“TIPS” for Developing a Learning Module on Transjugular Intrahepatic Portosystemic Shunt (TIPS) Creation

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Introduction

BACKGROUND and RATIONALE
PROBLEM
Abdominal vascular anatomy can be a challenge for graduate anatomy students.
Understanding of this anatomy is important for understanding clinical procedures.
Understanding the procedure for TIPS creation requires a deep understanding of the more difficult aspects of abdominal anatomy.

SOLUTION
Create a clinical anatomy-focused learning module for graduate anatomy students covering TIPS creation.

GOALS
This study describes and evaluates a learning module designed for graduate anatomy students that covers creation of the transjugular intrahepatic portosystemic shunt.

Methods-Development

Imaging data

Pre-TIPS Creation (left: multi-phase CT with contrast; right: portogram)

Post-TIPS Creation (left: multi-phase CT with contrast; right: portogram)

Module Developed in Articulate storyline

Experimental design

Pre-test: 20 questions (10 Anatomy, 10 TIPS specific)
Post-test: 20 questions (10 Anatomy, 10 TIPS specific) 5 survey items

Study Participants
Graduate anatomy students
Five 1st year students
Six 2nd year students
11 students total

Conclusions/Future Directions

This module:
1. Enhanced student knowledge of the clinical and anatomical fundamentals of TIPS creation.
2. Was favorably perceived by study participants

This module may now be improved upon and distributed to medical students, PGY1, and PGY2+ interventional radiology resident physicians.

Acknowledgments
We would like to thank the participants of this study for their time and effort, the clinicians in the Division of Vascular and Interventional Radiology for their kind guidance, and the Modern Human Anatomy program for the opportunities it provides its students.

Results

Test scores increased after interacting with the module

Students Perceived the learning module favorably

Figure 1: Average test score by cohort. Study participants were given a 20-question pre-test and post-test to evaluate learning.

*p>0.05 (paired t-test)

Figure 2: Average level of agreement by all volunteers to each of the above statements. 5=Strongly agree, 4=Somewhat agree, 3=Neither agree nor disagree, 2=Somewhat disagree, 1=Strongly disagree

Pre-TIPS Creation (left: multi-phase CT with contrast; right: portogram)

Post-TIPS Creation (left: multi-phase CT with contrast; right: portogram)

Module Developed in Articulate storyline

Sample test questions. Participants were given the same test before and after interacting with the learning module.

1. A 45-year-old Caucasian male with a history of alcohol use and cirrhosis presents with refractory ascites. The patient has a BID of 15 mg of bisoprolol. Physical examination reveals caput medusae, and multiple ascites engorged collateral veins. A C T imaging study was obtained; What may these vessels be?
   a. Pouches of Heuer
   b. Crus of the portal vein
   c. Collaterals of the hepatic veins
   d. Varices

2. Which type of image is likely to be obtained in the post-TIPS shunt situation?
   a. Multi-phase CT with contrast on an axial plane
   b. Ultrasound with Doppler
   c. Angiogram
   d. Magnetic resonance

3. What is the most likely diagnosis? (Choose 2)
   a. Primary hepatocellular carcinoma
   b. Budd-Chiari syndrome
   c. Portal hypertension
   d. Cirrhosis

4. The patient undergoes a transjugular intrahepatic portosystemic shunt (TIPS) procedure. Which of the following is a potential complication of this shunt?
   a. Budd-Chiari syndrome
   b. Portal hypertension
   c. Portal vein thrombosis
   d. Ascites

Students Perceived the learning module favorably

Figure 3: Average level of agreement by all volunteers to each of the above statements. 5=Strongly agree, 4=Somewhat agree, 3=Neither agree nor disagree, 2=Somewhat disagree, 1=Strongly disagree

Total Perceived Difficulty 4.3/5
Total Perceived Learning 4.4/5
Total Perceived Module usefulness 4.4/5

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