was found to be the cause in most of the cases. The chances of serious endometrial pathology in the presence of a very thin endometrial lining are highly unlikely.

Cooper JM and Erickson ML et al studied various endometrial sampling techniques and concluded that no technique surpasses the sensitivity and specificity of hysteroscopy with directed biopsy. For physicians who are untrained or lacking the expertise, can go in for simple in-office endometrial sampling techniques with no visual control to obtain reasonably reliable samples with negligible patient discomfort.

Critchley HO, Warner P et al in University of Edinburgh medical school compared the three outpatient procedures within controls defined by age and menopausal status. Investigations were i) blind biopsy alone ii) hysteroscopy with biopsy iii) TVS. Within this design, two devices for endometrial biopsy were compared, the pipelle and Tao brush.

Results: Pipelle biopsy provided adequate sample in 79% of moderate risk women, but only 43% of high-risk women. Minor adverse effects (e.g. shock, patient distress) occurred in 16% and 10% of women for hysteroscopy and blind procedure respectively.

Clark TJ, Mann CH, Shan N et al reviewed the published medical literature over a period of 20 years 1980 -1999 and the pooled results were – outpatient endometrial sampling has modest accuracy in diagnosing endometrial hyperplasia. Therefore, additional endometrial assessment to the undertaken only if symptoms persist or intra uterine structural abnormalities are suspected.

Bunyavejchevin S, Triratanachat S et al compared pipelle versus fractional curettage for endometrial sampling. The sensitivity and specificity of pipelle in endometrial tissue samplings compared with fractional curettage were 87.5 and 100% respectively. Pipelle significantly produced less pain than fractional curettage.

Ben Baruch G, Seidman DS, Schiff E et al compared outpatient endometrial sampling using Pipelle endometrial sampling curette and conventional Dilatation & curettage in 172 patients and 97 patients in both groups respectively. The diagnosis was identical in 95.5% of cases. Endometrial sampling with Pipelle was well tolerated causing only slight discomfort.

Van den Bosch T, Vandendael A, Wranz PA et al evaluated the accuracy of endopap and Pipelle sampling in South Africa. Their data tend to favor pipelle against endopap as diagnostic tool in endometrial disease in symptomatic postmenopausal women. The sensitivity of endopap and pipelle were 56% and 91% respectively and specificity of 94 and 100% respectively.

Van Den Bosch T, Vandendael A et al in South Africa investigated the value of combined use of vaginal sonography and endometrial sampling in the office for the diagnosis of endometrial disease in 140 postmenopausal women. They concluded that the sensitivity of Pipelle

sampling for endometrial carcinoma was excellent, but relatively weak for polyps & mucous myomas.

Kavak Z, Ceyhan N and Pekin S investigated the value of pipelle endometrial sampling with and without sonographic measurement of endometrial thickness and diagnosis of endometrial disease. A prospective study of 78 patients showed pipelle endometrial sampling had a sensitivity of 73% and a specificity of 100% for endometrial disease. The use of ultrasonography increased the sensitivity of Pipelle aspiration from 73% to 90%

Gabor Kovacs, Glen R. Hocking et al assessed the efficacy of combination of scraping and suction, compared to conventional curettage and found scraping & suction combined to be superior.

Morse AR, Ellice RM et al assessed the reliability of outpatient endometrial aspiration sampling to be used in subsequent patient management. The results show that this technique allows recognition and distinction between cystic hyperplasia, adenomatous hyperplasia, and carcinoma.

Polson DW, Morse A Beard RW et al conducted a retrospective study over three years to assess the acceptability and value of endometrial Aspiration cytology in endometrial pathology. It is concluded that with an experienced pathologist, the endometrial sampler should be used routinely for the primary investigation of DUB and postmenopausal bleeding.

Liza Sister, Rameshkumar K, Lillian Sister et al studied the value of endometrial aspiration in symptomatic peri and postmenopausal women at St. John Medical college and Hospital, Bangalore. The sensitivity of the procedure was 81.63% and specificity was 83.33%

Salet Lizee D, Gadonneix P et al compared the reliability of different methods of investigating the endometrium. A total of 178 patients were evaluated using endometrial cytology, Endometrial biopsy with pipelle, ultrasonography and hystero-graphy and hysteroscopy.

Results: The combination of hysteroscopy and endometrial biopsy is the diagnostic method of choice for the endometrium.

Shagaj H, Khalid S et al did a controlled analysis of factors associated with insufficient sample on outpatient endometrial biopsy. In conclusion, when reassuring a woman with insufficient sample on OP endometrial biopsy, one can be confident about absence of pathology provided the hysteroscopic and sonographic endometrial assessment is consistent with endometrial atrophy.

Torejon R, Fernandez – Alba JJ et al in Spain determined the sensitivity, specificity of hysteroscopic exploration in the diagnosis of endometrial hyperplasia and adenocarcinoma in women with abnormal uterine bleeding. 1398 patients 57.3% premenopausal and 42.6% postmenopausal were studied.

