Pictorial Review

Understanding the Endometrium at Menopause: A Hysteroscopist's View

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Abstract

The risk of premalignant and malignant endometrial pathologies increases in the postmenopausal period. Dilatation and curettage fail to diagnose one in ten endometrial pathologies. Hysteroscopy is the gold standard to evaluate the endometrial cavity. Hysteroscopy can identify malignant or benign pathology with approximately 20% false-positive results. Hysteroscopy combined with biopsy increases the accuracy of diagnosis up to 100%. This pictorial review takes you through the hysteroscopic view of normal-looking postmenopausal atrophic uterus, cystic atrophy, benign endometrial pathologies, endometrial hyperplasia, endometrial cancer, tamoxifen-induced endometrial hyperplasia and histiocytic endometritis. The purpose of this pictorial review is to guide the operator in systematic evaluation of the endometrial cavity with special attention to the thickness of the endometrium, vascular architecture, location of the lesion and surface aberrations, which adds value to the diagnosis and management of endometrial pathologies.

Keywords: *Endometrial pathology, hysteroscopic view, menopause*

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.

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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.

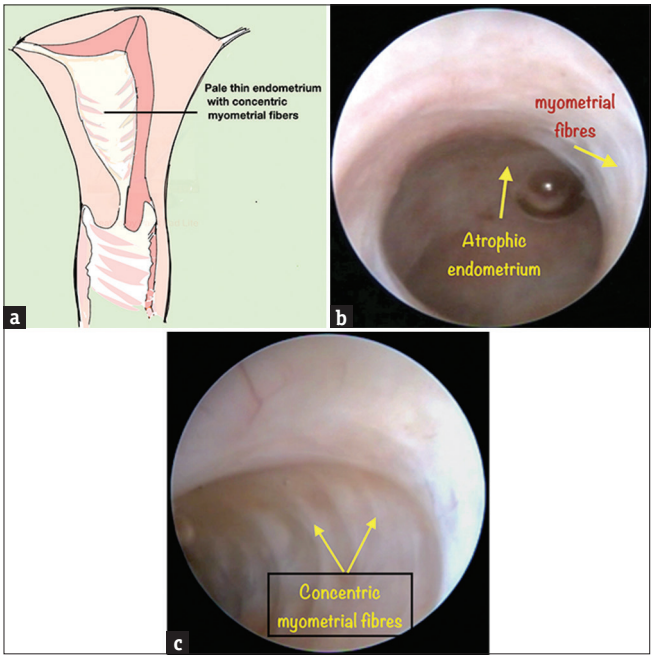

Figure 1: (a) Diagrammatic representation of pale endometrium (b) Hysteroscopic view of a postmenopausal endometrium showing (c) atrophy with concentric myometrial fibres

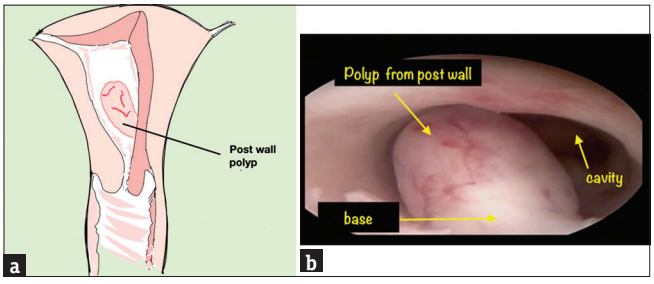

Figure 3: Hysteroscopic view of an endometrial polyp, (a) Diagrammatic representation of endometrial polyp; (b) Posterior wall sessile polyp

