

Using the Anatomage Table in Radiography Education

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Students must learn a large amount of content to complete a radiography program successfully and become well-prepared, entry-level technologists. Much of this education and preparedness relates to patient positioning, anatomy, and pathology. Educators use a variety of instructional resources to help students learn this information, including lectures, printed materials, and radiographs. Faculty also strive to engage students with various active learning techniques such as laboratory simulation and model construction.

Uses for Active Learning

The Anatomage Table (Anatomage, Inc) is a touch-screen interactive instrument that allows users to manipulate multiple, life-sized, digital cadavers in 3-D perspective.¹ Radiologic sciences educators can use the Anatomage Table's features to engage students and facilitate active, hands-on learning,² including annotation tools, anatomy labeling, and virtual dissection. Users can customize the visibility of anatomic structures and highlight various bony landmarks. The Anatomage Table includes a case library of pathologic conditions organized by body region. Users can load computed tomography and magnetic resonance images onto the Anatomage Table and use its features to manipulate patient anatomy. In addition, faculty and students can save screenshots on portable drives using the available universal serial bus ports. Educators can use the Anatomage Table's features to assess student learning through informal quizzing and formal assessment techniques.

Positioning

Historically, medical schools have been the primary users of the Anatomage Table. However, research indicates that students in other programs also enjoy using the Anatomage Table and believe it is beneficial to their learning.³ Undergraduate institutions can incorporate these instruments into programs for other health professionals. The Tarrant County College Radiologic Technology Program in Fort Worth, Texas, uses the Anatomage Table to help students learn a variety of concepts. In an introduction to radiography course, for example, faculty ask students to take turns manipulating a cadaver into various positions (eg, supine, left lateral) to verify understanding. The course instructor also asks students to use the virtual dissection tool to demonstrate various body planes. In positioning and procedures courses, faculty ask students to rotate the model to demonstrate proper positioning and relevant anatomy. For example, **Figure 1** shows the right posterior ribs in a left anterior oblique position. The user removed the right upper extremity for easier visualization of the ribs. In this position, students can distinctly visualize the axillary portion of the ribs farthest from the receptor and free from bony superimposition by the thoracic spine.

Showing Relevant Anatomy

Faculty also have students use various annotation tools to highlight relevant anatomy. Students save images to study in the future. **Figure 2** is an example of



Figure 1. Right posterior ribs in the left anterior oblique position with right upper extremity removed. Image courtesy of the authors.

this for the lateral projection of the scapula. In addition, faculty have students turn on the radiograph view, add overlying structures, and manipulate models to demonstrate various projections and positions. For example, **Figure 3** shows the stomach and the esophagus superimposed on a left posterior oblique radiograph. This task accomplishes 2 purposes; first, faculty assess students' understanding of the left posterior oblique position and their ability to orient the image to anatomic position, and second, students confirm they know the esophagus should be located between the heart and vertebrae.

Pathology

In a seminar course, the course instructor requires students to create a short presentation on a pathologic condition included in the table's case library. The instructor assigns pathologies to students, who then find the disease in the case library and use the table's pen tool to identify the pathology with the part in multiple positions. Students save these images on a portable drive and include them in the required presentation. **Figure 4** is an example of osteoarthritis of the knee.

Limitations

One serious limitation is cost; however, the Anatomage Table can be used in the classroom or

