MEDICAL PRODUCTS

Braiding

Braid

The manufacturing process of braiding is one of the oldest crafting techniques in the history of humankind. It has been used to produce round braids, such as cords or ropes, and flat braids, such as strands. Based on the manual crafting technique, the method of maypole braiding (also known as circular braiding) has emerged as an automated processing technology.

For the development of more complex braided structures, the technology of braiding has evolved over the years, so that the fields of application have progressed from flat and round braids to three-dimensional structural geometries using 3D braiding technologies.

Medical products such as sutures and stents represent a wide range of possible applications for the latest 3D braiding machine technology.

Raw Material

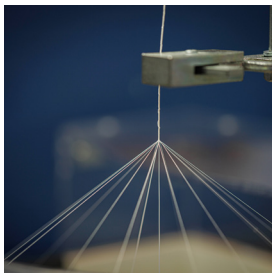
Medical yarns are mostly produced by braiding, which offers some advantages over other

textile methods, such as reduced fraying of the yarn, slight improvement in mechanical strength, and better control over structural properties such as porosity and pore size. To date, braided medical yarns are predominantly manufactured from inert fibers, which are melt extruded from synthetic polymers, and their development is largely driven by industry.

The preferred starting material for braided implants is polymer fibers. Today the most used material is polyethylene terephthalate (PET), thanks to the famous cardiac surgeon Michael DeBakey, who first introduced this material for this application (DeBakey et al., 1958). This polymer turned out to be very blood- and biocompatible and is therefore still used today.

Braiding

ALL Suture Anchor



We manufacture braided implants (multi wire braided).

Braided implants offer the advantages of smaller wall thicknesses and the associated smallest possible braid diameters. The resulting soft and pliable braided structure combined with low radial forces enables the implants to be used, for example, in the highly complex neurovascular area, which is characterized by the finest blood vessels.

We are using computer-controlled automated equipment. At the same time, many of the production steps require the sensitive and reliable manual skills of our highly experienced workers.

Innovation

New innovations in machine technology continually establish new areas of application in the field of technical textiles. Medical textiles are a rapidly growing and versatile area of technical textiles. Braided medical devices must be manufactured with incredible precision. To meet this requirement, the medical device manufacturers, and braiding machine developers of today move beyond traditional braiding processes. The latest evolutions aim at customized structures with different features to cover a variety of clinical applications.

Development

The suture anchor allows secure fixation of soft tissue to bone and has become an invaluable tool for the orthopedic surgeon. The original suture anchor was developed over 3 decades ago when a suture was bonded to a headless screw. Since then, anchors have undergone a wide variety of design modifications to increase strength and allow for new applications based on biomechanical and clinical evidence.

Further innovations in the anchor suture interface have seen the advent of knotless anchors, especially useful in arthroscopic surgery. The newest products are all-suture anchors which show impressive strength whilst reducing the iatrogenic damage caused by insertion. The further biomechanical development of suture anchors is likely to produce new designs that continue to increase strength whilst managing size requirements for tailored clinical applications.