NC STATE UNIVERSITY

JTATM
JOURNAL OF TEXTILE AND APPAREL, TECHNOLOGY AND MANAGEMENT

Volume 2, Issue 2, Spring 2002

Medical Textiles: Application of an Absorbable Barbed Bi-directional Surgical Suture

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ABSTRACT

Today's medical textile market is producing state of the art polymeric textile implantable devices that are redefining traditional materials and methods of surgery. These sophisticated high-tech polymer materials are engineered for specific uses in surgical and interventional procedures. One of the new biotextile products is an absorbable bi-directional barbed surgical suture that does not require surgical knots for wound closure. This novel idea has the attention of many physicians and surgeons where wound closure or tissue approximation is needed. The barbed suture has the potential to change the way wound closure is perceived in various clinical fields of surgery and veterinary medicine.

KEYWORDS: sutures, medical textiles, biotextiles, barbed suture, surgical suture

Introduction

The medical textile industry has diversified with new materials and innovative designs. Evolving polymer technology has yielded a wide range of applications of implantable medical textile devices or biotextiles. King has defined biotextiles as: "structures composed of textile fibers designed for use in specific biological environments (e.g. surgical implants, biomass reactors), where their performance depends on their interactions with cells and biological fluids as measured in terms of their biocompatibility and biostability" [1]. Applications of implantable biotextiles range from polymeric valves through woven or knitted artificial ligaments to polymeric wound closure devices. Examples of implantable biotextiles include cardiac support devices (Figure 1), vascular prosthesis (artificial arteries), heart valves (Figure 2), and sutures.

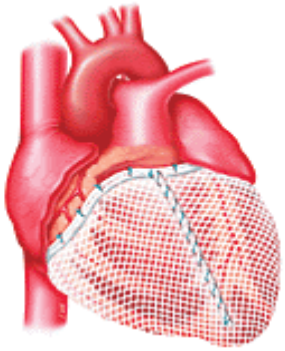

Figure 1. Cardiac support device (Courtesy of Acorn Cardiovascular, Inc)