as through the use of a fluid-containing IV bag which is elevated above the model. An internal mammary artery system **24** is provided in correct, or slightly larger spaced relation to the heart **18**. The internal mammary artery system **24** is removably mounted, preferably from the anterior of the model **10**. The internal mammary artery system **24** is provided with a fluid source to simulate bleeding, and is preferably provided with a pressurized fluid source to simulate bleeding of arteries. A skin jacket **14** is preferably, but not necessarily provided to simulate access difficulties, and to present accurate illumination conditions for endoscopic surgery. The model is covered by a removable, and preferably a disposable, jacket that simulates the skin and tissue enclosing the skeletal portion of the thorax.

The thoracic model can be used to interpose endoscopically a model vein graft between the coronary artery and a model aorta that is attached to the heart. The model vein graft can be sutured to the coronary artery and the model aorta. Alternatively, the surgeon trainee can endoscopically anastomose the coronary artery to the internal mammary artery.

The fluid system that simulates blood flow is optional, but provides several advantages. Because the heart **18** and internal mammary artery assembly **18** are fluid-tight, an unintentional nick of an artery can cause blood **82** to flow. That sort of mistake is best learned on a model rather than a live patient. Further, if the arteries are simulated sufficiently realistically, then the formation of a fluid tight anastomosis can be immediately seen and checked.

Moreover, the model **10** provides body parts with a realistic shape and performance, at least as to those parts that would be impacted by surgery. This provides realistic training on accessing, dissecting, cutting and suturing, all using endoscopic techniques. The use of a model with replaceable parts provides the ability to provide controlled and repeatable training conditions, and the ability to vary the level of difficulty appropriate to the level of experience of the person being trained.

The above advantages and features of the model are each suitable for use alone, or in various combinations with other features of this invention. The above description is given by way of illustration, not limitation. This invention is to be given the full scope of protection accorded by law, including equivalents of any features of this invention.

What is claimed is:

1. A surgical model for use with training for cardiac surgery using endoscopic techniques, comprising:

a thorax having an anterior aspect and a posterior aspect, the thorax comprising an internal cavity and a plurality of ribs;

intercostal spaces between the ribs through which an endoscopic instrument can be inserted during use of the model;

a heart located in the internal cavity and removably connected to the model, the heart comprising a coronary artery on which surgical training can be performed during use of the model;

a sternum located on the anterior aspect of the thorax; and

at least one internal mammary artery located on a posterior surface of the sternum.

2. A surgical model as defined in claim **1**, wherein the heart comprises two or more coronary arteries.

3. A surgical model as defined in claim **1**, further comprising a skin removably attached to the model.

4. A surgical model as defined in claim **1**, wherein the sternum is removably attached to the model.

5. A surgical model as defined in claim **1**, wherein the skin further comprises at least one of a nipple or an umbilicus as a landmark.

6. A surgical model as defined in claim **1**, further comprising a fluid system in fluid communication with the heart and providing pressurized fluid to the coronary artery, such that cutting the coronary artery simulates bleeding as the pressurized fluid effuses from the coronary artery.

7. A surgical model as defined in claim **1**, further comprising a fluid system in fluid communication with the internal mammary artery and providing pressurized fluid to the internal mammary artery, such that cutting the internal mammary artery simulates bleeding as the pressurized fluid effuses from the internal mammary artery.

8. A surgical model as defined in claim **7**, wherein the fluid system is in fluid communication with both the coronary artery and the internal mammary artery.

9. A surgical model as defined in claim **1**, further comprising a pair of lungs on opposing sides of the heart.

10. A surgical model as defined in claim **9**, wherein at least one of the lungs is collapsed.

11. A surgical model as defined in claim **1**, wherein at least one of the arteries tapers, reducing in diameter from a proximal end to a distal end.

12. A surgical model as defined in claim **1**, wherein the arteries are formed of a selected size, and formed of a selected material, selected to simulate at least one physical characteristic sensed by a surgeon performing endoscopic bypass surgery on a live person.

13. A surgical model as defined in claim **1**, wherein there is a space between the posterior surface of the sternum and the anterior surface of the heart of about 3 inches.

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