Pictorial Review

Understanding the Endometrium at Menopause: A Hysteroscopist’s View

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INTRODUCTION

Hysteroscopy is the eye of the gynaecologist for the evaluation of the endometrial cavity. The incidence of premalignant and malignant endometrial disorders increases in the postmenopausal period.[1] The concordance of dilatation and curettage results with hysterectomy specimen is 94% in diffuse lesions and 58% when focal.[2] With the advent of miniature hysteroscopes and 5Fr instruments, office hysteroscopy now plays a major role in the evaluation of postmenopausal bleeding with focal lesions, especially near the cornu not being missed.[3]

In an experienced hand, hysteroscopy can be used to identify patients with malignant or benign pathology. Hysteroscopy combined with biopsy increases the certainty of diagnosis up to 100%.[4]

The purpose of this pictorial review is to guide the gynaecologist in the systematic evaluation of the endometrial cavity with special attention to the thickness of the endometrium, vascular architecture, location of the lesion, surface aberrations can help in diagnosing the pathology and take the targeted biopsy.

NORMAL POSTMENOPAUSAL CAVITY

Dr. Frank Loffer in 1989 described the negative hysteroscopic view.[5] The surface of the endometrium in normal menopausal women is pale, atrophic with a porcelain appearance. Very sparse gland openings with constriction rings created by myometrium can be seen. Tissue sampling is not warranted Figure 1a-c.

CYSTIC ATROPHY

The atrophic endometrium has focal multiple cystic spaces which contain mucus covered by papery thin surface, which may be representative of mystically dilated glands. Small surface blood vessels can be seen with small petechial haemorrhages. Surface calcifications are visible. Cervical stenosis is encountered in the majority of the cases. Cystic atrophy is apparent if irregular proliferation occurs before the decline in oestrogen levels at menopause Figure 2a-c.[6]

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**Polyp**

Polyps are common cause of PMB. Polyps vary in size, usually single, fibrotic with sparse vessels and benign. The reddish look suggests infective aetiology. May show surface necrosis. A recent meta-analysis reviewed malignant risk and suggested that the risk is highest in women with PMB (2.3%).[7] In a retrospective Multicenter study of 770 patients, it was found that the polyp diameter (>18 mm) was the only variable which was significantly associated with an abnormal histology in both asymptomatic and symptomatic women.[8] It is mandatory to remove the polyp completely to not miss atypia or malignancy Figure 3a and b.

**Endometrial Hyperplasia**

Features seen on hysteroscopy are nonhomogeneous thickness of the endometrium, minor vascular distortions, glandular cystic dilatation which are focal, also known as pseudo polypoidal areas. On a closer look and with increase in experience abnormal spacing and dilatation of glandular openings can be appreciated.[9] All these criteria suggest endometrial hyperplasia. Certain features of atypical hyperplasia that help a hysteroscopist are irregularly thickened polypoidal endometrium with inter papillary bridges, irregular vascularity, denuded vessels with the increase in density. Hysteroscopic Visual D&C by tissue retrieval system, such as Truclear 5c™ is promising as all the tissue can be retrieved for examination Figure 4a-d.

**Endometrial Carcinoma**

The risk of endometrial carcinoma is about 10% in
women with PMB and increases with age. 0.5%-1.5% may remain asymptomatic.

The false-negative rate of hysteroscopy is <3%. A review of 65 articles that evaluated 26,345 women and the role of hysteroscopy determined that a positive hysteroscopy increased the probability of endometrial cancer to 71.8%, whereas a negative result had the probability of 0.6%.[10]

Sugimoto was the first to describe the visual morphological features of carcinoma endometrium on hysteroscopy. He classified them as circumscribed or exophytic with distinct forms such as polypoidal, nodular, papillary and ulcerated. He also described abnormal vascularity.[11]

