

# Polypoid endometriosis of post vaginal fornix: utility of MRI imaging of pelvis with diffusion weighted imaging for diagnosis

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### SUMMARY

**Polypoid endometriosis is an uncommon variant of endometriosis which can mimic malignancy due to its presentation as masses. We present a case of polypoid endometriosis which simulated cervical malignancy both on clinical examination and on computed tomography (CT) scanning and discuss how magnetic resonance (MR) imaging, in particular Diffusion Weighted Imaging (DWI), can help to distinguish this condition from true malignancy and avoid invasive surgery.**

### KEY WORDS:

*Polypoid endometriosis, Diffusion Weighted MRI, Cervical Cancer, Magnetic Resonance Imaging*

### INTRODUCTION

The presentation of abnormal prolonged vaginal bleeding warrants immediate gynaecological evaluation. The causes may range from benign disorders such as cervical polyps and ectropion to malignant causes such as endometrial and cervical cancers. Endometriosis is a benign disorder characterized by the presence of a proliferation of normal endometrial tissue outside of the endometrial cavity. Polypoid endometriosis is a distinctive mass-like variant and the clinical symptoms are variable, depending on the site of involvement.

### CASE REPORT

Ms B, a 43 year old single Chinese female, presented to the emergency department with heavy prolonged menstruation not responding to norethisterone and tranexamic acid, leading to anaemia with a haemoglobin of 8.5g/dL. Pelvic ultrasound showed the endometrium to be echogenic with a thickness of 14mm and small fibroids. In addition, the cervix was noted to be bulky with rich vascularity.

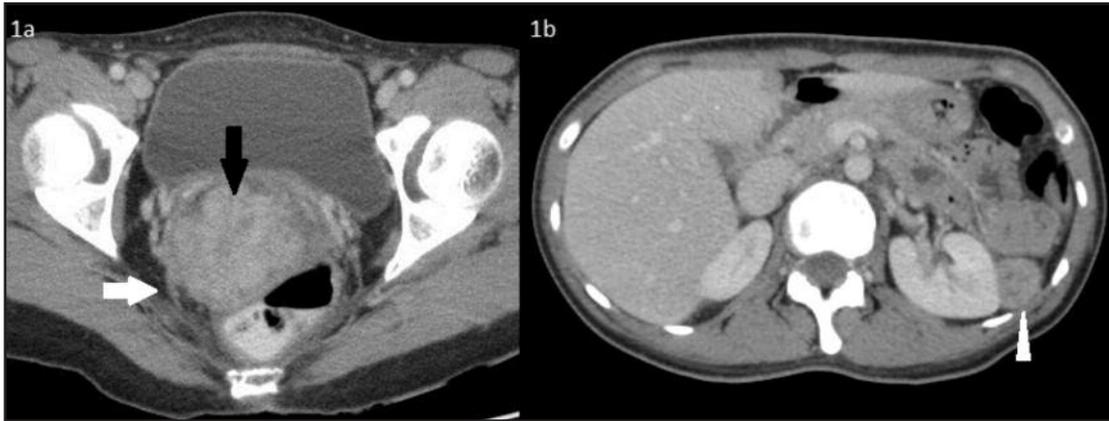
Examination under anaesthesia (EUA), hysteroscopy with dilation and curettage (D&C) showed a bleeding 'cervical mass', suspected to be tumour, which was removed piecemeal and sent for biopsy. The 'cervical tumour' consisted of multiple polypoid fragments, focally covered by ectocervix,

and which included complex, closely aggregated, but separated, convoluted or occasionally cystically dilated endometrial-type glands. The architectural features, may therefore have given an initial impression of malignancy, but closer examination of cytologic features did not reveal any atypia. Surrounding stromal cells appeared endometrial in type, as confirmed by strong diffuse immunopositivity with CD10. Additional supportive evidence for the glandular proliferation to represent endometriosis rather than well-differentiated carcinoma was that the glands were also positive with carcino-embryonic antigen (CEA), and demonstrated an extremely low proliferation index (MIB1 <1%).

