

Performance of O-RADS MRI Score for Classifying Indeterminate Adnexal Masses at US

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Take-Away Points

- **Major Focus:** To evaluate the performance of the five-point Ovarian-Adnexal Reporting Data System (O-RADS) MRI score in patients with adnexal masses that were indeterminate at US.
- **Key Results:** The five-point O-RADS MRI score had positive likelihood ratios for malignancy of 0.01 for score 2, 0.27 for score 3, 4.42 for score 4, and 38.81 for score 5. For experienced readers, area under the receiver operating characteristic curve was 0.96, with a sensitivity of 93% and a specificity of 91%, with good interrater agreement.
- **Impact:** O-RADS MRI scoring system can help risk-stratify malignant versus benign adnexal masses that are indeterminate at US, which has the potential to limit unnecessary surgeries, guide more complete oncologic surgeries, and preserve fertility.

US fails to differentiate benign from malignant adnexal masses in 18%–31% of patients, frequently leading to MRI studies to evaluate indeterminate lesions. O-RADS was created to standardize descriptions of ovarian and adnexal pathology to better stratify risk. An O-RADS MRI score was previously tested in a retrospective single-center study. The score consists of five categories for risk of malignancy: 1, nonadnexal lesion; 2, almost certainly benign (purely cystic, endometriotic, or fatty without wall enhancement; low diffusion-weighted b1000 and T2 signal if solid component); 3, low risk (solid component or mass with type 1 slowly increasing curve); 4, intermediate risk (mass with type 2 moderately increasing curve similar to myometrium); and 5, high risk (mass with type 3 rapidly increasing curve more rapid than myometrium, or, peritoneal or omental disease).

Thomassin-Naggara et al report on the application of the O-RADS MRI score in a large multicenter prospective study of women considered, as a result of findings at US,

to have indeterminate adnexal masses. MRI examinations were scored by two readers (experienced and junior) and one experienced reader masked to clinical and US data. The reference standard was histologic finding or 2-year follow-up. A score of 4 or 5, suggesting malignancy, had a sensitivity of 93% and specificity of 91%. Substantial interreader agreement of MRI score was observed between experienced and junior readers ($\kappa = 0.784$) and between experienced readers ($\kappa = 0.804$). Masses that remained indeterminate (ie, score 4) were infrequent, including 10.8% among experienced readers and 12.5% among junior readers. MRI correctly reclassified the mass origin as nonadnexal, with a sensitivity of 99% and a specificity of 78%. In category score 2, 99.6% of women had benign lesions. For category score 3, 12 women had malignant lesions (false-negative finding rate, 5.6%), eight of which were borderline. In category score 4, 50.8% of the women had benign and 49.2% had malignant lesions. For category score 5, 89.5% of the women had malignant lesions, while 10.5% of the lesions were benign. All fat-containing lesions were benign except one in category 5. Overall, there was good interreader agreement ($\kappa = .78-.80$) regardless of reader experience.

This multicenter prospective study validates the O-RADS MRI score as an effective tool in assigning risk for malignancy in sonographically indeterminate adnexal lesions.

—VINCENZO K. WONG AND VIKAS KUNDRA

Highlighted Article

Thomassin-Naggara I, Poncelet E, Jalaguier-Coudray A, et al. Ovarian-Adnexal Reporting Data System Magnetic Resonance Imaging (O-RADS MRI) score for risk stratification of sonographically indeterminate adnexal masses. *JAMA Netw Open* 2020;3(1):e1919896. doi:10.1001/jamanetworkopen.2019.19896