A pictorial MRI pelvis 'journey' will demonstrate the early and late appearances of endometriosis and its commonly associated complications.

Cases illustrate the typical appearances followed by the malignant effects it can cause secondary to scarring and fibrosis; premalignant and malignant ovarian lesions as well as complications following repeated operations.

Ultrasound is the first-line imaging technique for the evaluation of endometriosis. It is usually limited to the identification of endometriosis affecting the uterus and ovaries. It has a poor sensitivity for diseases elsewhere, particularly bowel lesions. The classical appearances of an endometrioma in the ovary are shown. A large hypoechoic and homogenous cystic lesion with low-level echoes and no vascularity on colour flow Doppler. Ultrasound can also be used to evaluate the uterus and the presence of adenomyosis. This is usually seen as gross thickening of the myometrium due to the presence of ectopic endometrial tissue.

MRI is very useful in evaluating and following up endometriosis. Typically, endometriomas appear homogenous with high signal on T1 sequences and homogenous or heterogeneous with low signal on T2 sequences depending on the age of the blood products, sometimes called 'T2 shading'. If the endometriomas increase in size they may meet in the midline, known as 'kissing ovaries' and synonymous for pelvic endometriosis. This is caused by adhesions to the posterior wall of the uterus and to each other.

Adhesions caused by endometriosis frequently cause tethering of the ovaries and bowel loops to the uterus and extend along peritoneal reflections and the uterosacral ligaments. Serosal disease on the bowel surface itself causes scarring leading to puckering or a 'mushroom cap' appearance. Less frequent sites of disease include the urinary tract. The disease can also cause marked hydronephrosis secondary to fibrosis within the pelvis. It is very important to review the localising images as this may be the only visualisation of the ureters.

Classical appearances of endometriosis also include dilated fallopian tubes, both haemato- and hydro-salpinges. Solid endometrial implants are typically seen along the anterior and posterior surfaces of the uterus. Common sites include rectovaginal nodules seen on the posterior surface of the vagina. This causes marked dyspareunia and can frequently be palpated on clinical examination.

Ectopic sites of disease include surface deposits in the peritoneum, bowel and abdominal organs. Abdominal wall endometriosis is typically found within a surgical scar and presumed secondary to iatrogenic transfer of endometrial cells e.g. C-section or episiotomy.

Endometriosis over many years causes marked fibrosis due to the repetitive cycles of bleeding, inflammation, scarring and adhesions.

Association with malignancy is seen with endometriosis. The disease increases risk for clear cell and endometrioid carcinoma. Patients with endometriosis are 4.2 times more likely to develop ovarian cancer. All ovarian endometriomas should be reviewed for features suggestive of cancer such as mural nodularity, solid lesions and rapid growth.