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ADHESION BEHAVIOUR OF RABBIT ADIPOSE-DERIVED STROMAL CELLS ON SURFACE OF CHITOSAN MODIFIED POLYPROPYLENE MESH

Hypothesis / aims of study

To study the parameters of chitosan-modified polypropylene mesh (PP mesh), and adhesion behaviour of rabbit adipose-derived stromal cells (ADSCs) on the modified mesh.

Study design, materials and methods

1g, 1.25g and 1.5g chitosan were respectively dissolved into the mixture of 2% acetic acid solution, 5% glutaraldehyde solution and 50% n-heptane solution. And 2.0%, 2.5%, 3.0% chitosan moulds were obtained. PP mesh was modified by different concentrations of chitosan moulds, and then the chitosan-modified PP mesh was finished. The rabbit ADSCs derived from New Zealand rabbits were cultured with chitosan-modified PP mesh about 24 hours.

Results

Softness of chitosan-modified PP mesh modified was lower than that of non-modified PP mesh. There was thin chitosan membrane on the modified mesh. Also there were small pores in the chitosan membrane, and the optimal chitosan concentration for chitosan -modified PP mesh was 2.5%. 24 hours co-culture of rabbit ADSCs and chitosan-modified PP mesh showed that rabbit ADSCs grew on modified PP mesh, morphology (spindle and triangle) of rabbit ADSCs didn't change. But there was no rabbit ADSCs growing on the non-modified PP mesh.

Interpretation of results

Regenerative medicine will be the development trend of the pelvic floor reconstructive surgery. The ADSCs is a good source of seed cells for tissue engineering mesh. In this study, the ADSCs can grow on chitosan modified PP mesh. Maybe it means that chitosan modified PP mesh can increase compatibility.

Concluding message

Chitosan-modified PP mesh was suitable for cell adhesion. It would be a promising scaffold for tissue engineering application.

Disclosures

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