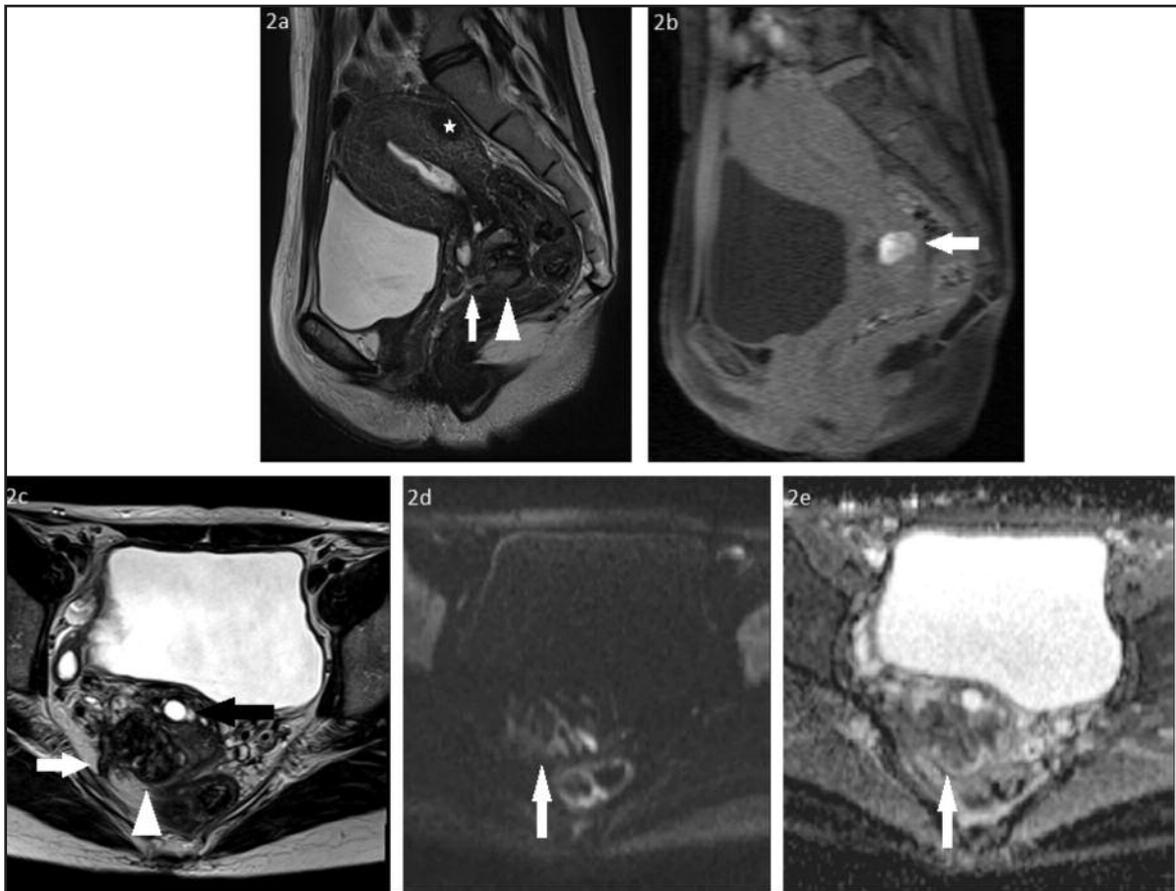
Computed tomography (CT) showed a heterogeneous soft tissue mass in the region of the cervix with thickening of the right uterosacral ligament indicating possible right parametrial involvement (Fig 1a). A well defined soft tissue nodule adjacent to the left kidney was thought to represent a peritoneal deposit (Fig 1b). Although initial biopsy was negative, the clinical and CT findings were suggestive of malignancy and she was referred to our institution for further investigation and management. Magnetic resonance imaging (MRI) of the pelvis was performed. Sagittal T2 weighted image elegantly demonstrated the presence of a multiloculated mass in the posterior fornix displacing the deficient posterior lip of the cervix anteriorly (Fig 2a). The cervix was otherwise normal with a few Nabothian cysts seen. There was T1 hyperintense content contained within the superior locule representing the presence of subacute blood product (Fig 2b). On axial T2 weighted imaging, a T2 hypointense rim was appreciated, with T2 hypointense thickening of the right uterosacral ligament (Fig 2c). Diffusion weighted imaging (DWI) and apparent diffusion coefficient (ADC) map did not reveal any restricted diffusion within the mass (Fig 2d, 2e). The mass showed mild progressive enhancement following administration of intravenous gadolinium contrast. The uterus showed evidence of adenomyosis and fibroids but the endometrium was normal in thickness (Fig 2a). There was no evidence of pelvic lymphadenopathy. Overall features were compatible with polypoid endometriosis.

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**Fig. 1a:** Axial post-contrast CT image showing heterogeneously enhancing mass in region of cervix (black arrow) with uterosacral ligament thickening (white arrow), raising suspicion of parametrial invasion.  
**Fig. 1b:** A soft tissue nodule is seen adjacent to the left kidney (white arrowhead).



**Fig. 2a:** Sagittal T2 (TR= 5582 msec TE= 96 msec) MR image showing multi-loculated mass in posterior vaginal fornix (white arrowhead), displacing the anterior and posterior lips of the cervix anteriorly (white arrow). Thickened junctional zone of the uterus with heterogeneous uterine myometrium is in keeping with adenomyosis of uterus. Ovoid T2 hypointense leiomyoma (\*) noted in posterior wall of uterus.  
**Fig. 2b:** Corresponding Sagittal T1 W FL2D (TR = 365 msec TE = 4.07 msec) MR image showing T1 hyperintense content in superior locule of posterior vaginal fornix mass due to subacute blood product (arrow).  
**Fig. 2c:** T2-weighted axial image (TR = 4200 msec TE = 111 msec) showing multiloculated mass with T2 hypointense rim and internal T2 hypointense foci (white arrowhead) in the right posterior vaginal fornix, displacing the cervix containing Nabothian cysts anteriorly (black arrow). T2 hypointense thickening of the right uterosacral ligament is due to desmoplastic reaction (white arrow).  
**Fig. 2d:** and e. Diffusion weighted image (b=1200) and corresponding ADC map at the same level shows that posterior fornix mass (arrow) and uterosacral thickening with no evidence of restricted diffusion. The areas of hyperintensity in DWI correspond with the areas of hyperintensity in the ADC map, in keeping with T2 shine through.

