

Imaging and Infertility: Mullerian Duct Abnormalities

Mullerian duct abnormalities (MDA) are a rare cause of infertility. In most cases, these abnormalities can be surgically treated. Patients with MDA have greater incidences of fetal intrauterine growth retardation, spontaneous abortions, preterm labor and retained placenta. The role of imaging is to help diagnose and distinguish surgically correctable forms of MDA from inoperable types. In some of the correctable forms, the surgical approach is altered based on the imaging findings.

If during clinical evaluation for infertility, a mullerian duct anomaly is suspected, the clinician may opt for additional imaging evaluation. In order to distinguish

the different types of anomalies, it is important to assess the configuration of the endometrial cavity and the appearance of the uterine body and fundus.

Hysterosalpingography has been a useful method to evaluate the endometrium and tubal patency and still has a role in infertility evaluations. It is limited however in evaluating the uterine contours and complete anatomy needed to evaluate many mullerian anomalies.

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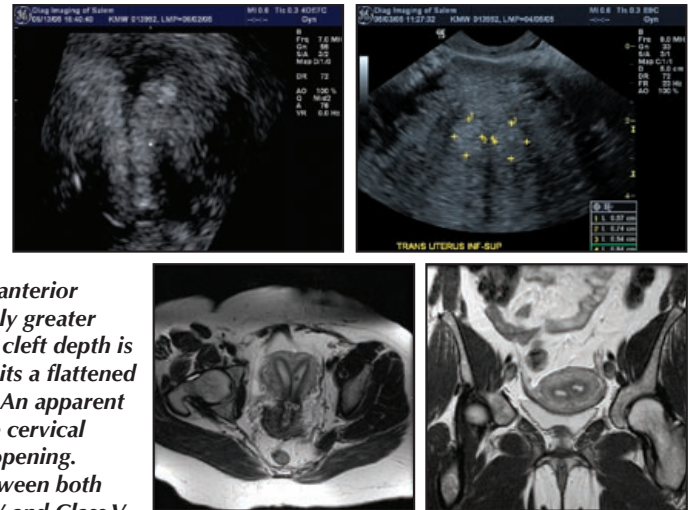
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The most common initial exam is a pelvic ultrasound with transabdominal and transvaginal imaging. The configuration may be suggested by standard 2 dimensional (2D) imaging, but may not be excluded on the basis of negative ultrasound findings. Newer 3 dimensional (3D) sonographic techniques offer more precise visualization of the uterine body than standard 2D ultrasound. 3D Ultrasound sensitivity and specificity is approaching that of MRI.

MRI is still the gold standard for imaging uterine anomalies. MRI provides high-resolution images of the uterine body, fundus and internal structure. In addition it can help evaluate the urinary tract for concomitant anomalies which occur with a higher incidence with mullerian abnormalities. The ovaries can also be evaluated as well. Most types of uterine anomalies can be diagnosed confidently using pelvic MRI.

Findings: *There are two separate endometrial canals visualized. There is a Mullerian abnormality that appears to be a bridge between the Class IV (bicornuate uterus) and Class V (septated uterus). The anterior cornual distance is slightly greater than 4 cm; however, the cleft depth is less than 1 cm and exhibits a flattened contour more inferiorly. An apparent fibrous septum abuts the cervical os to a unified external opening. Thus this uterus falls between both classifications of Class IV and Class V.*



Patient History:

A 34 year old female patient was undergoing infertility treatments. Patient has been prescribed clomid with no results. Her physician ordered an ultrasound to determine the thickness of her endometrium.

Examination:

The ultrasound was performed on the GE logiq 9 Ultrasound using both 2D and 3D imaging. The MRI scan was performed on the GE Signa 1.5T high-field short-bore MRI Scanner.

Discussion:

Mullerian duct anomalies are estimated to occur in 0.1-0.5% of women. The true prevalence may be higher, because full-term pregnancies can occur in some types of anomalies. The anomalies occur due to a disruption of development or fusion during embryogenesis of the female reproductive tract. The American Fertility Society has stratified mullerian duct anomalies into 7 classes.

Classification was difficult in this particular case as the uterus had a configuration that appeared to overlap between a bicornuate and septate uterus. There were two separate endometrial canals with a septum that extended to the internal cervical os. The intercornual distance measured 4cm, which is the upper limits for a septate uterus, but at the lower limits for a bicornuate anomaly. On both the 3D ultrasound and on MRI, there was a mild concavity of the uterine fundus which measured approximately 1cm, again falling into the higher end for a septate uterus and lower end for a bicornuate uterus.

Treatment:

Given the imaging findings, the patient was scheduled for a transvaginal hysteroscopic septoplasty.

Radiologist Spotlight



Victor J. Leonardo, M.D.

Dr. Leonardo is a staff radiologist at Diagnostic Imaging of Salem, as well as a member of Diagnostic Imaging Associates (Salem, OR). His specialties include general radiology and body imaging.

Dr. Leonardo received his undergraduate degree from Santa Clara University and medical degree from Creighton University. He completed his internship at Creighton University/St. Joseph Hospital and did his residency at Oregon Health Sciences University, where he also completed his fellowship in body imaging.

He is board certified by the American Board of Radiology, a radiologist on staff at Albany General Hospital & Tukwila and lives in Salem with his wife Vikkie and two sons.

About Our Center:

Diagnostic Imaging of Salem offers both short-bore and open MRI. Our GE Signa Horizon LX 1.5 T delivers superior image quality and enables a broad assortment of studies, while our Hitachi Elite open MRI delivers exceptional comfort to large, claustrophobic and special needs patients. We have also added a new GE Logiq 9 ultrasound for faster and more precise ultrasound studies with 3D/4D imaging when appropriate.

You can depend on us for:

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- A comfortable, non-clinical environment
- Extended hours and same-day scheduling
- 24-hour report turnaround and STAT studies on request
- Easy and convenient patient access
- Accepting most insurance
- Film or digital delivery and key images with all reports