AbioCor Artificial Heart

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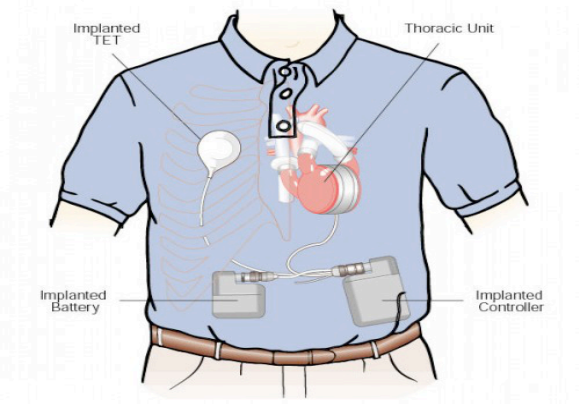
***Abstract*—This paper is about a new and upcoming project- the artificial heart. The past inventions have tubes or wires protruding from the skin. However, this invention may revolutionize this aspect in medicine.**

I. Introduction

THE AbioCor artificial heart is the world's first completely self-contained replacement heart. Designed to fully sustain the body's circulatory system, the AbioCor is intended for end-stage heart failure patients whose other treatment options have been exhausted. The AbioCor was approved by the FDA and now the AbioMed team is testing the AbioCor II on animals. The AbioCor II fixes the problem that the size of the heart was too big for most patients. The AbioCor II is 30% smaller than the first device. Despite the second artificial heart fixing the size problem, it still has not been perfectly altered to avoid blotclots.

II. Methods

The device consists of an internal, rechargeable battery that is normally charged by the wireless external power source, the TET. External, portable battery packs can be used for many hours and allow the patient to be quite mobile.



The AbioCor is primarily made of titanium and Angioflex®, Abiomed's proprietary polyether-based polyurethane.

III. Results

Abiomed received approval from the FDA to begin clinical trials in January 2001. The first patient was implanted on July 2, 2001. Fourteen patients were implanted with the AbioCor at four centers in the U.S., including Jewish Hospital in Louisville, KY., Texas Heart Institute at St. Luke's Hospital in Houston, UCLA Medical Center in Los Angeles, and Hahnemann University Hospital in Philadelphia. In this study some patients were able to resume their normal activities such as exercising, going to the movies, or out to dinner. One patient survived for 512 days with the device and was able to be there for the birth of his great-granddaughter.

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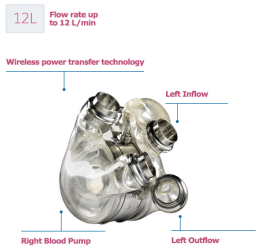

IV. Discussion

A disadvantage of the AbioCor I was that it did not fit in half of the males and eighty percent of females. The AbioCorII however, is thirty percent smaller and is expected to fit better in more patients. The AbioBiomed team along with PENN State University is working on altering the device to lower the risk of blood clots. Also the two teams are working to prolong its battery life.

The price of the device including surgery is about $350,000. The price could be a disadvantage to such a device. As mentioned before, the device could cause blood clots, and the team hopes to fix that in the next artificial heart they created. The most amazing thing about this heart is that it does not require any wires that protrude from the skin and it is contained in the body. Hopefully in the future this invention's advantages significantly outweigh its disadvantages.

References

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