Endometrial Hyperplasia

	Premenopausal	Postmenopausal
Sensitivity	71.8%	85.1%
Specificity	96.4%	100%
Global diagnostic precision	92.5%	97.3%

Adenocarcinoma

Sensitivity	100%	100%
Specificity	99.4%	99.4%
Global Diagnostic Precision	99.5%	99.5%

Garuti G, Sambruni I, Luerti M et al estimated the accuracy of hysteroscopy in predicting endometrial histopathology. Hysteroscopy was accurate in distinguishing between normal and abnormal endometrium. Sampling is recommended in all hysteroscopies showing unevenly shaped & thick endometrial mucosa.

Lo KW and Yuen PM in Hong Kong evaluated the role of outpatient diagnostic hysteroscopy on identifying anatomic pathology and histopathology in the endometrial cavity & concluded that hysteroscopy without biopsy carries low sensitivity and positive predictive value and endometrial biopsy should be performed during hysteroscopy for accurate diagnosis of endometrial histopathology

AIM OF THE STUDY

This study was conducted at Government Kasturba Gandhi Hospital for women and children, Chennai during the period October 2004 to May

2006 to assess the validity of endometrial sampling as an outpatient procedure by Pipelle in the evaluation of perimenopausal bleeding and to compare its efficacy with hysteroscopy guided biopsy and further hysterectomy as gold standard, in diagnosing the endometrial pathology of patients with dysfunctional uterine bleeding.

TYPE OF STUDY

A prospective descriptive comparative study analyzing the role of endometrial sampling as an outpatient procedure in perimenopausal women with abnormal uterine bleeding.

MATERIALS AND METHODS

200 Women with clinical diagnosis of perimenopausal bleeding were selected at random from gynecology OP department of Govt. Kasturba Gandhi Hospital based on the following inclusion and exclusion criteria and were subjected to endometrial sampling by Pipelle's sampler followed by hysteroscopy and guided biopsy. The efficacy of Pipelle Endometrial Aspirator was determined by correlating the histopathological results obtained from it and from hysteroscopy guided biopsy and further correlation was made in those patients who underwent hysterectomy where the same was identified as gold standard.

PATIENT SELECTION :

INCLUSION CRITERIA

1. Patients with age group in the range of 35 and above with menorrhagia, polymenorrhagia, metrorrhagia.
2. The study included only parous women.
3. Past H/O similar episodes in menstrual years.
4. Not on any contraceptives.
5. No demonstrable pelvic pathology.

6. No evidence of blood dyscrasias
7. Patients who do not have any other medical or surgical complications and who do not require any emergency management were selected for this study.

EXCLUSION CRITERIA

1. Nulliparous women
2. Any woman who develops vaginal bleeding following cessation of periods for a minimum of 1 year (postmenopausal bleeding)
3. Patient on contraceptives.
4. Women with demonstrable pelvic pathology like fibroid uterus.
5. Patient with severe anemia due to hemorrhage were excluded from the study since they required immediate intensive care.
6. Patients with profuse bleeding were also excluded from the study since they required emergency therapeutic curettage.
7. Patients with medical complications like uncontrolled diabetes mellitus or hypertension were also excluded from the study to preclude any anesthetic or surgical risks during hysteroscopy.

A detailed history was taken and recorded from all the patients thus selected. These patients were then subjected to a general and bimanual pelvic examination. All causes of abnormal uterine bleeding were ruled out. The following baseline investigations were performed on all patients.

Urine examination for albumin, sugar and deposits.

Blood Hemoglobin estimation (in gm%)

Electro cardiography for patients above the age of 35 years and X-ray for anesthetic fitness.

Anesthetic assessment was made on the day of admission. The patients were advised to have a light dinner before 10pm on the night prior to hysteroscopy. The patient was prepared as for any other surgical procedure. The next day, prior to hysteroscopy, endometrial sampling was done using Pipelle's aspirator on all these patients.

ENDOMETRIAL SAMPLING WITH THE PIPELLE ASPIRATOR

The patient was examined and re-assessed by the anesthetist in the theatre. After a routine examination of Temperature, pulse, blood pressure and cardiovascular and respiratory system examination, patient was put in lithotomy position after emptying bladder.

The procedure is then done as follows:

- Insert the speculum
- Clean the cervix with an antiseptic such as povidone iodine.
- Slowly catch the anterior lip of cervix with volsellum.
- Advance the pipelle through the cervical canal to the fundus applying gentle traction on the volsellum to straighten the cervical canal.
- Remove the piston, pulling tissue into the cannula.
- Rotate the pipelle while removing it from the uterine cavity.
- Place the tissue in a formalin solution and send to the laboratory for histological diagnosis.

After endometrial sampling with Pipelle's aspirator, hysteroscopy was performed. In this study, hysteroscopy was performed under intravenous ketamine Anesthesia

Anesthesia

Route – Intravenous

Drugs used – i) Ketamine hydrochloride 2mg /kg.

ii) Diazepam 10mg,rarely.