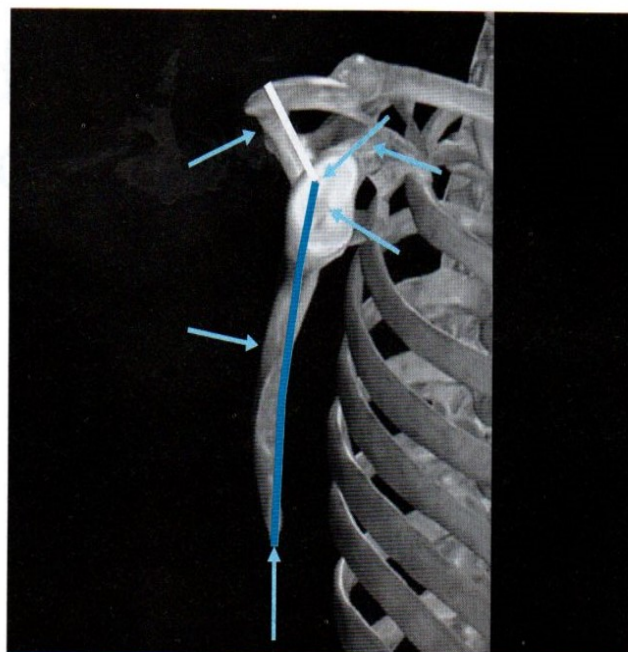


Figure 2. Lateral projection of the scapula. Using the Anatomage Table during instruction, faculty can have students use various annotation tools (lines, arrows) to highlight relevant anatomy. Image courtesy of the authors.

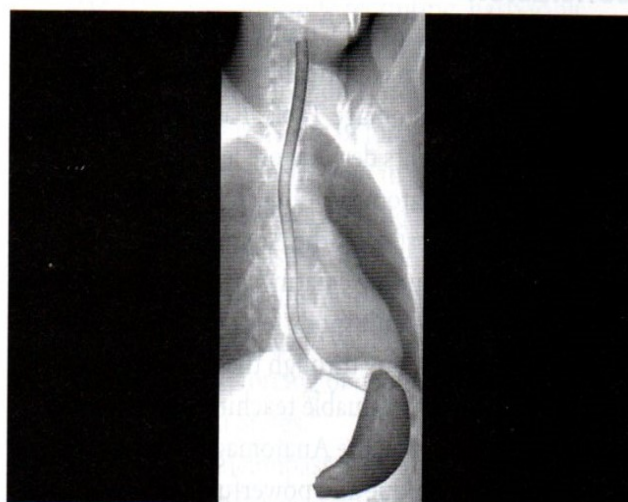


Figure 3. Stomach and esophagus superimposed on a left posterior oblique radiograph. Image courtesy of the authors.

laboratory for several years because software updates can be performed without purchasing a new table. Also, a limited number of students can gather around the Anatomage Table at one time. In addition, although the cadaver can be virtually dissected and manipulated in various planes, users lack the ability to position anatomy for specific radiographic projections. Finally, none of the models included are in true anatomical position, limiting the visualization of certain anatomy of interest.

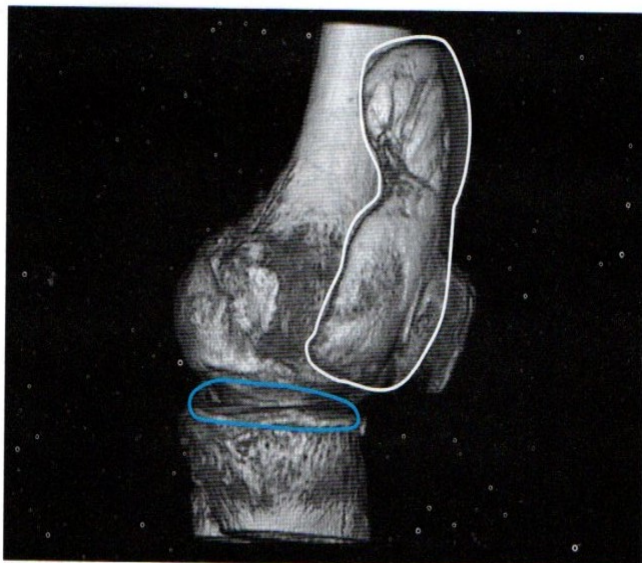


Figure 4. Osteoarthritis of the knee. Instructors can assign pathologies to students who locate the disease in the Anatomage Table’s case library and use the table’s pen tool (blue and white lines) to identify the pathology. Image courtesy of the authors.

Conclusion

Students in the Tarrant County College Radiologic Technology Program continually express satisfaction when using the Anatomage Table. Past course evaluations indicate students desire more learning activities that involve the Anatomage Table. Program faculty plan to further incorporate the Anatomage Table in future courses, including creating anatomy review quizzes through the quiz mode feature and teaching cross-sectional anatomy through the split-screen feature. Although many valuable teaching and learning resources are available, the Anatomage Table provides educators with a unique and powerful tool to help radiography students engage in personalized learning.

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