Endometrial Carcinoma

The risk of endometrial carcinoma is about 10% in

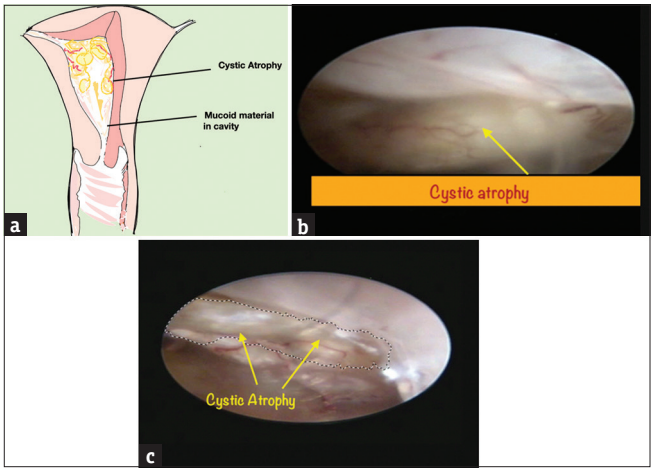

Figure 2: Hysteroscopic view of cystic atrophy, (a) Diagrammatic representation of cystic atrophic; (b.& c) Cystic dilatation of endometrial glands with flattened epithelium

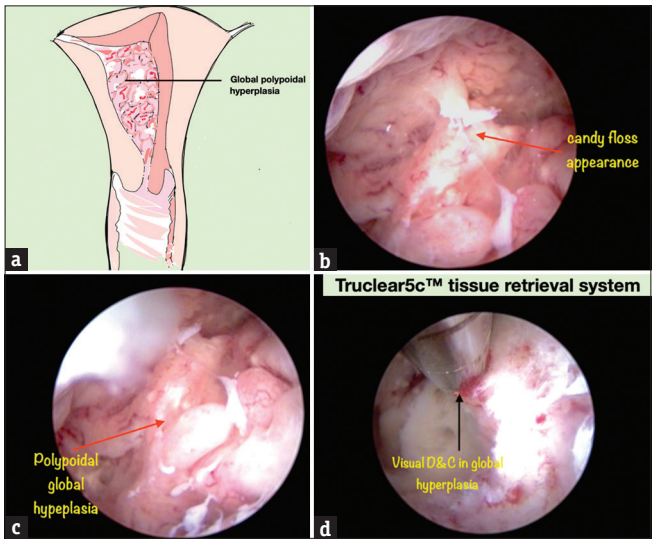

Figure 4: Hysteroscopic view of EIN (endometrial intraepithelial neoplasia) / atypical edometrial hyperplasia, (a) Diagrammatic representation of global endometrial hyperplasia; (b) Candy floss appearance, (c) Polypoidal global hyperplasia ; d. Visual dilatation and curretage using Truclear 5c

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]

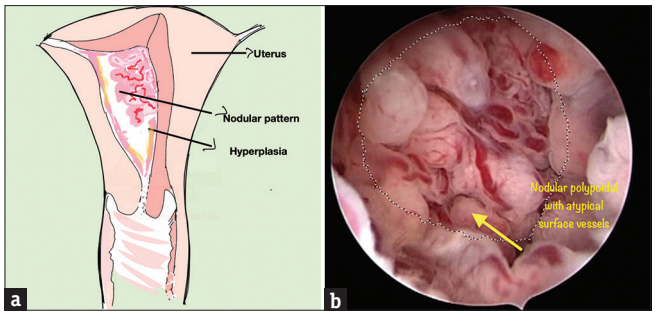

Figure 5: (a) Diagrammatic representation of nodular pattern of endometrial cancer (b) Hysteroscopic view of nodular pattern of endometrial cancer