Instruments for Hysteroscopy

- Speculum
- Volsellum
- Sponge holding forceps
- A flexible hysteroscopy with a light source
- Hysteroscopic Biopsy curette
- Distending medium – normal saline or ringer lactate with a drip set.
- Insufflation cuff.
- Dilators Mathew Duncan.

PROCEDURE

Under anesthesia after catheterizing the bladder a bimanual pelvic examination was done. After introducing sim's speculum, the anterior lip of the cervix was caught with volsellum. After measuring the length of uterine cavity, the internal os was dilated upto 7 Mathew Duncan dilator which was sufficient in most of the patients. A flexible hysteroscopy was introduced into the cervical canal under vision. The inflatable cuff surrounding the distending medium was inflated to 100mm Hg and maintained between 80-100mm Hg. The drip set attached to the distending medium was attached to the inflow channel of the hysteroscope. The uterine cavity was examined

and the following points were noted. The nature of surface and color of the endometrium were noted. The glandular opening, vascular pattern & presence of any other abnormalities, tubal ostia were visualized. The fluid used as distending medium will rinse off any blood clots present in the cavity. The time taken for the procedure and amount of fluid used were noted carefully at the end of the procedure. The patient was shifted to post operative ward where they were kept under observation for 24 hrs.

COMPLICATIONS

The following complications were noted following hysteroscopy:

- ❖ 4 out of 200 patients had bleeding from cervical lip (trauma by volsellum), which required tight vaginal packing for 6 hrs and careful monitoring.
- ❖ 12 patients had vomiting due to anesthetic drugs.
- ❖ There was no infective morbidity.
- ❖ 25 patients had minimal cramps while 2 experienced severe pain.
- ❖ Fluid overload and electrolyte disturbance were also not encountered in any of these patients.

The complications following Endometrial Aspiration were nil.

All patients had a minimal stay of 3 days.

RESULTS AND ANALYSIS

This study conducted at Government Kasturba Gandhi Hospital for women and children, Chennai during the period 2004 – 2006 compares the efficacy of endometrial sampling as outpatient by Pipelle's aspirator and hysteroscopic guided biopsy in the diagnosis of endometrial pathology in perimenopausal patients with DUB. The findings from the both are correlated with the histopathological diagnosis of endometrium obtained by hysterectomy.

200 patients were included in the study and the outcomes were analyzed using various parameters. The results are subjected to statistical analysis using the chi square test and frequency and percentage analysis.

Total No. of patients selected were 200

Endometrial sampling by Pipelle's aspirator was done in 200 patients.

Hysteroscopy guided biopsy was done in 200 patients.

Hysterectomy was done in 62 patients.

Indications for hysterectomy were

- 1) Persistent symptoms
- 2) Associated complications due to bleeding, Anemia, etc.
- 3) Not responding to conservative management

The findings of Pipelle's endometrial aspiration were correlated with hysterectomy specimens in these women.

138 patients with no significant pathology were followed up. In the 6 months follow up, 14 patients were lost to follow up, 124 patients did not have further episode of bleeding after conservative management with hormones.

CHARACTERISTICS OF THE STUDY GROUP

I.Age Group (n=200)

Age	No	%
35 – 39 Yrs	48	24%
40 - 44 Yrs	102	51%
45 – 49 Yrs	46	23%
>50 Yrs	4	2%

Majority of the patients belonged to the age group 40 – 44yrs (51%)

The youngest one in the group was 36 years and the oldest one was 51 years.

II Parity & DUB (n=200)

No. of children	No.	%
1	34	17%
2	62	31%
3	96	48%
4 and above	8	4%

Multiparous women especially 3 and above were most commonly affected.

Nulliparous women are not included in the study.

III. Prominent Pattern of Bleeding (n=200)

Pattern of Bleeding	No.	%
Menorrhagia	64	32%
Polymenorrhagia	96	48%
Polymenorrhea	24	12%
Metrorrhagia	16	8%

Majority of the patients (80%) presented with the complaint of prolonged excessive and frequent periods. Among these, those presented with polymenorrhagia account for nearly 50%

IV. Duration of Illness (n=200)

Duration	No.	%
< 3 Months	28	14%
3-6 Months	60	30%
6 Months – 1 yr	40	20%
> 1 Year	72	36%

Majority of patients (74%) presented within 1 year of onset of symptoms

Only 14% sought medical advice within 3 months of illness.

V Body Mass Index (n=200)

BMI	Number	%
20-25	44	22%
25-30	64	32%
30 and above	92	46%

Nearly 78% patients – had a BMI of 25 and above indicating obesity.

