

In vitro study of Human Dermal Fibroblasts seeded on two kinds of surgical meshes: monofilamented Polypropylene and multifilamented Polyestere

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List of abbreviations:

- HDF = Human Dermal Fibroblasts
LM = Light Microscopy
SEM = Scanning Electron Microscopy
DMEM = Dulbecco's Minimum Essential Medium
ISO = International Standardization Organization

SUMMARY

Many different synthetic biomaterials have been recently proposed in the majority of the techniques for hernioplasty and pelvic floor surgery. Required qualities of an implantable prosthetic material have been well established in the past and today the biomaterials better performing to this purpose are the monofilamented Polypropylene (Marlex) and the multifilamented Polyestere (Mer-silene). But, in spite of a wide surgical use of these two kinds of meshes, many failures of these im-plantations are reported leading to removal of the prosthetic implanted material. If some of these failures are due to errors in surgical technique, others seem to be due to inadequacy of the selected material, too much soft or too much stiff, or too much or too little incorporated into the host tissue. This experiment investigated the different behaviour of in vitro cultured Human Dermal Fibroblasts, seeded on specimens of both meshes and then observed by Light (LM) and Scanning Electron Microscopy (SEM). Around the multifilamented threads of Polyestere mesh, fibroblasts could grow very well, filling the holes and making a continuous cell layer completely enveloping the mesh. At the same culture time, around the Polypropylene mesh only big groups of fibroblasts were evident at the thread interlacing points. Therefore, it could be concluded that both meshes stimulate good fibroblast attachment and proliferation but in a very different way and amount; it will be up to the surgeon to select the appropriate mesh according to the specific surgical purpose.