

# Contrast and Time Intensity Curves

Modified on: Fri, 14 Feb, 2025 at 9:52 AM

<b><u>Does contrast need to be used for adnexal mass characterization using the O-RADS MRI risk score?</u></b>
<b><u>How do you acquire the DCE MRI series?</u></b>
<b><u>How are the ROIs placed to construct the time intensity curves?</u></b>
<b><u>Is there variability in myometrial enhancement, affecting the use of the myometrium as an internal reference for enhancement?</u></b>
<b><u>What software do you recommend for time intensity curve analysis?</u></b>
<b><u>Is the time intensity curve done by the technologists as a routine, or is it done by the radiologists on a MR workstation?</u></b>
<b><u>Is it necessary to use the time intensity curves for O-RADS MRI risk stratification?</u></b>
<b><u>If DCE cannot be performed, can you still use the O-RADS MRI risk score?</u></b>
<b><u>What is the suggested comparison in patients who have undergone hysterectomy?</u></b>

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(<https://www.surveymonkey.com/r/RadsFaq?HELPFUL=NO&RADS=O-RADS&FAQ=FAQ-187>)

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## FAQ-187: Does contrast need to be used for adnexal mass characterization using the O-RADS MRI risk score?

YES: Gadolinium based contrast is part of the protocol requirements for using the O-RADS MRI Risk Score

Did you find FAQ-187 helpful? [Yes](#)

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## FAQ-188: How do you acquire the DCE MRI series?

DCE MRI: 3D T1WI with fat sat

- Slice thickness: 3mm or less
- Minimal temporal resolution < 15 seconds
- Begin the scanning, then 30 second later start the injection, without interruption of the scanning
- Total duration after injection: 4 minutes

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## FAQ-189: How are the ROIs placed to construct the time intensity curves?

Suggested method:

- Scrolling through the entire lesion look for the earliest and most intense area of enhancement within the solid tissue
- Avoid placing ROIs on vessels by using the T2-weighted and diffusion weighted image to assure the ROI is placed on solid tissue
- Placing different ROIs will result in different time intensity curves; choose the highest risk time intensity curve to score the lesion

Did you find FAQ-189 helpful? [Yes](#)

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### **FAQ-190: Is there variability in myometrial enhancement, affecting the use of the myometrium as an internal reference for enhancement?**

Yes, because there is variation in myometrial enhancement throughout the menstrual cycle, but this pitfall can be avoided. According to a study that evaluated the variation of myometrial enhancement on DCE in relationship to the patient's menopausal status and menstrual cycle, it was found that the junctional zone is much more dependent on the hormonal status compared to the external myometrium. ***Placing the ROI over the external myometrium avoids variability.***

Did you find FAQ-190 helpful? [Yes](#)

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### **FAQ-191: What software do you recommend for time intensity curve analysis?**

The software depends on your PACS vendor as most vendors have some version of mean curve function for dynamic series; Examples: DynaCad, GE Advantage workstation, Intellispace Philips, etc.

Usually there are DCE tools available for breast, prostate or cerebral perfusion, and these can be utilized.

Did you find FAQ-191 helpful? [Yes](#)

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**FAQ-192: Is the time intensity curve done by the technologists as a routine, or is it done by the radiologists on a MR workstation?**

Currently, it is recommended that the time intensity curve are ***created by the radiologist*** in order to assure the ROI is placed over the solid tissue that demonstrates the earliest and most intense enhancement.

Did you find FAQ-192 helpful? [Yes](#)

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**FAQ-193: Is it necessary to use the time intensity curves for O-RADS MRI risk stratification?**

No, but it is recommended for maximal specificity. Time intensity curve (TIC) analysis is recommended because distinction between O-RADS MRI score 3 and score 4 / 5 cannot be made without TIC analysis, introducing a tendency to upscore lesions.

Although the O-RADS MRI score can be used with non-dynamic contrast enhanced MRI, the solid tissue can only be assessed as enhancing < outer myometrium (O-RADS MRI 4) versus > outer myometrium (ORADS MRI 5) at 30-40 seconds.

Did you find FAQ-193 helpful? [Yes](#)

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#### **FAQ-194: If DCE cannot be performed, can you still use the O-RADS MRI risk score?**

YES, however, the solid tissue can only be assessed as enhancing < outer myometrium (O-RADS MRI 4) versus > outer myometrium (O-RADS MRI 5).

Did you find FAQ-194 helpful? [Yes](#)

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#### **FAQ-195: What is the suggested comparison in patients who have undergone hysterectomy?**

If there is a previous hysterectomy, you can still differentiate the low risk curve (slow and flat with no shoulder) from an intermediate/high risk curve with a shoulder and plateau, and assign an O-RADS MRI Score 3 (low risk curve) or an O-RAD MRI Score 4/5, respectively; however intermediate and high risk curves cannot be differentiated.

Did you find FAQ-195 helpful? [Yes](#)

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