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## Uterine Inversion

**Kaitlin M. Zaki-Metias, MD,**

**Melina Hosseiny, MD,**

**Fardad Behzadi, MD,**

**Patricia Balthazar, MD**

Department of Radiology, Trinity Health Oakland Hospital/Wayne State University School of Medicine, 44405 Woodward Ave, Medical Education, Pontiac, MI 48341 (K.M.Z.M.); Department of Radiology, University of California San Diego, San Diego, Calif (M.H.); Department of Radiology, Brigham and Women's Hospital/Harvard Medical School, Boston, Mass (F.B.); and Department of Radiology and Imaging Sciences, Emory University School of Medicine, Atlanta, Ga (P.B.).

Uterine inversion, or uterine intussusception, is a rare, potentially life-threatening entity characterized by inversion of the fundus into the uterine cavity, which often manifests as an acute complication of childbirth (1,2). Less commonly, uterine inversion is nonpuerperal, occurring as a result of an endometrial or myometrial mass (2,3). Patients typically present with symptoms that include vaginal bleeding and pelvic pain.

At MRI, uterine inversion appears as a U-shaped uterus with loss of the normal convex fundal contour on sagittal images (Fig 1A, 1B) (2). A target configuration may be visualized on axial images, representing the concentric serosa, myometrium, and endometrium (Fig 1C, 1D) (2). MRI is also useful in assessing the cause in patients with nonpuerperal uterine inversion, including submucosal leiomyomas, uterine leiomyosarcomas, and endometrial malignancies. There are four grades of uterine inversion, which are characterized by the degree of inferior bowing of the fundus relative to the cervix and/or vaginal introitus (Fig 2).