Only 22% of patients were within the range of 20 –25

VI Socio economic Status: (n=200)

Socioeconomic Class	No	%
III	25	12%
IV	73	37%
V	102	51%

Majority (89%) belonged to socioeconomic class IV & V

**VII Type of Endometrium in Endometrial sampling using Pipelle's
curette.(n=200)**

	No	%
Proliferative Phase	64	32%
Secretory Phase	50	25%
Simple Hyperplasia	60	30%
Complex Hyperplasia	16	8%
Inconclusive	7	3.5%
Polyp	2	1%
Adenocarcinoma	1	0.5%

All the patients in the study group underwent an initial endometrial sampling using Pipelle's curette.

Abnormal findings like polyp, hyperplasia and adenocarcinoma were noted in 39% of the patients while the remaining 61% had normal findings consistent with their age.

VIII Findings in Hysteroscopy guided biopsy.(n=200)

	No	%
Proliferative Phase	60	30%
Secretory Phase	42	21%
Simple Hyperplasia	64	32%
Complex Hyperplasia	24	12%
Adenocarcinoma	2	1%
Polyp	6	3%
Inconclusive	1	0.5%
Sub mucous Fibroid	1	0.5%

All the patients after a blind endometrial aspiration underwent hysteroscopy guided biopsy

47% of the patients were found to have some abnormality such as polyp, hyperplasia.

One patient was found to have sub mucous fibroid

51% of the patients had normal findings.

By Pipelle, only 2 patients were found to have polyp, however during hysteroscopy 6 were diagnosed as having polyps.

Similarly the number of endometrial hyperplasia detected differed between the two diagnostic procedures in that 76 were diagnosed to have hyperplasia by pipelle when 88 were diagnosed by hysteroscopy.

Pipelle was able to diagnose one of the 2 cases of adenocarcinoma and misdiagnosed the other as complex hyperplasia.

IX . Adverse Events during Hysteroscopy **n=27** (13.5% of 200 patients)___

	Number	%
Mild Cramps	25	92.6 %
Severe Pain / Cramps	2	7.4 %
Vasovagal Syncope	0	0
Endometritis	0	0

None of the patients in the Pipelle’s endometrial aspiration group have any complaints during or after the procedure.

However, following hysteroscopy, 25 Patients complained of mild lower abdominal pain while 2 patients had severe pain requiring analgesics. There was no relationship between their age, parity, disease and adverse events.

There were no episodes of vasovagal syncope or post procedural endometritis.

X.Findings in Hysterectomy Specimens (n=62)

	No	%
No specific pathology detected	10	16%
Hyperplasia	46	73%
Polyp	3	5%
Sub mucous fibroid	1	2%
Adeno carcinoma	2	4%

The histopathology obtained by surgery was taken as gold standard against which the other findings were confirmed.

62 patients underwent hysterectomy among the study group, of which 46 patients had hyperplasia and 2 had adenocarcinoma.

Hysterectomy was performed for

- i) Abnormal histopathology by Pipelle / hysteroscopy or
- ii) Persistent symptoms or
- iii) Not responding to conservative means of management.

XI . Comparison of Pipelle with Hysteroscopy

Pipelle's endometrial aspiration

Hysteroscopy		Normal	Hyp	Polyp	A.Ca	Inconclusive
Normal	102	102				
Hyperplasia	88	11	73			4
Polyp	6	1	2	2		1
Sub mucous fibroid	1					1
A. Ca	2		1		1	
Inconclusive	1					1

Hyp: Hyperplasia; A.Ca: Adenocarcinoma.

Pipelle was able to diagnose all the normal histopathologic findings (102 patients), but it also under diagnosed 12 patients having hyperplasia and polyp as normal.

Of the two cases of adenocarcinoma Pipelle rightly diagnosed one and the other as complex hyperplasia.

Of the 6 polyps, 2 were diagnosed rightly, 2 were labeled as hyperplasia, one as normal and in the other the diagnosis was inconclusive. Pipelle rightly diagnosed 73 of the 88 patients with hyperplasia (83%)

XII. Comparison of Pipelle with Hysterectomy

Hysterectomy

Pipelle		Normal	Hyp	Polyp	SMF	A.Ca
Normal	10	10				
Hyperplasia	46		45			1
SMF	0					
A.Ca	1					1
Polyp	2			2		
Inconclusive	3		1	1	1	

Hyp: Hyperplasia; SMF: Sub mucous fibroid; A.Ca: Adeno carcinoma

Pipelle was able to detect correctly 42 of the 43 cases of hyperplasia (accuracy 97.6%)

Of the 10 normal findings, only one showed hyperplasia in hysterectomy.

Pipelle correctly diagnosed the 2 polyps, which were found in hysterectomy.