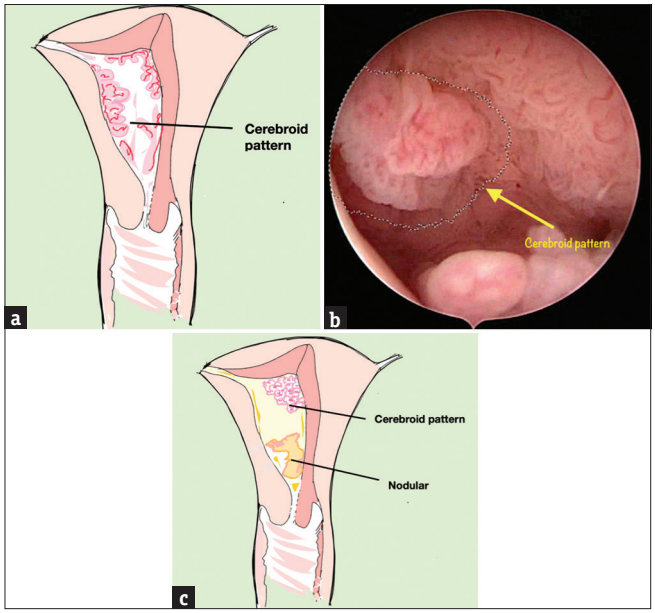

Figure 7: (a) Diagrammatic representation of cerebroid pattern of endometrial cancer (b) Hysteroscopic view of cerebroid pattern of endometrial cancer

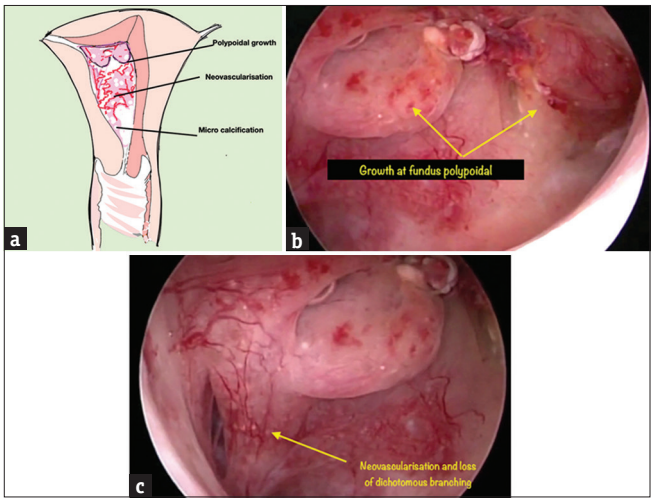

Figure 6: (a) Diagrammatic representation of polypoidal pattern of endometrial cancer (b) Hysteroscopic view of polypoidal pattern of endometrial cancer, (c).Neovascularization and loss of dichomatous branching

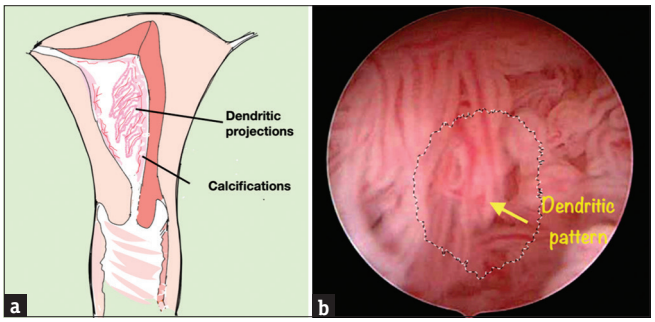

Figure 8: (a) Diagrammatic representation of dendritic pattern of endometrial cancer (b) Hysteroscopic view of dendritic pattern of endometrial cancer

Table 1: Morphological features of endometrial cancer on hysteroscopy

	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]
Morphological features	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-calcifications resembling the glomerulus

