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**Poor Collimation and Scout Images Can Assist Your Defense**

And More!

By Mike Dial

# Poor Collimation and Scout Images Can Assist Your Defense

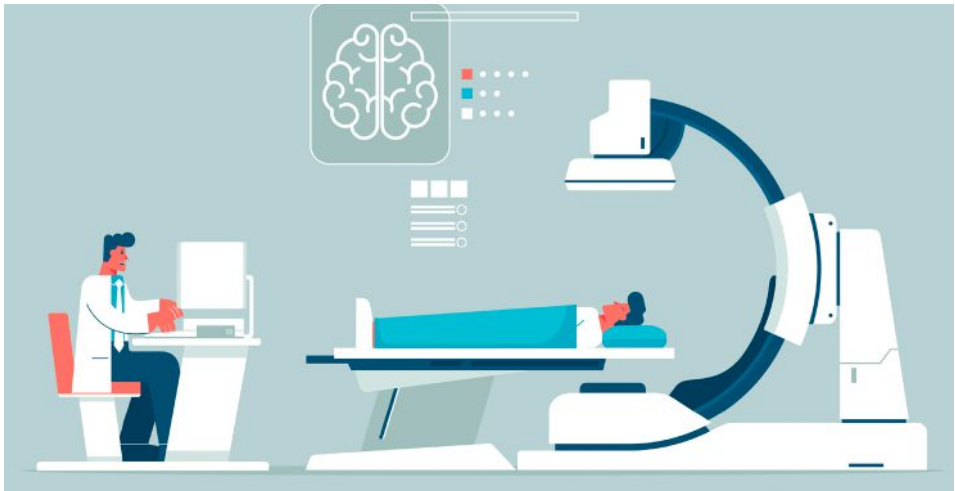
This article focuses on imaging collimation and scout images and how knowing about these issues can help you and your clients.

Medical imaging is an often-overlooked source of evidence in litigation. All experienced personal injury/wrongful death litigators know to review the "impression" of pertinent radiologist reports and obtain pertinent images from providers. But a lack of knowledge regarding human anatomy, or how imaging departments and radiographers operate, can lead to omitting key evidence. This well is deep. This article focuses on imaging collimation and scout images and how knowing about these issues can help you and your clients.

## Collimation

"Collimation is the limitation of the primary x-ray beam by blade-type diaphragms on the x-ray tube. Collimation of the primary beam to the area of interest limits the radiation dose to the patient by limiting the amount of tissue that is exposed."[1] In other words, collimation focuses the x-ray beams on the desired body part. Collimation is similar to focusing and zooming in before taking a picture with your phone. Proper collimation improves image quality and reduces the amount of radiation the patient absorbs. The radiographer taking the image has a duty to balance ensuring all the desired body part is properly imaged while limiting adjacent body parts as much as possible. Whether the radiologist has a duty to interpret imaging that should not have been included in the image ordered is beyond the scope of this article. Here, I'm advocating for defense counsel to 1) obtain all imaging possibly related to litigation and 2) have someone with knowledge review the images to determine whether the images can assist in defending the matter.

If body parts connect, like bones forming a joint, then at least a portion of the adjacent body part will be included even in properly collimated images. If an image of a long bone is ordered, then the radiog-



[1] *Ball S, McKerrow M, Murphy A., Do radiographers collimate? A retrospective analysis of radiographic collimation of common musculoskeletal examinations at an adult trauma centre, J Med Radiat Sci. 2023 Mar;70(1):21-29.*

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**The key for defense counsel is to know anatomy and be aware of body parts included in, or adjacent to, the body part imaged.**

rapher must image both ends of the bone even if it requires more than one image. So the knee and hip joints are shown in properly collimated femur x-rays. The wrist and elbow are shown on properly collimated forearm x-rays.

If body parts are on top of one another, then the supra or superimposed body part will be included in the image regardless of collimation. So at least a portion of the abdomen is included in a lumbar x-ray. Same for the chest in a thoracic spine x-ray and esophagus and trachea in cervical x-rays or CT.

Poor collimation results in more of the body being imaged. You can only know whether an image was properly collimated by viewing it. It's possible, but rare, for a radiologist to comment on improper collimation in an x-ray report. If a radiologist did make such a comment in a report, then, arguably, the radiologist has a duty to interpret the additional body part imaged or at least recommend additional imaging ordered for that body part. But it would not be prudent for defense counsel to rely solely on the interpreting radiologist in this regard. Get the images and look yourself, or have someone with knowledge view the image.