XIII. Comparison of hysteroscopy with hysterectomy

		Normal	Hyp	Polyp	SMF	A. Ca
Normal	10	10				
Hyp	47	45		1	1	
SMF	0					
A.Ca	2					2
Polyp	3		3			

Hyp: Hyperplasia; SMF: Sub mucous fibroid; A.Ca: Adeno carcinoma

XIV.Comparison of Pipelle with Hysteroscopy guided biopsy

PIPELLE

HYSTEROSCOPY		ABNORMAL	NORMAL
ABNORMAL	86	77	9
NORMAL	114	12	102
		89	111

SENSITIVITY = 87%

SPECIFICITY = 92%

POSITIVE PREDICTIVE VALUE = 90%

NEGATIVE PREDICTIVE VALUE = 90%

XV.Comparison of the histopathology in the three different

procedures:

	Pipelle	Hysteroscopy	Hysterectomy
Normal	10	10	10
Hyperplasia	46	47	46
Polyp	2	3	3
A.Ca	1	2	2
SMF	-	-	1
Inconclusive	3	-	-

RESULTS AND STATISTICAL ANALYSIS

Pipelle's Endometrial Sampling

Total number of patients: 200

The endometrial sampling did not correlate with the pathology in hysterectomy in 4 of the 62 cases. Out of this, 4 cases, 1 had hyperplasia, 1 had polyp, 1 had sub mucous fibroid and 1 case of adenocarcinoma had been diagnosed as complex hyperplasia. Pipelle diagnosed the first three to be inconclusive.

Sensitivity & specificity of Pipelle's curette in the diagnosis of abnormal endometrium;

The hyperplastic endometrium, polyp, adeocarcinoma were all considered as abnormal. The histopathological results of Pipelle's curette & hysterectomy were correlated.

Total No. of Cases: 200

Total No of hysterectomy: 62

No. of cases diagnosed to be abnormal by Pipelle: 52

Out of these 52 cases, 48 were confirmed to the abnormal by hysterectomy and the remaining four were false positives.

Comparison of Pipelle with hysterectomy :

HYSTERECTOMY

PIPELLE		ABNORMAL	NORMAL
ABNORMAL	52	48	4
NORMAL	10	0	10
		48	14

SENSITIVITY = 100%

SPECIFICITY = 72%

POSITIVE PREDICTIVE VALUE = 92%

NEGATIVE PREDICTIVE VALUE = 100%

Hysteroscopy guided biopsy

Total no. Of patients: 200

Hysteroscopy guided biopsy did not correlate with pipelle endometrial sampling in 21 of the 200 cases. Of the 21 cases, 12 cases that were diagnosed normal by pipelle were hyperplastic in 11 and polyp in one. 3 cases that were hyperplastic in Pipelle were found to be polyp in 2 and

adenocarcinoma in one. Of the 6 inconclusive cases in pipelle, hysterectomy showed hyperplasia in 4, polyp in 1, sub mucous fibroid in one.

Hysteroscopic guided biopsy correlated with hysterectomy in 61 out of 62 cases. Only 1 case that was hyperplasia in hysteroscopy was Sub mucous Fibroid in hysterectomy.

Sensitivity and specificity of hysteroscopy guided biopsy in the diagnosis of abnormal endometrium.

Total no. of cases : 200

Total no. of hysterectomy : 62

No. of cases diagnosed to the
abnormal by hysterectomy : 52

Out of the 52 cases 51 were confirmed to the abnormal by hysteroscopy

Comparison Of Hysteroscopy with hysterectomy

HYSTERECTOMY

HYSTEROSCOPY		ABNORMAL	NORMAL
ABNORMAL	52	51	1
NORMAL	10	0	10
		51	11

SENSITIVITY	= 100%
SPECIFICITY	= 99%
POSITIVE PREDICTIVE VALUE	=98%
NEGATIVE PREDICTIVE VALUE	=100%

The results were analyzed using chi-square test and frequency & percentage analysis where histopathology of Pipelle's and Hysteroscopy guided biopsy were compared to hysterectomy as the gold standard. There was statistically significant correlation between Pipelle & Hysteroscopy & hysterectomy with a p value of 0.000

Correlations

		Aspiration	Hysteroscopy	Hysterectomy
Endometrial aspiration	Pearson Correlation	1	.739(**)	.762(**)
	Sig. (2-tailed)		.000	.000
	N	200	200	62
Hysteroscopy	Pearson Correlation	.739(**)	1	.905(**)
	Sig. (2-tailed)	.000		.000
	N	200	200	62
Hysterectomy	Pearson Correlation	.762(**)	.905(**)	1
	Sig. (2-tailed)	.000	.000	
	N	62	62	62

** Correlation is significant at the 0.01 level (2-tailed).

Chi-Square Test

Frequencies

Endometrial Aspiration

	Observed N	Expected N	Residual
Normal	114	40.0	74.0
Hyperplasia	76	40.0	36.0
Polyp	2	40.0	-38.0
Inconclusive	7	40.0	-33.0
Adeno Carcinoma	1	40.0	-39.0
Total	200		

Hysteroscopy

	Observed N	Expected N	Residual
Normal	102	33.3	68.7
Hyperplasia	88	33.3	54.7
Polyp	6	33.3	-27.3
Sub mucous Fibroid	1	33.3	-32.3
Inconclusive	1	33.3	-32.3
Adeno Carcinoma	2	33.3	-31.3
Total	200		

Hysterectomy

	Observed N	Expected N	Residual
Normal	10	12.4	-2.4
Hyperplasia	46	12.4	33.6
Sub mucous Fibroid	3	12.4	-9.4
Inconclusive	1	12.4	-11.4
Adeno Carcinoma	2	12.4	-10.4
Total	62		

Test Statistics

	Aspiration	Hysteroscopy	Hysterectomy
Chi-Square (a, b,c)	270.650	345.700	117.839
Df	4	5	4
Asymp. Sig.	.000	.000	.000

a 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 40.0.

b 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 33.3.
c 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 12.4.

