The added value of MRI to patients with Disorders of Sexual Development (DSDs)
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MR is well established as best method for showing congenital abnormalities of sex development in adolescence and adulthood, in particular the structure of the uterus and related organs (1,2). Ultrasound is generally used in babies and young children when the focus of care is usually related to other associated abnormalities such as ano-rectal and urological anomalies. CT scanning does not have a place in imaging uterine anomalies in DSDs, as it is preferable to avoid irradiating the pelvis in patients of reproductive age. Despite the advent of 3D ultrasound MR remains the mainstay of uterine imaging in DSDs.

Apart from showing the uterine anatomy, MRI has added value in the following situations where it can contribute information essential to patient care and management.

1. Identifying the site of the ovaries:
Ovaries are frequently ectopic in patients with Mullerian anomalies. In our own series of MRKH patients one or both ovaries were ectopic in around 50% of patients (3). Knowing the site of the ovaries is important for fertility treatment and egg harvesting. Ultrasound is less reliable for finding these ovaries as they may be sited where there is a poor acoustic window such as in the lower abdomen.

2. Diagnosis and follow up of patients with complete androgen insensitivity syndrome (CAIS).
Patients with CAIS have ectopic testes which are most commonly found in the inguinal canal and the pelvic sidewalls, but they may be intraabdominal. MR is the most sensitive imaging modality for finding these gonads. For a variety of reasons patients are electing to retain their testes despite the increased risk of malignancy. MRI is being used for surveillance of these patients although there are no data as yet to show that early malignant disease can be found.

3. Postoperative patients.
Reconstructive surgery of the uterus and vagina can sometimes fail. Patients can represent with pain and obstructed menstruation. MR can be used to show the cause of recurrent pain. An example of this is following resection of a functioning rudimentary horn in patients with unicorunate uteri where residual functioning endometrial material can cause recurrence of haematometria. MRI is the modality of choice for the assessment of the post-operative vagina where stenosis can preclude transvaginal ultrasound.

4. Septate uterus.
These uteri are associated with an increased incidence of miscarriage and the current treatment is for resection of the septum. The surgeon aims to resect the fibrous component of the septum and leave the muscular part. MR is the best modality for differentiating between...
fibrous and muscular material and can guide the surgeon on the extent of resection possible.

5. Vaginal assessment.
Vaginal reconstructive surgery is determined by the size and length of native vagina and its relationship to the perineum. The need for a graft and the approach to the vagina (perineal or perineal combined with abdominal) can be assessed only by MR (4, 5). Currently ultrasound does not give sufficient information for surgical planning.

6. Uterine function.
Reconstructive surgery is difficult and there is significant morbidity associated with this complex surgery. Before attempting to reconstruct an abnormal uterus, it would be helpful if the potential for a successful pregnancy could be estimated. Currently there are no studies published that predict the potential fertility of the uterus. But size, endometrial function and motility are probably relevant and these can be assessed by MR.

7. Other associated disorders.
Mullerian abnormalities are frequently associated with other anomalies such as spinal, pelvic floor, anorectal and renal and ureteric anomalies. These can also be assessed on MR (6).

During this lecture, examples of MR added value will be presented and their relevance to the clinical management of the patients will be illustrated.

References: