

# Computed Tomography: Soft Tissue Neck with IV Contrast

Image quality in the multicenter setting can be greatly influenced by variances in acquisition protocols. These variances may be related not only to equipment manufacturer and model, but also technique.

The study may permit imaging per institutional standard-of-care. However, aligning image acquisition to established standards is essential for robust quality data.

The table, below, is provided as a guideline and overview for routine head CT exams. Please refer to your site's specific CT manufacturer's imaging protocols and physicist recommendations for the optimal scanning protocol.

The soft tissue neck CT examination should contain, at a minimum, the following series:

1. Localization scan
2. Contrast-enhanced helically acquired 2-3mm contiguous axial plane series in:
  - a. standard algorithm

Exam and Patient Preparation		
Scan Type	Helical	
SFOV	<ul style="list-style-type: none"> <li>Small Body</li> <li>Adjust to include all soft tissue</li> </ul>	Typically 250–300 mm.
DFOV	Adjust to include all soft tissue structures	
Patient Position	<ul style="list-style-type: none"> <li>Supine, head-first into the gantry with the head in the head-holder whenever possible</li> <li>Patient's arms by sides secured with safety strap and shoulders relaxed down</li> <li>Remove any metal objects (earrings, removable dentures etc.) out of the scanning range</li> <li>Patient's neck slightly extended to exclude the orbits if possible</li> </ul>	Lateral iso-centering is critical for proper Automatic Exposure Control
IV Contrast Injection	<ul style="list-style-type: none"> <li>Dose and rate per institutional standard</li> <li>Single injection with 35-45 second fixed scan delay is typical</li> <li>Split-bolus technique may provide better lesion and vascular enhancement</li> <li>Dual head power injector recommended</li> <li>Saline flush recommended</li> </ul>	Insert an intravenous catheter per institutional guidelines prior to the start of imaging.
Oral Contrast	None	

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## Image Acquisition

<b>Localization Scan</b>	Lateral	Vertex to aortic arch
<b>Scan Direction</b>	Craniocaudal	
<b>Scan Range</b>	Skull base (sellar floor) to top of the aortic arch	Include all soft tissue
<b>Technical Scan Parameters</b>	<ul style="list-style-type: none"> <li>Automatic Exposure Control (AEC) should be used whenever possible</li> <li>Iterative reconstruction and similar noise reduction techniques should be utilized if available</li> <li>Metal artifact reduction (MAR) should be enabled prior to scanning for any metal objects that cannot be removed from the scan field of view if available</li> <li>Adjust kVp and mAs per slice or range (minimum and maximum mAs for multidetector CT) per body habitus and manufacturer recommendations</li> </ul> <p>Slice thickness = 2–3 mm contiguous</p>	
		Please refer to manufacturer recommendations
		Recommend thin slice reconstructions ( $\leq 1$ mm) in standard algorithm for reformats
<b>Reconstructions</b>	Recommended in both soft tissue and bone algorithm	
<b>Reformats</b>	<ul style="list-style-type: none"> <li>Coronal performed perpendicular to the plane of the hard palate from the nasal vestibule</li> <li>Sagittal performed to the plane of the hard palate through the maxillary sinuses</li> </ul>	
<b>Radiation Dose</b>	Per ALARA	
<b>Respiration</b>	<ul style="list-style-type: none"> <li>Suspended inspiration</li> <li>Instruct patient not to swallow during scan acquisition</li> </ul>	Patient should be instructed to hold breath at end of inspiration during scan acquisition

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## References

1. ACR–ASNR–SPR Practice Parameter for the Performance of Computed Tomography (CT) of the Extracranial Head and Neck, Res. 14 – 2016. <https://www.acr.org/-/media/ACR/Files/Practice-Parameters/CT-Head-Neck.pdf>, accessed February 13, 2021.