Using frequency analysis, these two methods vis a vis hysterectomy was compared. Pipelle appeared to obtain a correct diagnosis of 93% and hysteroscopy 98% with hysterectomy as gold standard.

Pipelle's Curette & hysteroscopy are able to obtain statistically significant results in the detection of abnormalities of the uterus in cases of perimenopausal bleeding.

DISCUSSION

This prospective descriptive comparative study analyzing the role of endometrial sampling as outpatient procedure using Pipelle's Curette in perimenopausal abnormal uterine bleeding (AUB) was undertaken in 200 patients.

The results of this study is discussed below:

Characteristics of the study group:

TABLE 1: Most of the patients in this study belonged to the age group of 40-44 years (51%)

TABLE 2: Patients were selected irrespective of their parity, but multiparous female with parity 3 and above are more commonly affected (52%)

TABLE 3: Majority (80%) presented to the OPD with menorrhagia or polymenorrhagia.

TABLE 4: 74% of the patients presented within 1 yr of the onset of symptoms

TABLE 5: Nearly 78% of the patients had a BMI of 25 and above.

TABLE 6: 89% of the patients belonged to class IV & V

TABLE 7,9-12: ENDOMETRIAL SAMPLING USING PIPELLE:

- In the present study, abnormal findings like hyperplasia, polyp and malignancy were noted in 86 patients (43%) while the remaining 57% of the patients had a normal endometrium either proliferative or secretory.
- Of 2 cases of adenocarcinoma one was correctly diagnosed but the other was wrongly diagnosed as a hyperplasia (accuracy 50%) similar to Guido's study where malignancy was diagnosed in 54 of his 65 patients with an accuracy of 83%
- Manganiello et al in Lebanon proved that Pipelle obtained adequate samples in 78 of 79 cases (98.7%) which is similar to our study where the inconclusive reports were due to inadequate samples in 3.5%
- Critchley HO et al in UK also proved that Pipelle biopsy could obtain adequate endometrial sample in low risk women of perimenopausal age (79%) compared to high-risk postmenopausal women (43%)

- Guido et al did Pipelle biopsies in 65 patients and found that adequate tissue for analysis was obtained in 97%.
- Ben Baruch et al in Israel at the same time proved that sufficient endometrial sample was obtained in 90.6% of women and the discomfort caused was only very slight.
- Guido and associates found that Pipelle missed 3 of the 5 polyps and a sub mucous fibroid and hence concluded “Pipelle is excellent for detecting global processes of the endometrium than focal lesions.” The results were same in our study where Pipelle missed 4 of the 6 polyps.
- Bunyavejchevin S et al in Thailand showed the sensitivity and specificity of Pipelle in endometrial tissue sampling to be 87.5% and 100% respectively whereas the results in our study is 72% and 100%
- Van den Bosch et al in South Africa came out with data which favor Pipelle as an initial diagnostic tool with a specificity of 100%
- Similar results from Vandendael A and Lombard CJ were that Pipelle sampling was excellent for hyperplasia and carcinomas but relatively weak for polyp and sub mucous fibroid as that of our study wherein the accuracy for diagnosis of polyp and hyperplasia are 33% and 83% respectively.

- Caspi B and Dgani R proved that in about 90% of the cases, Pipelle biopsy was in agreement with curettage as gold standard similar to our study where correct diagnosis was made in 92%.
- Overall, Pipelle was able to obtain statistically significant results ($p = .000$) in the detection of uterine pathology with a correct diagnosis in 92% of the cases comparable to that reported by Paul HL et al in 2000 (81% sensitivity for detection of uterine abnormality)

TABLE 8,9,10,13: HYSTEROSCOPIC GUIDED BIOPSY

- Symptoms such as mild cramps occurred in 12.5% of the patients while 2 patients complained of severe cramps. There were no occurrences of vasovagal syncopal attacks or post procedural endometritis. There were also no procedural difficulties.
- 49% of the patients were found to have some abnormality such as polyp, hyperplasia and sub mucous fibroid. 51% of the patient had normal findings.
- Though a sub mucous fibroid was incorrectly diagnosed as irregular hyperplasia, still the further evaluation that was done for the hyperplasia helped in arriving at the correct final diagnosis.

