



# O-RADS

“Time Intensity Curves”



## O-RADS MRI Risk Stratification and Management System

O-RADS MRI Score	Risk Category	Positive Predictive Value for Malignancy <sup>^</sup>	Lexicon Description
0	Incomplete Evaluation	N/A	N/A
1	Normal Ovaries	N/A	No ovarian lesion Follicle defined as simple cyst ≤ 3 cm in a premenopausal woman Hemorrhagic cyst ≤ 3 cm in a premenopausal woman Corpus luteum +/- hemorrhage ≤ 3 cm in a premenopausal woman
2	Almost Certainly Benign	<0.5% <sup>^</sup>	Cyst: Unilocular- any type of fluid content <ul style="list-style-type: none"> <li>No wall enhancement</li> <li>No enhancing solid tissue*</li> </ul> Cyst: Unilocular – simple or endometriotic fluid content <ul style="list-style-type: none"> <li>Smooth enhancing wall</li> <li>No enhancing solid tissue</li> </ul> Lesion with lipid content** <ul style="list-style-type: none"> <li>No enhancing solid tissue</li> </ul> Lesion with "dark T2/dark DWI" solid tissue <ul style="list-style-type: none"> <li>Homogeneously hypointense on T2 and DWI</li> </ul> Dilated fallopian tube - simple fluid content <ul style="list-style-type: none"> <li>Thin, smooth wall/endsalpingeal folds with enhancement</li> <li>No enhancing solid tissue</li> </ul> Para-ovarian cyst – any type of fluid <ul style="list-style-type: none"> <li>Thin, smooth wall +/- enhancement</li> <li>No enhancing solid tissue</li> </ul>
3	Low Risk	~5% <sup>^</sup>	Cyst: Unilocular – proteinaceous, hemorrhagic or mucinous fluid content*** <ul style="list-style-type: none"> <li>Smooth enhancing wall</li> <li>No enhancing solid tissue</li> </ul> Cyst: Multilocular - Any type of fluid, no lipid content <ul style="list-style-type: none"> <li>Smooth septae and wall with enhancement</li> <li>No enhancing solid tissue</li> </ul> Lesion with solid tissue (excluding T2 dark/DWI dark) <ul style="list-style-type: none"> <li>Low risk time intensity curve on DCE MRI</li> </ul> Dilated fallopian tube – <ul style="list-style-type: none"> <li>Non-simple fluid: Thin wall /folds</li> <li>Simple fluid: Thick, smooth wall/ folds</li> <li>No enhancing solid tissue</li> </ul>
4	Intermediate Risk	~50% <sup>^</sup>	Lesion with solid tissue (excluding T2 dark/DWI dark) <ul style="list-style-type: none"> <li>Intermediate risk time intensity curve on DCE MRI</li> <li>If DCE MRI is not feasible, score 4 is any lesion with solid tissue (excluding T2 dark/DWI dark) that is enhancing ≤ myometrium at 30-40s on non-DCE MRI</li> </ul> Lesion with lipid content <ul style="list-style-type: none"> <li>Large volume enhancing solid tissue</li> </ul>
5	High Risk	~90% <sup>^</sup>	Lesion with solid tissue (excluding T2 dark/DWI dark) <ul style="list-style-type: none"> <li>High risk time intensity curve on DCE MRI</li> <li>If DCE MRI is not feasible, score 5 is any lesion with solid tissue (excluding T2 dark/DWI dark) that is enhancing &gt; myometrium at 30-40s on non-DCE MRI</li> </ul> Peritoneal, mesenteric or omental nodularity or irregular thickening with or without ascites

How do I know if the DCE is low, intermediate, or high risk?

<sup>^</sup>Approximate PPV based on data from Thomassin-Naggara, et al. O-RADS MRI Score for Risk Stratification of Sonographically Indeterminate Adnexal Masses. JAMA Network Open. 2020;3(1):e1919896. Please note that the PPV provided applies to the score category overall and not to individual characteristics. Definitive PPV are not currently available for individual characteristics. The PPV values for malignancy include both borderline tumors and invasive cancers.