Another EUA with colposcopic examination was performed. This showed a 3cm posterior fornix vaginal mass abutting but separate from the deficient posterior cervical lip. The next biopsies were obtained partly as intraoperative frozen section specimens, from multiple ectocervical locations as well as the vaginal posterior fornix, enabling the diagnosis of polypoid endometriosis to be confirmed.

Various treatment options were discussed with Ms B who opted for medical treatment with subcutaneous Lucrein (gonadotrophin – releasing hormone agonist) for symptomatic control, keeping in view definitive surgical treatment with excision of the vaginal mass and total hysterectomy. A follow-up CT scan six months later showed interval decrease in size of the posterior vaginal fornix mass as well as the left perinephric nodule which represents another focus of polypoid endometriosis.

## DISCUSSION

The term 'polypoid endometriosis' was coined in 1980 to describe an uncommon and distinctive variant of endometriosis with the appearance of single or multiple polypoid masses. Patients tend to be postmenopausal women and present with symptoms related to per vaginal bleeding (as in our case - although our patient was not postmenopausal) or abdominopelvic masses and their related effects; for example, bowel obstruction, deep vein thrombosis or obstructive uropathy. This histologically benign entity has been shown to be a mimic of neoplasm.<sup>1</sup> As such, clinicians should be aware of both its existence and characteristic imaging features so that the diagnosis can be made and unnecessary investigation and invasive surgery can be avoided.

A prior case series<sup>2</sup> has shown polypoid endometriosis manifesting in the large bowel or its mesentery, the female reproductive organs (cervix, vagina, fallopian tubes and ovaries), omentum, ureters, bladder, paraurethral and paravaginal soft tissue, retroperitoneum and periadrenal soft tissue. In several cases, multiple sites were involved, as in ours. There is suggestion of a link with oestrogen levels, with case reports associating it with gonadotrophin-releasing hormone (GnRH) agonist withdrawal and with the use of tamoxifen.

On examination of the initial biopsy of the 'cervical tumour' consideration had to be given to the possibility of a well-differentiated endometrioid carcinoma, especially in view of the complexity of the glandular architecture. The most helpful diagnostic feature in the second biopsy series was the presence of normal endometrial glands and stroma within muscular vaginal wall, confirming the diagnosis of polypoid endometriosis.

The MR features of polypoid endometriosis have been described in only a few case reports. Three previous case reports described masses with T2 hypointense rim, similar to our case.<sup>3,5</sup> This T2 hypointensity was shown to correspond to surrounding fibrous tissue associated with endometriosis. Various enhancement characteristics ranging, from intense enhancement - "similar to the adjacent uterus" to delayed enhancement have been described by various authors.<sup>4,5</sup>

In our case, while clinical and CT findings were suggestive of a cervical malignancy and histological analysis inconclusive, MR was able to demonstrate the exact location of the mass in the posterior fornix and helped suggest the diagnosis of polypoid endometriosis. The mass was multiloculated, with blood products noted within some of the locules. These locules were compatible with dilated endometrial glands. This mass had a T2 hypointense rim as well as adjacent uterosacral thickening in keeping with desmoplastic reaction. Features atypical for malignancy included the absence of restricted diffusion or pelvic lymphadenopathy. All these features, as well as the associated findings of uterine adenomyosis favoured the diagnosis of polypoid endometriosis over malignancy.

Our case demonstrates the utility of diffusion-weighted imaging in suggesting that the mass was not of a neoplastic origin. This has not been mentioned in previous case reports. The absence of restricted diffusion in the mass and uterosacral ligament thickening helps in differentiating between a cellular tumour of vaginal fornix and polypoid endometriosis with predominant fibrotic desmoplastic reaction. Vaginal carcinoma, on the other hand, typically appears as lobulated exophytic masses or flat, infiltrating plaque-like lesions that show diffuse enhancement with contrast and restricted diffusion on DWI imaging.

In conclusion, polypoid endometriosis is a benign condition which is known to mimic malignancy in the clinical setting. MR imaging, especially with DWI, is useful for suggesting the diagnosis as well as locating and assessing extent of disease. It can also be used to ascertain the presence of complications from the condition. Both radiologists and clinicians should recognise the utility of MR imaging in this condition, especially when accompanied by inconclusive histology findings.

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