- In our study, hysteroscopic guided biopsy showed a sensitivity of 100% and specificity of 91% in the detection of abnormal uterine finding with a positive predictive value of 98% and a negative predictive value of 100%
- The values are comparable with other reports in the literature such as Torrejon R, Cominor et al in Spain who showed the sensitivity, specificity and the global diagnostic precision as 100%, 99.4% and 99.5% respectively.
- Altaras MM, Aviram R et al also in their study proved the sensitivity and positive predictive value as 93.7% and 83.3% respectively which is similar to our study
- Garuti G et al at Italy when estimating the accuracy of hysteroscopy found it to be greatest in polyps comparable to our study. The sensitivity & specificity were 94.3% and 88.8% respectively.
- de Wit AC and Vlengels MP in Netherlands concluded that hysteroscopy is a valuable tool in diagnosing structural intracavitary pathology.
- In our study, hysteroscopy was able to detect uterine cavity abnormalities with a correct diagnosis in 98% of the cases.

SUMMARY

This present, prospective, descriptive study analyzing the role of endometrial sampling as an outpatient procedure using Pipelle in women with perimenopausal bleeding was carried out at Government Kasturba Gandhi Hospital, Madras Medical College, Chennai during the period October 2004 to May 2006

A total of 200 patients were included in the study. All the patients underwent an initial assessment using, Pipelle's curette followed by hysteroscopy-guided biopsy. Those patients with abnormal findings and those not responding to medical management underwent hysterectomy. The final diagnosis obtained after hysterectomy was designated as the gold standard against which the findings of Pipelle's aspiration was compared & analyzed for statistical significance.

Observations in this study includes

- Patients in the study group were 35 years and above with 74% of them belonging to the 40-50 age group.
- The study encompasses women of any parity with majority of them belonging to the low socioeconomic status.
- Majority of patients (74%) had presented within 1 yr of onset of symptoms

- Both Pipelle's curette and hysteroscopic biopsy produced statistically significant results while evaluating perimenopausal bleeding. (p = 0.000)
- When histopathology of the endometrium was obtained using Pipelle's curette, correct diagnosis could be obtained in 93% of the cases.
- Similarly when hysteroscopy was performed the correct diagnosis was 98%
- Pipelle showed a sensitivity of 100% specificity of 72% in the detection of abnormal findings with PPV of 92% and NPV of 100%
- However accuracy of hysteroscopy is found to be less in the diagnosis of polyps and sub mucous fibroids with accuracy of 100%
- The low specificity could be attributed to the inability of the device to diagnose focal processes like polyp in the endometrium.

CONCLUSION

- Endometrial sampling as outpatient procedure using Pipelle is a safe, simple, minimally invasive procedure with no complications.
- Pipelle's gives near equal percentage of correct diagnosis that is statistically significant when hysteroscopy and hysterectomy are correlated.
- Thus Endometrial sampling as an outpatient (ESOP) procedure is a simple, safe and reliable way to undertake first line assessment of abnormal uterine bleeding in the perimenopausal age group where the incidence of abnormal findings itself is very low. This is particularly relevant in a setting where more advanced methods are not readily available.
- ESOP can reliably classify a lesion as benign or hyperplasia accurately.
- Though hysteroscopy is an acceptable procedure and can be reassuring, it did not influence clinical management, especially with respect to hysterectomy rate.

Thus for abnormal uterine bleeding in perimenopausal women, , Endometrial Sampling as an Outpatient (ESOP) procedure has a central role in the new guidelines for the management of Dysfunctional Uterine Bleeding, before considering any other diagnostic modalities. Therefore a need exists to broaden its use and include it in the routine diagnostic armamentarium.

BIBLIOGRAPHY

1. Gynecologic Oncology; Uterine Cancer; Novaks Gynecology 13 th edition 2002: 1143-49
2. A clinical approach to Gynecology; special tests and accuracy aids to diagnosis; Jeffcoates principles of gynecology 5th edition 2001:11-14
3. Guidelines for the management of abnormal uterine bleeding SOGC Clinical practical guidelines No 106, August 2001.
4. **Guido RS, Kanbour Shakir A, Rulin MC, Christopherson WA** Sensitivity in the detection of endometrial cancer by Pipelle endometrial sampling; J Reprod Med 1995:33: 76-8
5. **Ferry J, Farnsworth A, Webster M, WrenB:** The efficacy of pipelle endometrial biopsy in detecting endometrial cancer Aust N .ZJ Obstetrics Gynecology 1993:33:76-8
6. **Kaunitz AM, Masciello AS, Ostrowsym, Rovvira EZ:** Comparision of endometrial pipelle and vabra aspirator; J Reprod Med 1988: 33: 427-31
7. **Goldschmit R Katz A, Blickstein I, Caspi B, Dgani R:** The accuracy of endometrial sampling with and without sonographic measurement of endometrial thickness ;Obstet Gynec 1993:82:727-30
8. **Jensen JG:** Vacuum curettage without anesthesia a report of 350 cases Dan Med Bull 1970; 17:199