\* Solid tissue is defined as a lesion component that enhances and conforms to one of these morphologies: papillary projection, mural nodule, irregular septation/wall or other larger solid portions.

\*\* Minimal enhancement of Rokitansky nodules in lesion containing lipid does not change to O-RADS MRI 4.

\*\*\* Hemorrhagic cyst ≤3cm in pre-menopausal woman is O-RADS MRI 1.

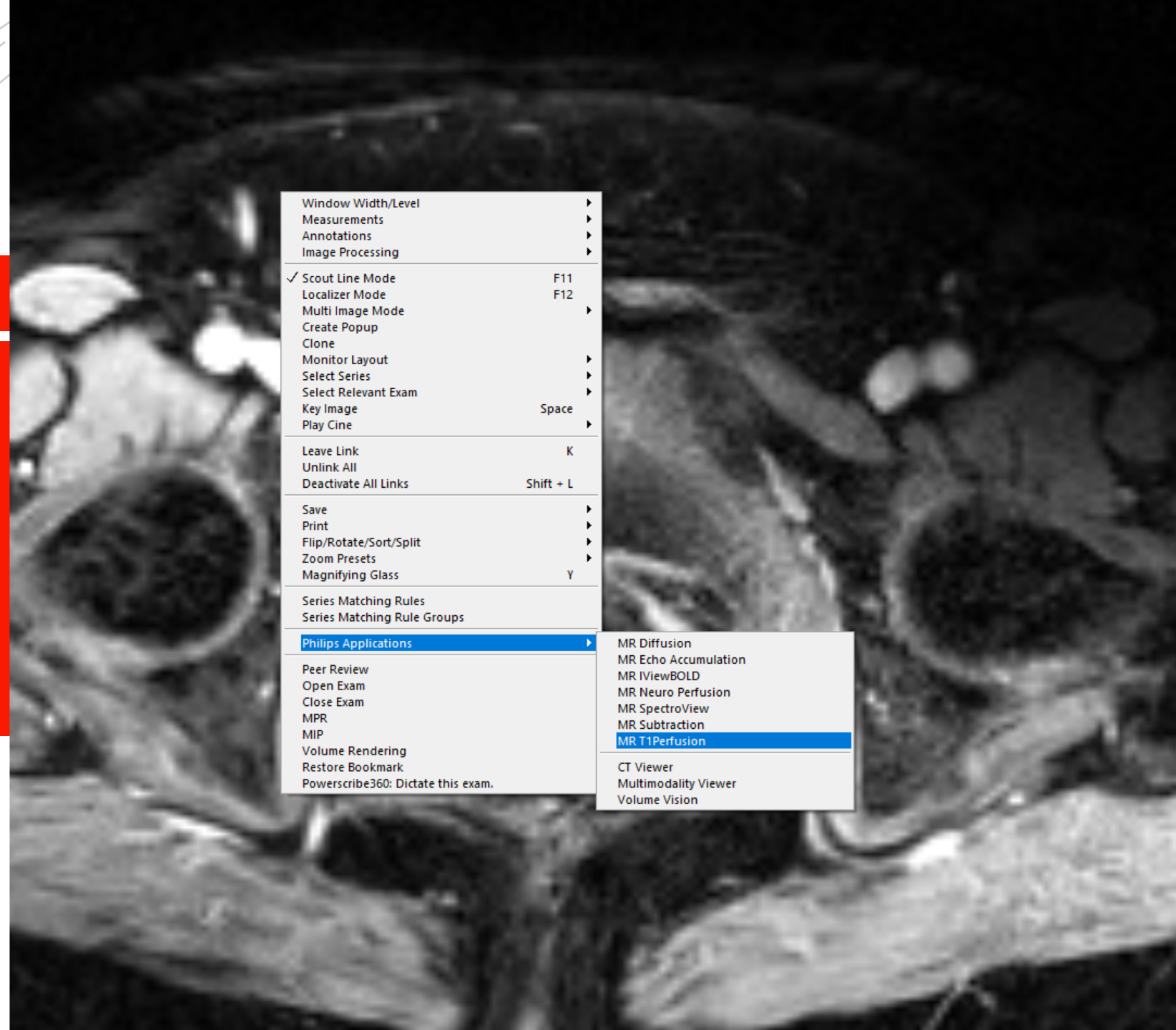
DCE = dynamic contrast enhancement with a time resolution of 15 seconds or less