**Table 1: Morphological features of endometrial cancer on hysteroscopy**

| Morphological features | Nodular pattern [Figure 5a and b] | The polypoidal pattern [Figure 6a-c] | The cerebroid pattern [Figure 7a-c] | The dendritic pattern [Figure 8a and b] | The gomerular pattern [Figure 9a-c] |
|------------------------|----------------------------------|-------------------------------------|-----------------------------------|--------------------------------------|-----------------------------------|
|                        | Numerous small nodes that protrude with irregular surface and vasculature and cover the endometrium diffusely or locally | Polypoidal surface extensions with increased vascularity, irregular branching of vessels with loss of arborization, neo vascularization. Areas of microcalcification | Nodular and cerebroid pattern can also be seen, circumscribed well-defined lesions | Fine dendritic tentacle-like projections giving a velvety appearance | Increased vascularity of small irregular vessels and micro-calculations resembling the glomerulus |

![Figure 5](image5.png) (a) Diagrammatic representation of nodular pattern of endometrial cancer (b) Hysteroscopic view of nodular pattern of endometrial cancer

![Figure 6](image6.png) (a) Diagrammatic representation of polypoidal pattern of endometrial cancer (b) Hysteroscopic view of polypoidal pattern of endometrial cancer, (c). Neovascularization and loss of dichotomous branching

![Figure 7](image7.png) (a) Diagrammatic representation of cerebroid pattern of endometrial cancer (b) Hysteroscopic view of cerebroid pattern of endometrial cancer

![Figure 8](image8.png) (a) Diagrammatic representation of dendritic pattern of endometrial cancer (b) Hysteroscopic view of dendritic pattern of endometrial cancer

![Figure 9](image9.png) (a) Diagrammatic representation of gomerular pattern of endometrial cancer (b) Hysteroscopic view of gomerular pattern of endometrial cancer
Valli and Zupi created nomenclature and classification by grading four features: Thickness, surface, vascularization and colour. High-risk features include the endometrial thickness of 10 mm, polymorphous surface, irregular vascularization and whitish-gray color [Table 1].

The proper and complete description of the lesion is essential and should take into account the following features to suggest malignancy.

- Pattern of growth
- Intra cavitory extension and topography
- Involvement of cervical canal.

When compared with the histologic diagnosis of the uterus, the hysteroscopic findings showed a diagnostic sensitivity of 98%, a specificity of 95%, a positive predictive value (PPV) of 96% and a negative predictive value (NPV) of 98%. Hysteroscopy was found to have a greater diagnostic accuracy than D&C: The sensitivity and the NPV of the two diagnostic procedures were statistically different.

**Technique of Targeted Biopsy [Figure 9a-c]**

The Grasp technique described by Bettocchi is a type of targeted biopsy for focal lesions. 0.5–1 cm of the tissue is grasped with the jaws of the 5Fr alligator forceps, giving it a gentle push forward. The scope along with the forceps is withdrawn from the uterine cavity. This allows not only the tissue entrapped in the grasper but also the tissue protruding out to be evaluated and enabling an adequate biopsy. Multiple biopsy’s can be taken Figure 10a-c.

**Posttamoxifen [Figure 10a and b]**

Tamoxifen is selective estrogen receptor modulator used in the treatment of breast cancer. Tamoxifen has a marked oestrogenic action on the endometrium with different patterns varying from atrophy to endometrial cancer. Hysteroscopy is indicated in symptomatic patients with endometrial cut-off on TVS of 8–12 mm. Perez-Medina et al. 2011 described different hysteroscopic patterns.
Atrophic, hypervascularized, cystic, polypoidal and cerebriform projections with irregular growths.[14] In the case of polyp in tamoxifen users, it is mandatory to remove the entire polyp as they have higher rate of malignant transformation than the non-tamoxifen patients Figure 11a and b.

**Histiocytic Endometritis [Figure 11a and b]**

This pathology has to be suspected if the patient has persistent leukorrhoea, pruritus, pelvic pain and recurrent PMB. Cervical stenosis leading to retention of fluid in the cavity with resultant pyometra can lead to endometritis and in extreme cases replacing the endometrial mucosa with sheets of foamy lipid-containing histiocytes, siderophages, giant cells, calcification and polymorphonuclear leucocytes plasma cells.[15] On hysteroscopy, the features mimic carcinoma endometrium. Yellowish finger-like projections scattered globally with micro polyps with microcalcification. Carcinoma endometrium can co-exist and therefore multiple biopsies may be required. Cytology and immunohistochemistry can resolve the suspicion. Treatment is antibiotics and hysterectomy Figure 12a and b.

