

HEART DEFECT TEACHING AID**BACKGROUND OF THE INVENTION**

1. Field of the Invention

The present invention relates generally to anatomical teaching aids, and more specifically to teaching aids that teach sonographic analysis of heart defects.

2. Description of the Prior Art

Congenital heart defects are a common and serious problem among infants. Such defects must be recognized as soon as medically possible if an infant is to survive. Yet, the trauma of exploratory surgery of each infant potentially afflicted by a heart defect would, needless to say, be unacceptable. For this reason, sonography, also known as ultrasound, is commonly used to visualize the major features of an infant's circulatory system. This non-invasive procedure allows observations of the paths of blood flow through the heart and the major arteries and veins. However, the images provided by sonography must be correctly interpreted before they can be useful. Correct interpretation of sonographic images is an important skill that requires practice to develop. Without such skill, a sonographer could make a mistake leading ultimately to the unnecessary death of an infant.

Development of this skill can best be accomplished by viewing of actual sonographic images. For better or worse, however, it is often the case at teaching facilities that there is not a convenient, ready supply of infants with the particular defect of interest. Consequently, it is highly desirable to have a realistic model suitable for teaching interpretation of sonographic images of heart defects. While computerized simulations have been seen by some educators to be a cure for every teaching problem, there is no way a computer can effectively replace a three-dimensional model used to represent a human patient. What is needed is a model that will not only provide realistic sonographic images, but will also have the physical form of a real infant patient. Such a model would teach both the visual aspects of sonography, and the equally important mechanical procedure of correctly orienting the patient with respect to the sonographic equipment.

The use of teaching aids relating to medical information is common, and various attempts have been made to improve such teaching aids. None, however, meets the needs served by the present invention. For example, U.S. Pat. No. 3,855,714, issued on Dec. 24, 1974, to Bartley C. Block, describes a device and method for studying human gross anatomy. The device of this patent comprises two-dimensional representations of anatomical parts which can be laid upon one another to simulate the three-dimensional arrangement of parts of the human body. The device of this patent does not represent heart defects, has no three-dimensional structure of a heart, and is not suitable for use with sonography.

U.S. Pat. 4,323,350, issued on Apr. 6, 1982, to Robert L. Bowden, Jr., describes an anatomical model that photographically depicts sections of the human torso. There is no physical structure representing body organs, and the model in the patent is not suitable for use in sonography.

U.S. Pat. 4,601,668, issued on Jul. 22, 1986, to Vladimir Sirota, describes a novelty toy in the form of a doll. The doll provides audible, and optionally visual, representation of a heart beat, and not of the heart, itself. There is no physical structure representing body organs, and the doll in the patent is not suitable for use in sonography.

U.S. Pat. 4,768,960, issued on Sep. 6, 1988, to Chiou-Wen S. Pan, describes a two-dimensional, symbolic representa-

tion of the human body and the perceived ill-effects of illegal drugs. The device of this patent does not represent heart defects, has no three-dimensional structure of a heart, and is not suitable for use with sonography.

U.S. Pat. 5,197,885, issued on Mar. 30, 1993, to Joan Friedel, describes a doll intended to discourage drug misuse. The doll has an illuminated "heart area," which comprises an openable flap. There is no physical structure realistically representing body organs, and the doll in the patent is not suitable for use in sonography.

None of the above inventions and patents, taken either singly or in combination, is seen to describe the instant invention as claimed.

SUMMARY OF THE INVENTION

A teaching aid according to the present invention comprises a doll with a realistic, replaceable heart. The heart is attached to a pump unit that provides realistic flow of fluid through the heart. The heart may be selected from a variety of types of hearts, such as a normal heart or one of numerous congenitally diseased hearts. By using sonographic analysis of the doll, a student of heart diseases or a student of sonography may experience a realistic simulation of sonographic images of actual heart defects.

Accordingly, it is a principal object of the invention to provide a teaching aid for teaching sonography.

It is another object of the invention to provide a teaching aid for teaching differences among congenital heart defects.

It is a further object of the invention to provide a realistic simulation of the heart and major arteries and veins, such that the simulation can be used with ordinary sonographic equipment in place of a live patient.

Still another object of the invention is to provide interchangeable hearts in a model of the human body, such that hearts of different types can be placed alternately in a single such model.

It is an object of the invention to provide improved elements and arrangements thereof in an apparatus for the purposes described which is inexpensive, dependable and fully effective in accomplishing its intended purposes.

These and other objects of the present invention will become readily apparent upon further review of the following specification and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1A is a front perspective, view of the present invention, shown with a normal heart and supporting ribs.

FIG. 1B is a front perspective, view of the present invention, shown without supporting ribs.

FIG. 1C is a front perspective, of the present invention, shown without a heart but with supporting ribs.

FIG. 2A is a back perspective view of the present invention, showing the rear panel covering the rear entry through which a heart can be replaced.

FIG. 2B is a back perspective view of the present invention, showing the uncovered rear entry through which a heart can be replaced, as well as a heart and supporting ribs.

FIG. 3 is a partial cutaway front view of a normal heart and attachment valves, as used in the present invention.

FIG. 4 is a partial cutaway front view of a heart of the present invention showing a first example of the Partial Anomalous Pulmonary Venous Return (PAPVR) disorder.

FIG. 5 is a partial cutaway front view of a heart of the present invention showing a second example of the Partial Anomalous Pulmonary Venous Return (PAPVR) disorder.