## Step 1 Find the DCE:

AX VIBE 20 Phase\_W? Labels may change.  
Look for a T1 FS that shows multiple post  
gad timepoints



# Step 2: Send to Philips



- Window Width/Level ▶
- Measurements ▶
- Annotations ▶
- Image Processing ▶
- ✓ Scout Line Mode F11
- Localizer Mode F12
- Multi Image Mode ▶
- Create Popup
- Clone
- Monitor Layout ▶
- Select Series ▶
- Select Relevant Exam ▶
- Key Image Space
- Play Cine ▶
- Leave Link K
- Unlink All
- Deactivate All Links Shift + L
- Save ▶
- Print ▶
- Flip/Rotate/Sort/Split
- Zoom Presets ▶
- Magnifying Glass Y
- Series Matching Rules
- Series Matching Rule Groups
- Philips Applications ▶**
- Peer Review
- Open Exam
- Close Exam
- MPR
- MIP
- Volume Rendering
- Restore Bookmark
- Powerscribe360: Dictate this exam.
- MR Diffusion
- MR Echo Accumulation
- MR IViewBOLD
- MR Neuro Perfusion
- MR SpectroView
- MR Subtraction
- MR T1Perfusion**
- CT Viewer
- Multimodality Viewer
- Volume Vision

# Step 3: Create curves

"Measure ROIs" → Ellipse →  
Place on enhancing  
nodule/mass

The screenshot displays a software interface for medical image analysis. On the left, a dark grey panel contains a list of parameters with checkmarks, indicating they are active or selected:

- Max rel enhan... ✓
- Time to peak ✓
- Wash out rate ✓
- Area under th... ✓
- TO ✓
- Wash in rate ✓
- Brevity of enh... ✓

Below the parameters, the interface is divided into sections:

- 4. Measure ROIs**: Includes a help icon (?) and an expand/collapse icon (^).
- Draw tissue ROI**: Shows a dropdown menu with options: **Smoothed Contour**, **Ellipse**, and **Freehand**. The **Ellipse** option is currently selected.
- 5. Select underlay**: Shows a dropdown menu with options: **Ellipse** and **our**.

At the bottom of this panel is a **Generate series** button with a save icon.

On the right, a CT scan image is shown. A region of interest (ROI) is marked with a blue dashed outline and labeled **Roil** in a green box. The image is labeled **Contrast** at the top. In the bottom right corner, there is a directional cross with **A** (Anterior), **R** (Right), **L** (Left), and **P** (Posterior) labels. The text **Dt 2:15** is visible at the bottom left of the image area.