**Conclusion**

Hysteroscopy is found to have high diagnostic accuracy for endometrial cancer. Hysteroscopic view also helps to differentiate endometrial cancer from endometrial hyperplasia. This pictorial review gives the reader an understanding of the endometrium at menopause from an hysteroscopist viewpoint.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**

There are no conflicts of interest.

**References**

1. Günakan E, Atak Z, Albayrak M, Kurban Y, Şimşek GG. Endometrial histopathology results and evaluation of endometrial cancer risk in geriatric women. Prz Menopauzalny 2018;17:18-21.
2. Epstein E, Ramirez A, Skoog L, Valentin L. Dilatation and curettage fails to detect most focal lesions in the uterine cavity in women with postmenopausal bleeding. Acta Obstet Gynecol Scand 2001;80:1131-6.
3. Litta P, Merlin F, Saccardi C, Pozzan C, Sacco G, Fracas M, et al. Role of hysteroscopy and endometrial biopsy to rule out endometrial cancer in postmenopausal women with abnormal uterine bleeding. Maturitas 2005;50:117-23.
4. Luca M, Luiz CA, Alfonso AA. Manual of Hysteroscopy Diagnostic, Operative and Office Hysteroscopy. Tuttingen: Endo Press; 2013.
5. Loffer FD. Hysteroscopy with selective endometrial sampling compared with D&C for abnormal uterine bleeding: The value of a negative hysteroscopic view. Obstet Gynecol 1989;73:16-20.
6. Kurman RJ, Ronnett BM, Hedrick Ellenson L, editors. Blaustein’s Pathology of the Female Genital Tract. 6th ed. New York: Springer; 2011.
7. Lieng M, Istre O, Qvigstad E. Treatment of endometrial polyps: A systematic review. Acta Obstet Gynecol Scand 2010;89:992-1002.
8. Ferrazzi E, Zupi E, Leone FP, Savelli L, Omodei U, Moscarini M, et al. How often are endometrial polyps malignant in asymptomatic postmenopausal women? A multicenter study. Am J Obstet Gynecol 2009;200:235.e1-6.
9. Nappi C, Di Spiezio Sardo A. State-of-the-Art Hysteroscopic Approaches to Pathologies of the Genital Tract. Tuttingen: EndoPress; 2014.
10. Clark TJ, Voit D, Gupta JK, Hyde C, Song F, Khan KS. Accuracy of hysteroscopy in the diagnosis of endometrial cancer and hyperplasia: A systematic quantitative review. JAMA 2002;288:1610-21.
11. Sugimoto O. Hyteroscopic diagnosis of endometrial carcinoma. A report of 53 cases examined at women’s clinic of Kyoto University Hospital. Am J Obstet Gynecol 1975;121:105-13.
12. Valli E, Zupi E. A new hysteroscopic classification of and nomenclature for endometrial lesions. J Am Assoc Gynecol Laparosc 1995;2:279-83.
13. Ceci O, Bettocchi S, Pellegrino A, Impedovo L, Di Venere R, Pansini N. Comparison of hysteroscopic and hysterectomy findings for assessing the diagnostic accuracy of office hysteroscopy. Fertil Steril 2002;78:628-31.
14. Pérez-Medina T, Salazar FJ, San-Frutos L, Rios M, Jiménez JS, Troyano J, et al. Hysteroscopic dynamic assessment of the endometrium in patients treated with long-term tamoxifen. J Minim Invasive Gynecol 2011;18:349-54.
15. Stefano B, Luigi N, Oronzo C. Hysteroscopy and menopause past and future. Curr Opin Obstet Gynecol 2005;17:366-75.