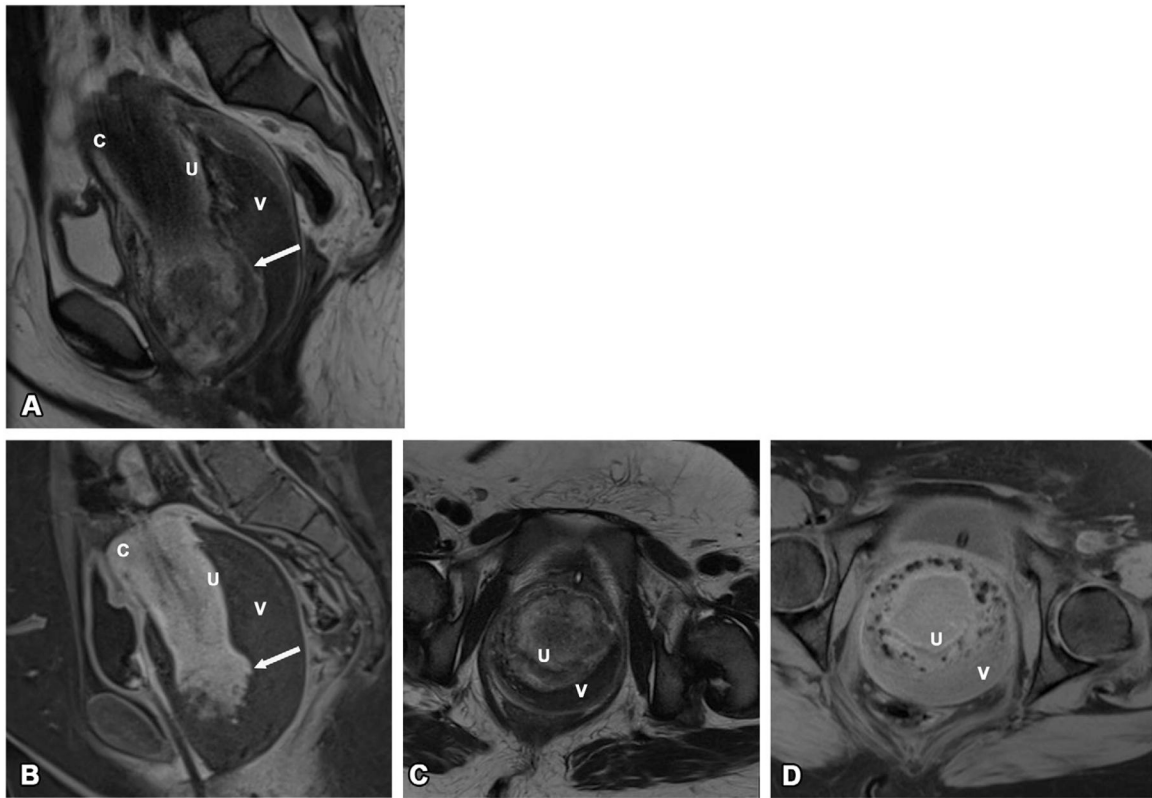
## References

1. Wendel MP, Shnaekel KL, Magann EF. Uterine inversion: a review of a life-threatening obstetrical emergency. *Obstet Gynecol Surv* 2018;73(7):411–417. [PubMed: 30062382]
2. Foti PV, Tonolini M, Costanzo V, et al. Cross-sectional imaging of acute gynaecologic disorders: CT and MRI findings with differential diagnosis. Part II: uterine emergencies and pelvic inflammatory disease. *Insights Imaging* 2019;10(1):118. [PubMed: 31858287]
3. Dadgar S, Pourhosseini SA. Non Puerperal Uterine Inversion Due to Submucous Myoma: A Case Report. *J Family Reprod Health* 2018;12(3):169–172. [PubMed: 31223323]

**Address correspondence to** K.M.Z.M. (kaitlin.zaki@trinity-health.org).

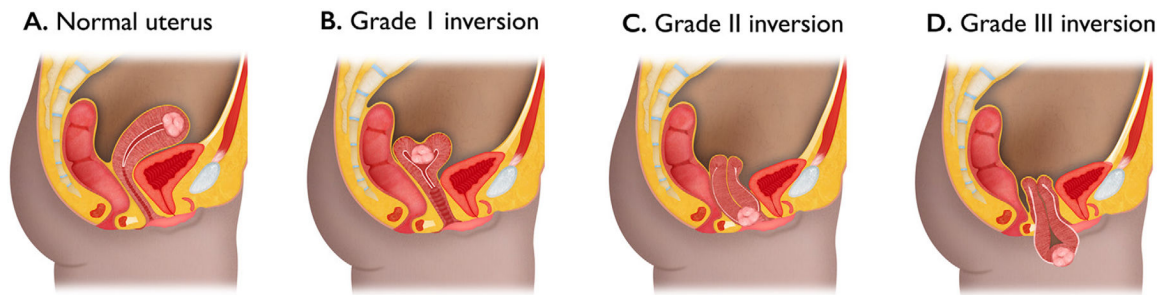
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**Figure 1.**

Uterine inversion in a previously healthy premenopausal female patient with acute onset of pelvic pain and vaginal bleeding. A bleeding vaginal or cervical mass was suspected on physical examination, and pelvic MRI was performed for further evaluation. Sagittal T2-weighted (**A**) and contrast-enhanced fat-suppressed T1-weighted (**B**) MR images of the pelvis demonstrate a U-shaped uterus (*U*) with loss of the normal fundal contour, with protrusion of the fundus into the distended vaginal canal (*V*), consistent with grade III uterine inversion. The cervix (*C*) is located superior to the inverted fundus. At the fundus, there is an ill-defined rounded lesion (arrow in **A** and **B**) with heterogeneous T1 signal intensity and enhancement with irregular margins, with adjacent heterogeneous T2 signal intensity and increased T1 signal intensity. The findings are most consistent with a hemorrhagic submucosal uterine leiomyoma. Axial T2-weighted (**C**) and contrast-enhanced fat-suppressed T1-weighted (**D**) MR images of the pelvis show concentric rings of signal intensity indicating the serosa, myometrium, endometrium, and vagina.



**Figure 2.**

Illustration depicts the normal anatomic position of the uterus (*A*) and the various grades of inversion. Grade I uterine inversion (*B*) is characterized by inferior bowing of the fundus up to but not beyond the cervix. In grade II uterine inversion (*C*), the inverted fundus protrudes through the cervix and into the vagina. The uterus is fully inverted and protrudes out of the vagina in grade III uterine inversion (*D*).