Make a 2<sup>nd</sup> ROI  
on normal  
myometrium

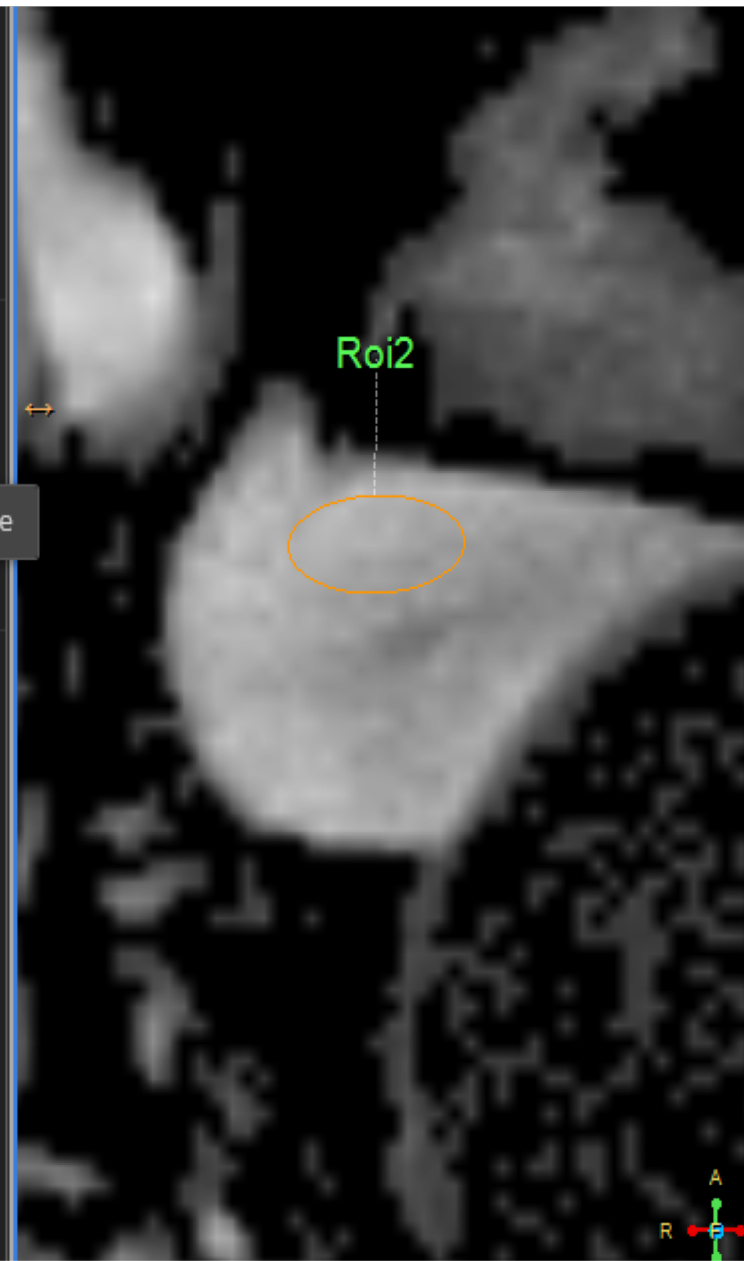
- Time to peak
- Wash in rate
- Wash out rate
- Brevity of enh...
- Area under th...

