Introduction

• Ultrasound (US) has recently become an important addition to undergraduate medical education.

• Two standard views used during cardiac ultrasound scanning are:
  - Parasternal long axis (PLAX)
  - Parasternal short axis (PSAX)

• Ultrasound images are used to identify the chamber views.

• CT scans are used to identify the chamber views.

• Ultrasound images are used to identify the chamber views.

• The heart model should be used throughout the cardiac ultrasound scanning session.

Methods: Guide Development

• Photographic Guide and Facilitator’s Guide development:
  - Images taken throughout heart sectioning process and US scanning session
  - Edited in PowerPoint
  - Imported in Word
  - Interactive PDF

• Participants: medical students enrolled in gross anatomy at the University of Colorado School of Medicine (N = 114).

• Students used sectional heart models during their thoracic scanning session.

• Identify internal anatomical structures:
  - Orientation to obtain either PLAX or PSAX views

• Participants were surveyed after their thoracic ultrasound scanning session.

• Likert scale items rating the usefulness (1 = not useful, 5 = very useful) of the PLAX and PSAX sectional pig heart models

• Students who used heart models in the ‘Both’ group rated the models significantly higher compared to students in the ‘Only Before’ and ‘Only While’ groups.

Methods: Model Evaluation

• Physical models increase students’ conceptual understanding of 2D images.

• There is a lack of physical heart models specific to standard cardiac ultrasound views (Fig. 3).

• The state of ultrasound education in U.S. medical schools: Results of a national survey.

• A new set of 3D physical heart models depicting PLAX and PSAX views were created.

• Easy to obtain and create, affordable, and safe to handle without special solutions.

• Development of a Photographic Guide and a Facilitator’s Guide.

• Students viewed the physical pig heart models to be useful for both the PLAX and PSAX views.

• There was a significantly higher mean usefulness rating (p<0.001) for students who used the PLAX and PSAX models both before and during ultrasound scanning.

• Physical heart models should be used throughout the cardiac ultrasound scanning sessions.

Guidance Results

• 3D sectional pig heart models to supplement traditional cadaveric models.

• 60 page guide

• Heart scanning

• Heart sectioning

• Chamber clearing

Conclusions

• A new set of 3D physical heart models depicting PLAX and PSAX views were created.

• Easy to obtain and create, affordable, and safe to handle without special solutions.

• Development of a Photographic Guide and a Facilitator’s Guide.

• Students viewed the physical pig heart models to be useful for both the PLAX and PSAX views.

• There was a significantly higher mean usefulness rating (p<0.001) for students who used the PLAX and PSAX models both before and during ultrasound scanning.

• Physical heart models should be used throughout the cardiac ultrasound scanning sessions.

Future Directions

• Develop plasmatized sectional human heart models to further supplement medical and anatomy student training in sonographic anatomy education.

• Further evaluating the perception of the heart models and direct impact on learning with the MHA/AA Class of 2018.

References


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