Shoulder x-rays can include the upper lobes of the lung and cervical and thoracic spine. Pelvis x-rays can include the abdomen and show abdominal distention, air in the colon or fecal impaction. Foot x-rays can show the ankle bones. Hand x-rays can show bones in the wrist and vice versa. Chest and abdomen CT includes the thoracic and lumbar spine. A head CT can include facial bones and the mandible. The list goes on and on. Knowing anatomy and adjacent body parts is key for defense counsel on the hunt for evidence to defend their clients.

With digital imaging, radiographers can "crop" images after obtaining the image but before sending the image to the server (e.g., Picture Archiving System). This is like cropping a photo and can result in what appears to be a properly collimated image. These cropped images may not have been properly collimated, and the original, uncropped image may contain parts of the body in addition to what was ordered to be imaged. Again, this can be a goldmine for litigators.

[2]

The image above shows the radiographer poorly collimated including the distal radius and ulna and proximal humerus in this elbow x-ray. The purple box shows how the x-ray beam should have been collimated. Using digital imaging software, the radiographer can "crop" the image before sending it to the server and radiologist resulting in:

[2] *Image obtained from: Esmaeilian, A. M., Aliakbari, S., Hejazi, P., and Jadidi, M., Impact of Electronic Collimation on Reducing Unnecessary Patient Dose in Digital Radiography, Journal of Biomedical Physics and Engineering, 14, 5, 2024, 457-468.*

[3] *Nazir SA, Benamore R, Gleeson F. Missed lung cancers on the scout view: do we look every time?, Case Rep Med. 2013;2013:760543.*

[4] *Albano S, Ramnot A, Siddiqi J, Mahato D. Medical and Legal Implications of MRI Scout Imaging in a Surgical Patient with Case Presentation, Cureus. 2020 Jan 31;12(1):e6833.*

[5] *Nabrawi E, Alanazi AT. Imaging in Healthcare: A Glance at the Present and a Glimpse Into the Future, Cureus. 2023 Mar 14;15(3):e36111.*

Here, an expert is likely required to determine whether to pursue the original, uncropped image. If a lawsuit involved the mid-to-distal radius or ulna or mid-to-proximal humerus, it is certainly worth contacting the provider's imaging department with the proper medical authorization or release and obtaining the original, uncropped image. Or serving the provider with a subpoena if necessary in your jurisdiction. Prepare yourself for this process to be more difficult than it should be. Individuals in medical records departments likely know little about imaging or how to obtain an image stored on a portable x-ray machine or elsewhere before it was sent to the server. It may be worth a trip to the provider to speak with someone from the radiology department face-to-face. If the imaging provider is your client, this process should be much easier.

**Knowing human anatomy, having a basic awareness of how images are obtained and understanding how images can be used in litigation is key to properly advocate for our clients.**

Scout Images

"Scout views are digital radiographs obtained to aid planning of the subsequent [CT]." "Scout images obtained during a [CT] or magnetic resonance imaging (MRI) are used for localization purposes. The scout images are a survey of the region of interest used by the technician to select the area of dedicated image acquisition."[4] For example, a radiographer will obtain an anterior-posterior image of the chest, abdomen and pelvis and a lateral, sagittal image of the chest, abdomen and pelvis at the beginning of performing a chest, abdomen and pelvis CT. The same AP and lateral scout images are obtained at the beginning of a head or neck CT. Using the scout image, the radiographer will collimate the CT beam and program the scanner where to start and end the exam on the patient's body (in addition to programming other information like slice thickness, reformats, etc.). Whether a radiologist has a duty to read scout images is beyond the scope of this article. I'm advocating for defense counsel to be aware these images exist and use them appropriately.

Scout images for a head or cervical CT could show a fractured mandible, missing teeth or issues with facial bones. Scout images for a thoracic CT could show lung lobes includes masses, nodules or atelectasis. All scout images show soft tissue around the area imaged. Again, the key for defense counsel is to know anatomy and be aware of body parts included in, or adjacent to, the body part imaged.

Conclusion

Technological advancements and demand for medical imaging have increased dramatically over the past 20 years.[5] I expect these trends to continue. And I expect defense counsel to encounter imaging more frequently and in new contexts. Imaging can be useful beyond defending "radiology" cases. Knowing human anatomy, having a basic awareness of how images are obtained and understanding how images can be used in litigation is key to properly advocate for our clients.