

Surgical mesh for the repair of abdominal wall hernia defects

A mesh intended to repair hernia defects, with an architecture that promotes symmetrical biomechanical behaviour at the periphery of the mesh, thus reducing the percentage of recurrences.

Description and essential characteristics

This is a surgical mesh (2) intended to repair hernia defects in a patient's anterior abdominal wall that is made of synthetic knitted filaments of a biocompatible material. The main innovative feature introduced by this technology is the design or pattern of the mesh's warp (architecture), whose geometry is particularly suitable for the biomechanical characteristics of the abdominal wall.

The devices conceived thus far to correct hernias are based on meshes consisting of filaments parallel to two or more axes, and are accordingly characterised by having an asymmetrical mechanical behaviour, which is the main cause of relapse in hernia repair operations. This new mesh has a concentric architecture of symmetrical behaviour, which favours a homogeneous distribution of tension at the periphery of the mesh. This symmetrical behaviour is especially indicated for the biomechanical characteristics of the abdominal wall.

The filaments that constitute this new mesh are made of a non-resorbable biocompatible polymeric material and are knitted following a crochet pattern with a structure comprising a mesh body central core clamp (4c) and a number of concentric rings (4, 4c, 4e), which start from the core, thus defining concentric openings in a circular crown (6). The rings are linked together by radial connecting filaments (8), which are spaced (d), extending over each of the annular openings collectively providing a symmetrical structure.

This particular geometry of the mesh provides the aforementioned symmetric behaviour, which is regular throughout the whole extension thereof, with the consequent homogeneous distribution of tension throughout the periphery of the mesh itself (i.e., the same elasticity in any axis of space).

Competitive advantages

This novel mesh is made of biocompatible materials currently available on the market and its design promotes a more physiologic repair of abdominal wall hernias thus promoting a reduction in the percentage of hernia reappearances (recurrences or reoperations). In this way, the use of this new mesh would contribute to reducing public health expenditures on second surgical procedures.

In addition, this mesh is simple and inexpensive to manufacture, both in terms of the mesh knitting process and the biocompatible material needed for its manufacture.

Type of collaboration sought

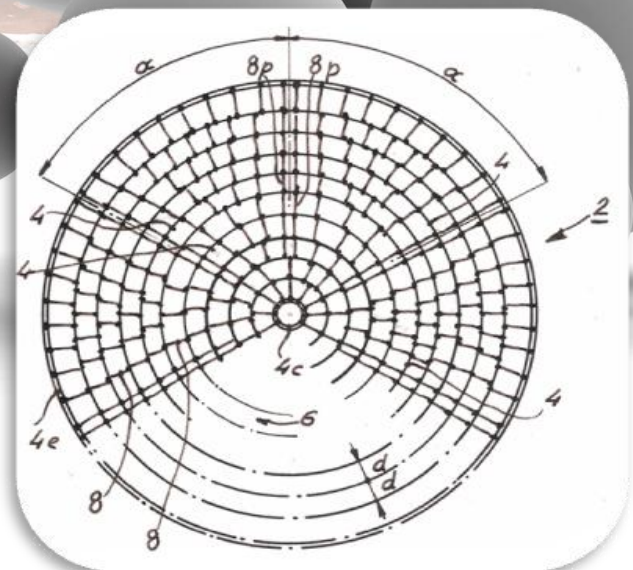
Cooperation is sought with any Party interested in partnering, licensing or investing in the technology, whether it be an investor to fund the project, a partner interested in getting involved in any of the various phases until its placement on the market, a patent licensee, etc. Organisations potentially interested in this product are those devoted to the manufacture, commercialization and/or distribution of healthcare products, particularly medical devices; as well as hospitals, healthcare centres, etc.

Current stage of development

A hand-made prototype has already been developed with which biomechanical tests have been carried out showing the symmetric, mechanical behaviour of the mesh.

Current state of intellectual property

Spanish patent P201331453, granted in May 2016.
International patent application PCT/ES2014/000161.



Top view of a schematic representation of the surgical mesh

For further information, please contact

Innovation Unit
Foundation for Biomedical Research of La Paz University
Hospital (FIBHULP)-IdiPAZ
Telephone number: +34 91 207 12 34
e-mail: innovacion@idipaz.es
Web: www.idipaz.es