4. Measure ROIs

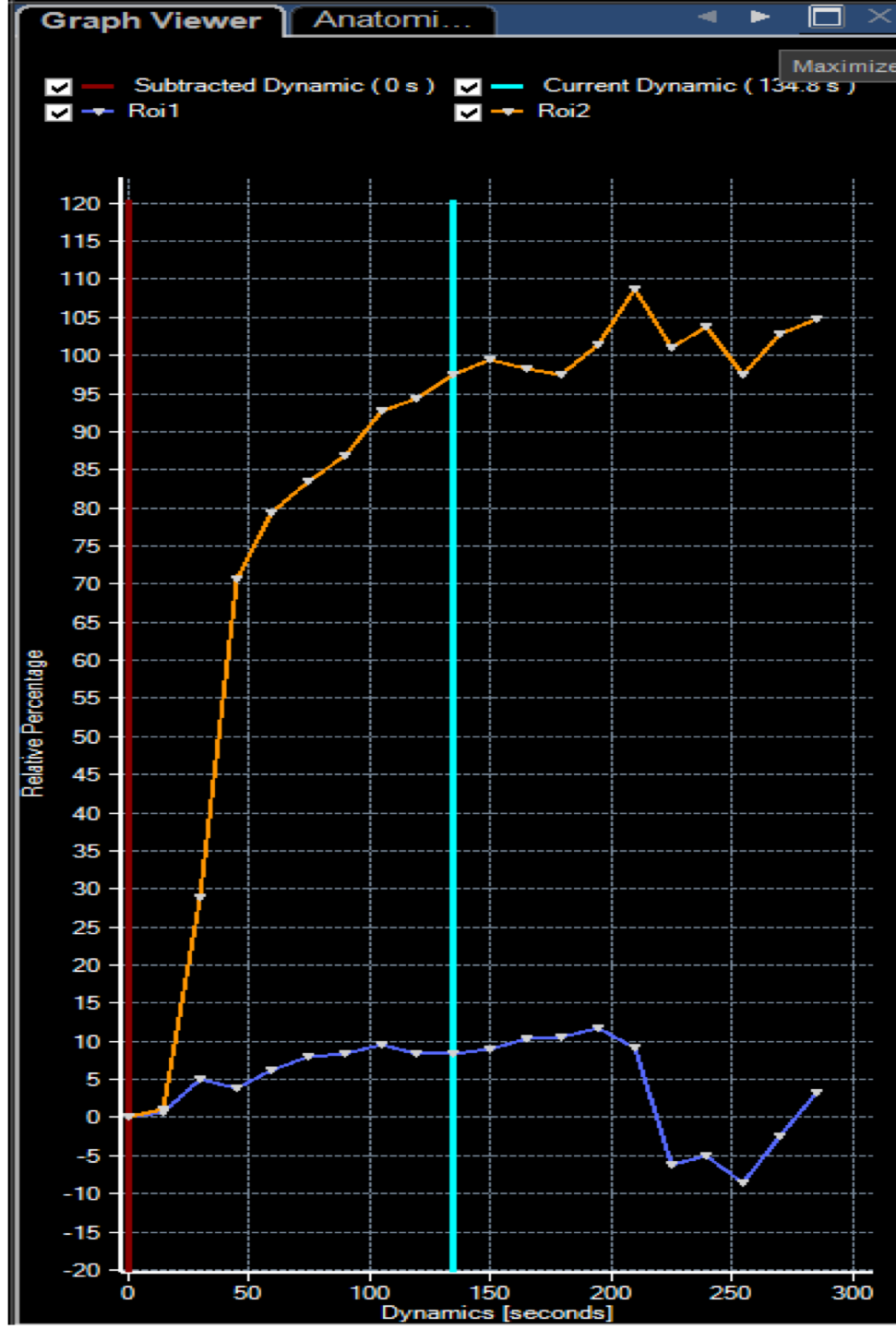
Draw tissue ROI

5. Select underlay

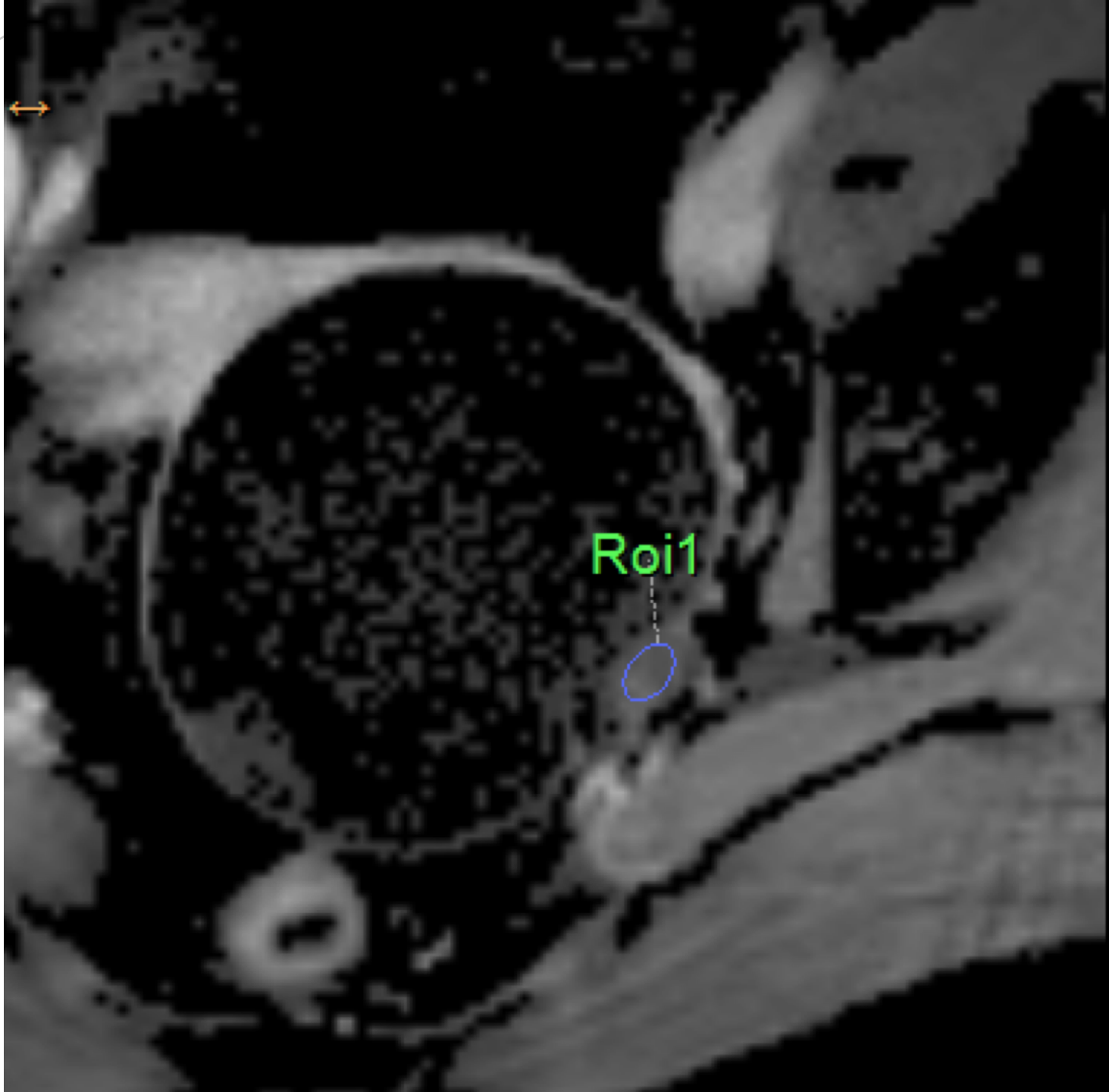
 Generate series



This graph will  
be on screen  
automatically

