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EFFICACY OF PIPELLE AS A TOOL FOR ENDOMETRIAL BIOPSY

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This study was carried out to determine the accuracy of Pipelle sampling in the diagnosis of abnormal uterine bleeding by comparing it with histopathology of the hysterectomy specimens taken as gold standard. One hundred patients with abnormal uterine bleeding in perimenopausal or postmenopausal age group scheduled for hysterectomy had endometrial sampling with Pipelle, in the department of Obstetrics and Gynaecology Unit I, Sir Ganga Ram Hospital, Lahore, from Dec. 2003 to Dec. 2004. The specimens were sent for histopathology. Among 100 patients, 66 underwent hysterectomy. In the remaining 34 patients, 6 had inadequate specimen on Pipelle sampling and in 28 patients hysterectomy was planned but postponed because of medical problems. Among the 66 patients the results of Pipelle Endometrial Sampling (PES) were compared with histological results of hysterectomy specimen. Among the 66 patients the results of PES were compared with the histological results of hysterectomy specimen. In 61 cases the histopathological results were identical indicating a correlation of 92.42%. In 5 cases results were different, 4 having slight variation and in one case PES reported complex hyperplasia and on hysterectomy it turned out to be a case of carcinoma cervix. It is concluded that Pipelle biopsy is definitely a useful and cost effective method. It can reduce the number of D&C performed in the theatre. Moreover it has an advantage of taking biopsy on the first visit of patient thereby time taken for the diagnosis of malignancy can be reduced.

Menstrual problems and irregularities are common conditions for which females seek advice from gynaecologists. It is estimated that menorrhagia is one of the commonest cause of iron deficiency anaemia in western women[1]. It affects 10-15% of females in Western Europe and is main indication for total abdominal hysterectomy (TAH) in a study conducted by Akhtar[2]. The prevalence of abnormal uterine bleeding is difficult to determine, however, 9 to 30% of women of reproductive age have menstrual irregularities requiring medical evaluation[3]. Dilatation and curettage (D&C) under general anaesthesia remains the commonest procedure of abnormal uterine bleeding (AUB) and serves the purpose of differentiating uterine lesions. There are a lot of short and long term complications associated with this procedure. It usually requires general anaesthesia and hospitalisation which makes the techniques inconvenient. It is only recently that this procedure has been seriously questioned[4].

Gynaecologists are trying to lower the cost and danger of dilatation and curettage by making it an out patient procedure. In 1882, Moriche obtained first endometrial sample using a catheter whereas endometrial biopsies have been performed in outpatient setting since 1935[5]. Endometrial biopsy performed without cervical dilatation was introduced in 1930s using narrow metal cannula with side opening and syringe attached for suction. However it caused significant cramping during removal[6]. More recent alternative is vabra aspiration that was introduced in 1970s. Since 1980, the most popular device is disposable pipelle De-Cornier[7], that was first introduced in France. It is a 3.1 mm diameter, semi rigid plastic tube with single side opening. It can be inserted in cervical canal without dilatation; hence it is ideal for obtaining endometrial biopsy in outpatient setting. It causes less pain than older devices.

This study was intended to establish the reliability of the Pipelle curette so that the number of traditional D&C done under general anaesthesia could be reduced to minimum.

MATERIALS AND METHODS

The study was carried out on 100 patients in the department of Obstetrics and Gynaecology, Sir Ganga Ram Hospital, Lahore from January, 2004 to December 2004.

All patients with abnormal uterine bleeding inperimenopausal age group, those with premenopausal bleeding (non-responsive to hormonal treatment) and patients with postmenopausal bleeding were included in the study. On the other hand patients with pregnancy related bleeding were excluded.

The data was collected on a proforma that included history, general physical examination, local examination along with the information comparing the reports of Pipelle and hysterectomy specimens.

One hundred patients with abnormal uterine bleeding scheduled for hysterectomy had endometrial sampling with Pipelle. The hysterectomy specimens were sent for histopathology. The findings of the final histopathology were compared with those of Pipelle before. Both were analysed by the same histopathologist throughout the study.

Table 1: *Sociodemographic characteristics of patients presenting with abnormal uterine bleeding*

Age of Patients with abnormal uterine bleeding		
Age (years)	**N=100**	**Percentage**
35 – 40	23	23
41 – 45	18	18
46 – 50	35	35
51 – 55	2	2
56 – 60	13	3
Mean age was 46.65 with standard deviation of 6.28 years.		
Age of Patients with Ca-Endometrium		
Age (years)	**N=100**	**Percentage**
46	1	25
50	1	25
56	1	25
60	1	25
Total	4	100
Parity of participants with AUB		
Parity	**N=100**	**Percentage**
Nulliparous	2	2
Multiparous	45	45
Grand multiparous	53	53
Total	100	100
Presentation of patients with AUB		
Indication	**N=100**	**Percentage**
Menorrhagia	38	38
Irregular menstrual bleeding	48	48
Postmenopausal bleeding	14	14
Total	100	100

Sensitivity, specificity, positive predictive value, negative predictive value and accuracy of the Pipelle were calculated using 2 x 2 tables.

RESULTS

The sampling by Pipelle was performed on all the 100 patients scheduled for hysterectomy. However, hysterectomy was postponed due to medical reasons in 34 patients. Their age range was 25 to 60 years (mean ± SD 46.65 ±6.28). The age, parity and indications for TAH are given in Table 1.