9. **Kelly HA:** Curettage without anesthesia on the office table .Am J Obs Gyn 1925; 9: 78.
10. **Lutz MH, Underwood PB Jr, Kreutner A:** Vacuum aspiration: an efficient outpatient screening for endometrial disease. South Med J 1977;70: 393.
11. **Chambers JT, Chambers SK:** Endometrial sampling when? Where? Why? With? What? Clinic Obs Gynaec 1992;35:28-39
12. **Stovall TG, Ling FW, Morgan PL:** A prospective randomized comparison of pipelle endometrial sampling device with Novak curette Am J Obs Gynaec 1991;165: 1287-9
13. **Stovall TG, Wotopolus PJ, Poston WM, Ling FW, Sandles LG.** Pipelle endometrial sampling in patients with known endometrial cancer Obste Gynaec 1991;77:954-56
14. **Cooper J, Erickson M:** Endometrial sampling techniques in the diagnosis of abnormal uterine bleeding. Obstet Gynecol Clin North Amer, 2000: 27:235 -43.
15. **Clark T, Mann C, Shah N:** Accuracy of outpatient endometrial biopsy in the diagnosis of endometrial cancer: a systematic quantitative review: BJOG 2002: 109: 313 – 21.
16. **Forthergill D, Brown V, Hill A:** Histological sampling of the

endometrium: a comparison between formal curettage and the Pipelle Sampler. Br. J Obstet Gynecol, 1992: 99:779-80

17. **Goldscmitt R, Katz Z, Blickstein I:** The accuracy of endometrial Pipelle sampling with and without sonographic measurement of endometrial thickness. Obstet Gynecol 1993;33: 76-78
18. **Eddowes H, Read M, Colding B:** Pipelle: a more acceptable technique for outpatient endometrial biopsy. Br.J. Obstet Gynecol, 1990;97: 961-62
19. **Wagaarachchi P, Sirisena J.** Efficiency of Pipelle device in sampling endometrium. Acta Obstet Gynecol Scand, 2000;79: 793-95
20. **Bakour S, Khan K, Gupta J:** Controlled analysis of factors associated with insufficient sample on outpatient endometrial biopsy Br J. Obstet Gynecol, 2000: 107: 1312-14
21. **Adstran K, Femtral J:** The diagnostic possibilities of a modified hysteroscopic technique. Acta Obstet Gynecol Scand 49: 327, 1970.
22. **Behrman SJ:** Hysteroscopy: An overview, Clin, Obstet Gynaecol 19: 307, 1976
23. **Edstrom K, Fernstrom I:** The diagnostic possibilities of a modified hysteroscopic technique, Acta Obstet Gynecol Scand 49: 327, 1970
24. **England F, Ingleman-Sundberg A, Westing B:** Hysteroscopy in diagnosis and treatment of uterine bleeding. Gynaecologia 143:217;

1957.

25.**Gribb JJ:** Hysteroscopy: an aid in Gynecologic diagnosis. *Obstet*

Gynaecol 15: 593; 1960

26.**Less RS:** Hysteroscopy. *J. Am obstet Assoc* 77:118,1977

27.**Levine RV:** A symposium on advances in fiber optic hysteroscopy.

Contemp. Obstet Gynaecol 3: 115, 1974

28.**Sciarra JJ, Valle RF:** Hysteroscopy: A clinical experience with 320

patients, *Am J obstet Gynaecol* 127: 340,1977.

PROFORMA

NAME **AGE** **IPNO** **SES**
PARA **LIVE** **ABORTIONS**

COMPLAINTS

H/o Abnormal bleeding – type

Duration

Cycles

H/o Pain abdomen

H/o White discharge - Scanty / profuse / blood stained / itchy / foul smelling

H/o intermenstrual bleeding

H/o postcoital bleeding

H/o burning micturition

Menopause

PREVIOUS MENSTRUAL HISTORY :

PAST HISTORY :

PERSONAL HISTORY :

FAMILY HISTORY :

TREATMENT HISTORY :

CONTRACEPTION : Yes / No

Type

Duration

GENERAL EXAMINATION

HEIGHT WEIGHT BMI

ABDOMEN EXAMINATION :

SPECULUM EXAMINATION :

PERVAGINAL EXAMINATION :

INVESTIGATIONS :

Urine Albumin, Sugar ,Deposits

Blood Hb

Chest X-ray

ECG

ASPIRATION SAMPLING

SAMPLE :

HPE :

HYSTEROSCOPY :

DISTENSION MEDIA :

TYPE OF ANESTHESIA :

NEED FOR DILATATION :

ENDOCERVICAL CANAL :

ENDOMETRIUM :

OSTIA :

VASCULAR PATTERN :

POLYP :

COLOR OF ENDOMETRIUM :

HYSTRECTOMY

UTERINE CAVITY :

HPE :