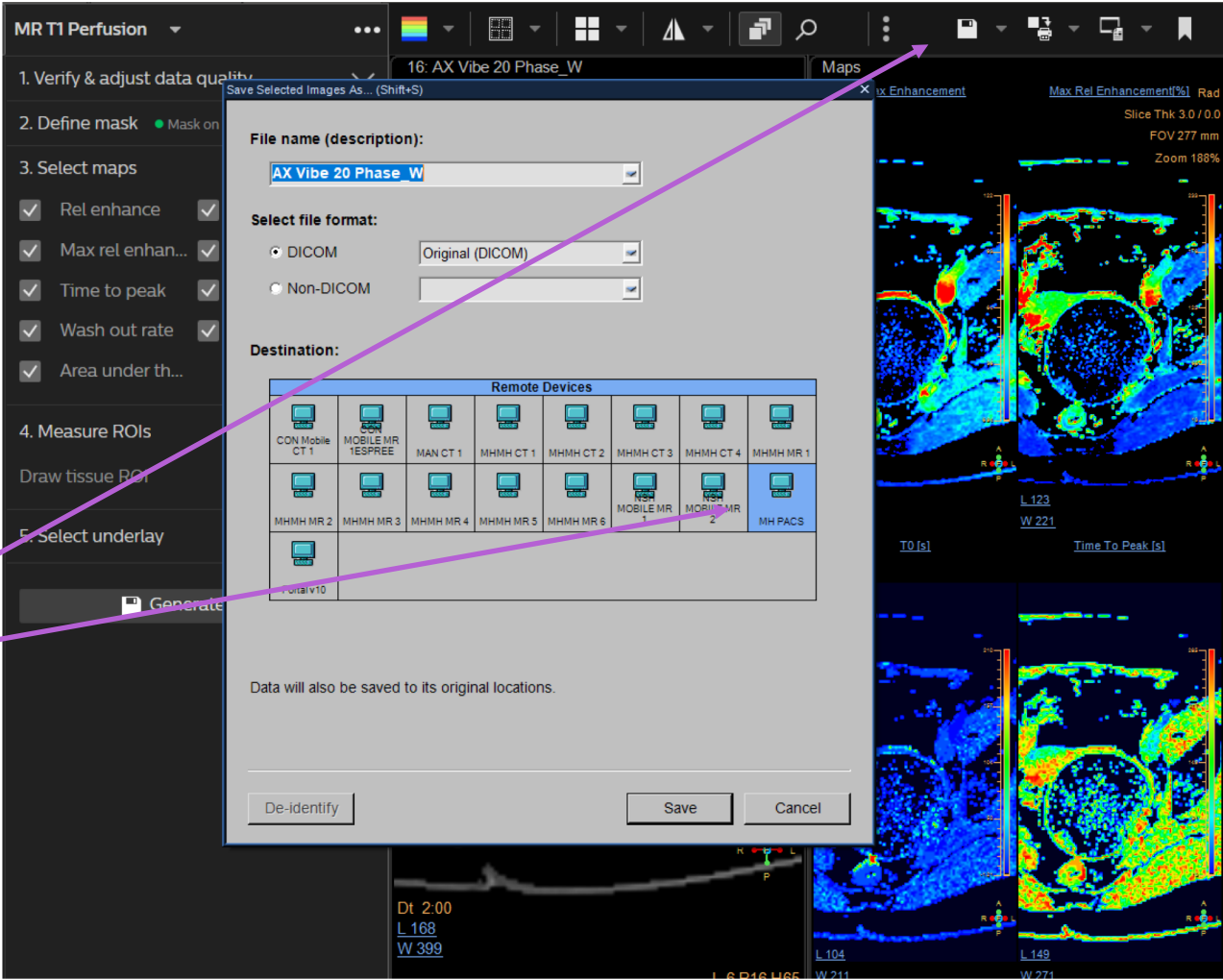


Step 4  
Scroll images back  
to ROI 1 (the  
mass)

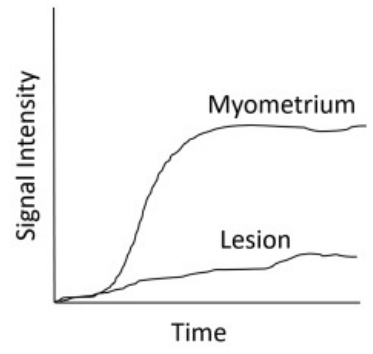




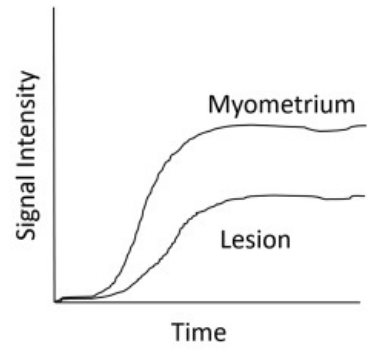
Step 5  
Press Save button  
(floppy disk)  
Save to MH PACS



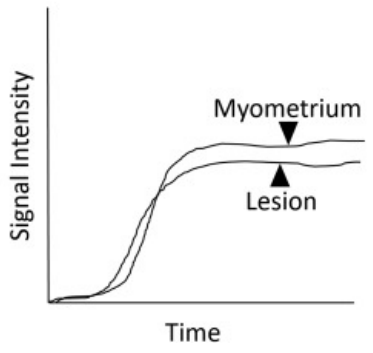
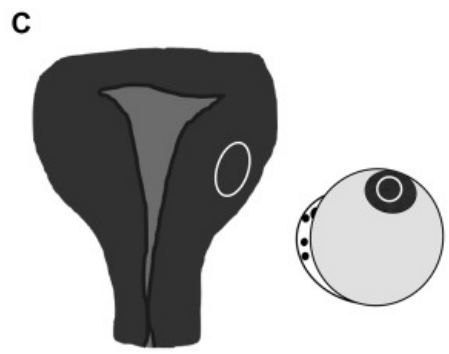
Compare to O-RADS Lexicon definition of low, intermediate, and high risk



Low



Intermediate



High