Table 2: *Comparison of results of Pipelle biopsy with histopathology after hysterectomy*

Biopsy report	**Pipelle sample**	**Hystrectomy**
Benign conditions other than hyperplasia	44	46
Cystic hyperplasia	13	11
Adenomatous hyperplasia without atypia	5	5
Complex hyperplasia	1	0
Adenocarcinoma	3	4
Total	66	66

The results of Pipelle endometrial sampling (PES) were compared with histological results of hysterectomy specimen in 66 patients as shown in table 2. The results of histopathology and PES were grouped into two catogories; endometrial hyperplasia and endometrial carcinoma and the diagnostic accuracy of PES was calculated.

Table 3: *Validity of PES for endometrial hyperplasia and endometrial carcinoma*

Validity of PES	**Endometrial Hyprplasia**	**Endometrial Carcinoma**
Sensitivity rate	100%	75%
Specificity rate	94%	100%
Accuracy rate	95%	98%
Positive predictive value	84%	100%
Negative predictive value	100%	98%

The results were found to be comparable with each other. In 61 cases the histopathological results were identical indicating a correlation of 92.42%. In 5 cases results were different, 4 having slight variation and in one case PES reported complex hyperplasia and on hysterectomy it turned out to be a case of carcinoma endometrium. The sensi-

tivity of PES in diagnosing hyperplasia is 100%, specificity 94%, accuracy 95%, positive predictive value 84% and negative predictive value was 100% as shown in table 3. The sensitivity of PES in diagnosing carcinoma endometrium is 75%, specificity 100%, accuracy 98% with positive predictive value 100% and negative predictive value was 98% (Table 3).

DISCUSSION

The most efficient method for sampling the endometrium is diagnostic curettage (D&C) under general anaesthesia. However, it is now recognized that D&C is really just another blind sampling technique which often samples less than half of the endometrium[8].

Currently Pipelle endometrial sampling has replaced D&C as the first line diagnostic test in the evaluation of abnormal bleeding as both have been shown to have similar accuracy.[9-11] Pipelle endometrial sampling has several advantages over D & C. It is safer because there is no need for general anaesthesia. There is usually no need for cervical dilatation and there are markedly decreased risks of haemorrhage, infection and perforation.[12] Pipelle endometrial sampling is also more convenient and save time for both the physician and the patient. Minimally invasive endometrial biopsy to obtain tissue in an outpatient setting is better tolerated than endometrial curettage after dilatation of cervix under general anaesthesia.[13]

In this study results of PES were compared with those of hysterectomy specimen in 66 patients and in 61 patients the result were similar in both PES and hystrectomy showing the correlation of 92%. These results are comparable to the study of Zia et al.[14] The use of pipellle in premenopausal age group detected endometrial carcinoma in all cases but in postmenopausal bleeding (PMB) the pipelle was unable to detect one case of Ca endometrium and labelled it as complex adenomatous hyperplasia. That may be because of focal nature of malignancy of endometrium or due to tumour present in an endometrial polyp. Similar results were found in the study by Shakir et al[15] and Bunyanegehvin et al[16]. In their study three case of adenocarcinoma in patients with PMB were not detected by Pipelle due to focal disease. In this study the sensitivity of PES in the detection of endometrial hyperplasia and carcinoma is 100% and 77% respectively. These results are similar to the study of Stocx et al[8] who showed that sensitivity of Pipelle ranged from 83-96% in the detection of endometrial carcinoma. These results are also comparable to those of many others[10,7,6,17-19] who claimed that the sensitivity of Pipelle in detection of carcinoma endometrium / hyperplasia ranged from 83-100%. They concluded that Pipelle endometrial sampling is an effective device for evaluating the patients at risk of endometrial carcinoma. Contrary to this, Ferry et al detected adenocarcinoma in 67% of their cases only, which raised the question of using Pipelle alone in high risk patients[20]. Tanriverdi et al[21] showed that Pipelle biopsy was unable to diagnose 1 out of 5 endometrial hyperplasia. They concluded that Pipelle device is a limited endometrial sampling technique for obtaining an adequate and representative endometrial sampling[21]. Specificity of PES in the detection of endometrial hyperplasia/carcinoma was 94% and 100% in the PES with AUB and PMB. This is comparable to the study of Bunyamejchevin et al and Dijkhuizen et al who showed specificity of PES upto 100% and 98% respectively in the detection of endometrial carcinoma in PMB.[7,16] Positive predictive value for endometrial hyperplasia/carcinoma is 84% and 100% respectively. Negative predictive value for endometrial hyperplasia/carcinoma was 100% to 98%. Similar results have been reported by Macahado et al who reported PPV 94.1% and NPP 93.7%[19]. The accuracy of PES in the present study in the detection of endometrial hyperplasia / carcinoma is 95% and 98% respectively. Similar results have been reported by Ongs and Duffy et al who showed in their studies that there was no missed malignancies to their knowledge for more than 8 years period since endometrial Pipelle biopsy was introduced in the hospital[22].

It is **concluded** that Pipelle biopsy is definitely a useful and cost effective method. It is convenient to the patients and physicians. It can reduce the number of D&Cs performed in the operating theatre. It is useful in obese and high risk patients with minimum chances of perforation of uterus due to its soft flexible tip. It has advantage of taking biopsy on the first visit of patient thereby waiting time for early diagnosis of malignancy can be reduced. However, hysteroscopic examination of high risk patients is emphasised as certain lesions in the endometrium can be missed on PES or even on thorough traditional D&C.

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