specimen for a long time as long as the specimen has been embalmed. Training on anesthetized animals allows time for only a few procedures.

The training procedures that may be used in conjunction with the present invention include skin incisions and craniotomies; coagulation, hemostasis and management of bleeding; tissue and vascular dissection; artificial aneurysm creation, clipping, coagulation and manipulation; resection of artificial tumors; endoscopic procedures; endovascular and angioscopic procedures; education and training of medical and nursing school students in invasive procedures, such as venipuncture, venous and arterial lines, and studying the circulation of an organ; and resident training on jugular, femoral and subclavian catheter insertion. Not only training procedures can be applied to this method, we can study the hemodynamic features of the vascular tree, the blood supply of anatomical regions, collateral and vascular alignments, and actual relation between neurovascular structures inside the skull or any other part of the body. The present invention may also be used for testing new endovascular catheters and other devices, particularly those related to the vascular system. When used in conjunction with animal cadavers, the present invention may be useful in the training of veterinary surgeons.

The apparatus of the present invention may be used with artificial models and manikins having silicon tubing in place of blood vessels. Such models are disclosed in U.S. Pat. Nos. 6,062,866; 5,320,537; 4,182,054; and 5,215,469.

In order to obtain the most realistic model of live surgery, two characteristics of the cadaveric anatomy may need to be addressed. First, the stiffness of the formalin-fixed specimen make exposure and retraction somewhat difficult and sometimes troublesome. It may be necessary to apply the model on a softer specimen preserved by glycerin, alcohol and other fixation methods or using fabric softener materials that make the specimen soft and retractable. (Satish, K, M.D., Stephen K. P, M.D. The use of Fabric Softener in Neurosurgical Prosections. Neurosurgery 36:420–424, 1995.)

Second, coagulation of the cadaveric vessels without vascular tone and a blood coagulation mechanism made hemostasis by coagulation a tedious matter, although this characteristic might be favorable in a training situation. This situation might be dealt with by altering the nature and viscosity of the fluid to give it coagulation characteristics more similar to blood.

Although the preferred embodiments of the present invention are described with reference to human cadaveric anatomy, the method and apparatus of the present invention may be used with animal cadaveric anatomy also when training procedures and exercises that do not require actual human anatomy are practiced. The preferred and alternative embodiments described herein are intended to be exemplary only and not limiting to the full scope of the present invention as set forth in the appended claims.

What is claimed is:

1. An apparatus for surgical training on at least a portion of cadaveric anatomy having at least one major artery and at least one major vein, comprising:

a reservoir of artery-filling fluid, said artery-filling fluid having a first color simulating the appearance of blood circulating in the arteries of a living organism from which said cadaveric anatomy is derived;

a reservoir of vein-filing fluid, said vein-filling fluid having a second color simulating the appearance of blood circulating in the veins of a living organism from which said cadaveric anatomy is derived;

means for applying to said reservoir of artery-filling fluid a static arterial pressure simulating the arterial pressure appropriate to that of a living organism from which said cadaveric anatomy is derived;

a pulsating pressure machine for generating pulsating pressure fluctuations and means for transmitting said pulsating pressure fluctuations to said reservoir of artery-filling fluid whereby the pressure of said reservoir of artery-filling fluid pulsates to simulate the pulsations of the arteries of a living organism from which said cadaveric anatomy is derived;

means for applying to said reservoir of vein-filling fluid to a static venous pressure simulating the venous pressure appropriate to a living organism from which said cadaveric anatomy is derived;

means adapted for connecting said artery-filling reservoir to said at least one major artery; and

means adapted for connecting said vein-filling reservoir to said at least one major vein;

wherein said reservoir of artery-filling fluid comprises a flexible inner container having an inner volume containing said artery-filling fluid and means for communication between said flexible inner container and said means adapted for connecting said artery-filling reservoir to said at least one major artery, a rigid air-tight outer container enclosing said flexible inner container, a space defined between said flexible inner container and said rigid air-tight outer container, and means for communication between said space and said means for applying to said reservoir of artery-filling fluid a static arterial pressure and between said space and said pulsating pressure machine;

wherein said reservoir of vein-filling fluid comprises a flexible inner container having an inner volume containing said vein-filling fluid and means for communication between said flexible inner container and said means adapted for connecting said vein-filling reservoir to said at least one major vein, a rigid air-tight outer container enclosing said flexible inner container, a space defined between said flexible inner container and said rigid air-tight outer container, and means for communication between said space and said means for applying to said reservoir of vein-filling fluid to a static venous pressure; and

wherein said pulsating pressure machine comprises means for generating pulsating pressure fluctuations in air and means for transmitting said pulsating pressure fluctuations to said space in said reservoir of artery-filling fluid.

2. The apparatus of claim **1**, wherein said at least a portion of cadaveric anatomy has at least a portion of spinal canal, further comprising a clear fluid reservoir containing a clear fluid and means for connecting said clear fluid reservoir to said at least a portion of spinal canal and means for adjusting a flow rate of said clear fluid from said clear fluid reservoir.

3. The apparatus of claim **1** wherein said first color is red.

4. The apparatus of claim **1**, wherein said second color is dark red.

5. The apparatus of claim **1**, wherein said second color is blue.

6. The apparatus of claim **1**, wherein said at least a portion of cadaveric anatomy is human cadaveric anatomy.

7. The apparatus of claim **1**, wherein said at least a portion of cadaveric anatomy is animal cadaveric anatomy.

8. The apparatus of claim **1**, wherein said rigid outer container of reservoir of artery-filling fluid and said rigid