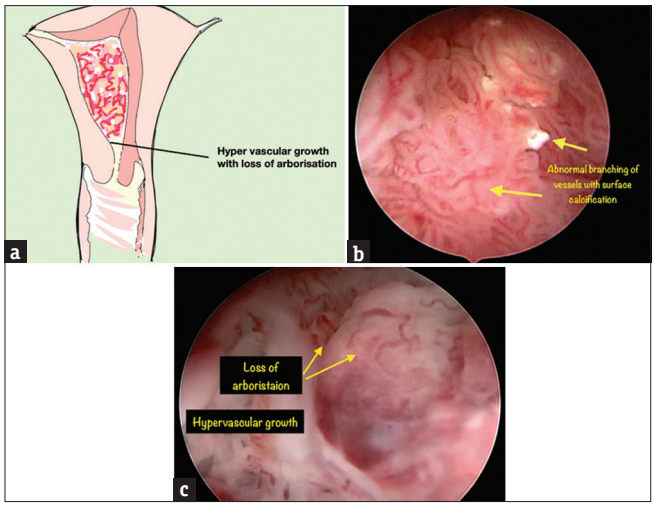

Figure 9: (a) Diagrammatic representation of Glomerular pattern showing hypervascualr growth, (b and c) Hysteroscopic view of glomerular pattern of endometrial cancer. There is abnormal branching of vessels with surface calcifications ans loss of arborisation.

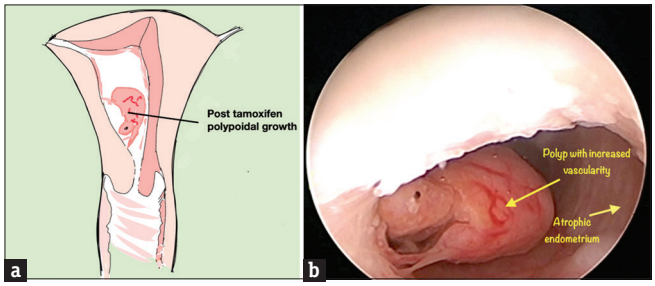

Figure 11: (a) Diagrammatic representation of post tamoxifen polypoidal growth with increased vascularity; (b) Hysteroscopic view of post tamoxifen endometrial polyp

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].[12]

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 cavitary 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.[13]

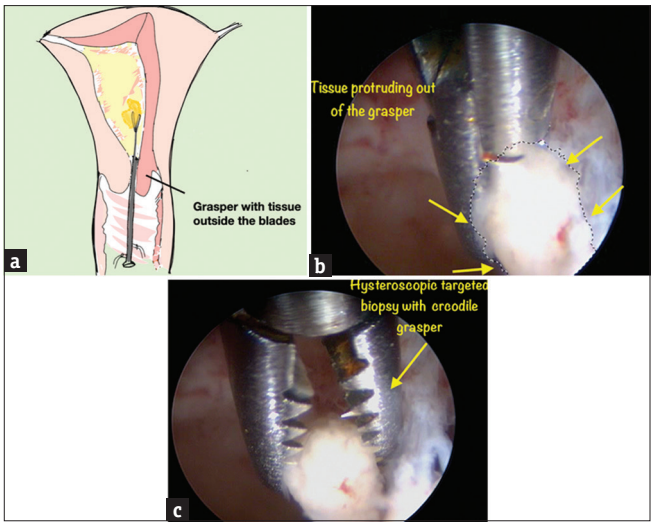

Figure 10: (a) Diagrammatic representation of Targetted endometrial biopsy; (b) Technique of endometrial biopsy using a 5 Fr forceps; (c) Tissue is grasped with the forceps, advanced forward parallel to the endometrium and downward. The hysteroscope along with the forceps holding the tissue is brought out of the uterine cavity

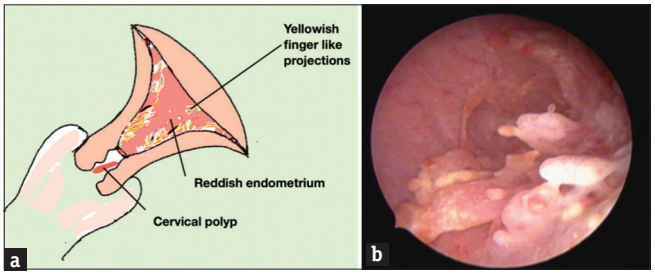

Figure 12: (a) Diagrammatic representation showing yellowish finger like projections; (b) Hysteroscopic view of histocytic endometritis

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 leuckocyes 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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The pictures are from the personal collection of the authors. The pictures are copyrighted.

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Conflicts of interest

There are no conflicts of interest.

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