

MECHANICAL RESISTANCE OF SYNTHETICS MESHES FOR INCONTINENCE OR PROLAPSE SURGERY.

Hypothesis / aims of study

Synthetic meshes are now being more widely for the treatment of urinary incontinence or pelvic organ prolapse. Many meshes are now commercially available and used via different routes. The aim of this study is to objectively measure the mechanical resistance in cadavers of several meshes inserted via four different routes used in clinical practice. In addition, the effect of increasing the width of the mesh was also examined.

Study design, materials and methods

The mechanical resistance of different meshes (TVT®, IVS®, LIFT®, PROLENE®, PROLENE SOFT®) was compared by estimated the traction required to remove the mesh from four routes (Space of Retzius, Trans obturator, Trans levator ani muscles and Trans sacrospinous ligament route) in cadaveric specimens. In addition, Prolène® mesh was also tested in 3 widths (1- 1.5- and 2 centimetres). Measurements were made with a dynamometer and results expressed in Newton. The different tapes and routes were compared by analysis of variance calculated on SPSS® software version 9 for Windows® and all results were given with 5% error

Results

The highest resistance to removal was demonstrated for TVT® inserted via the space of Retzius and this was significant greater than the other meshes commercialised for urinary incontinence surgical treatment (IVS®, LIFT®) $P < 0.05$. There was no significant difference between the four routes for each type of 1-centimetre meshes. There was statistical increased resistance with increased width of the Prolène® mesh (1.5 and 2 centimetres) $P = 0.02$. With the 2 centimetres Prolène® mesh, there was increased resistance with removal from the sacrospinous ligament in comparison to the Trans levator ani muscles route, $P < 0.01$.

Interpretation of results / Concluding message

This is the first study to objectively assess the mechanical resistance in cadavers of several meshes inserted via different routes commonly used in clinical practice.

The highest resistance to removal was demonstrated for TVT®, inserted in the space of Retzius, than to other meshes tested and this may have clinical implications regarding effectiveness.

Increasing the width of the Prolène® mesh is associated with increased mechanical resistance with removal from cadaveric tissues. This may be explained for an increased surface area between the tissues and the mesh. This may also have clinical implications with regard to the width of the arm of prosthetic meshes which should be wider than one centimetre in order to maintain their position immediately post operatively before fixation of the mesh takes place.

With the increased resistance with removal from the sacrospinous ligament in comparison to the levator ani muscles route may indicated increased fixation of the posterior arm of posterior meshes through the sacrospinous ligament in comparison to the muscles.