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"STUDY OF TRACTIONAL FORCE FOR VARIOUS PELVIC RECONSTRUCTIVE GRAFT MATERIALS - AN EXPERIMENTAL ANIMAL MODEL"

AIM

To compare tensile strengths of three different types of mesh used in pelvic reconstruction surgery at different stages of healing and evaluate the extent of tissue integration at each stage.

MATERIALS AND METHODS

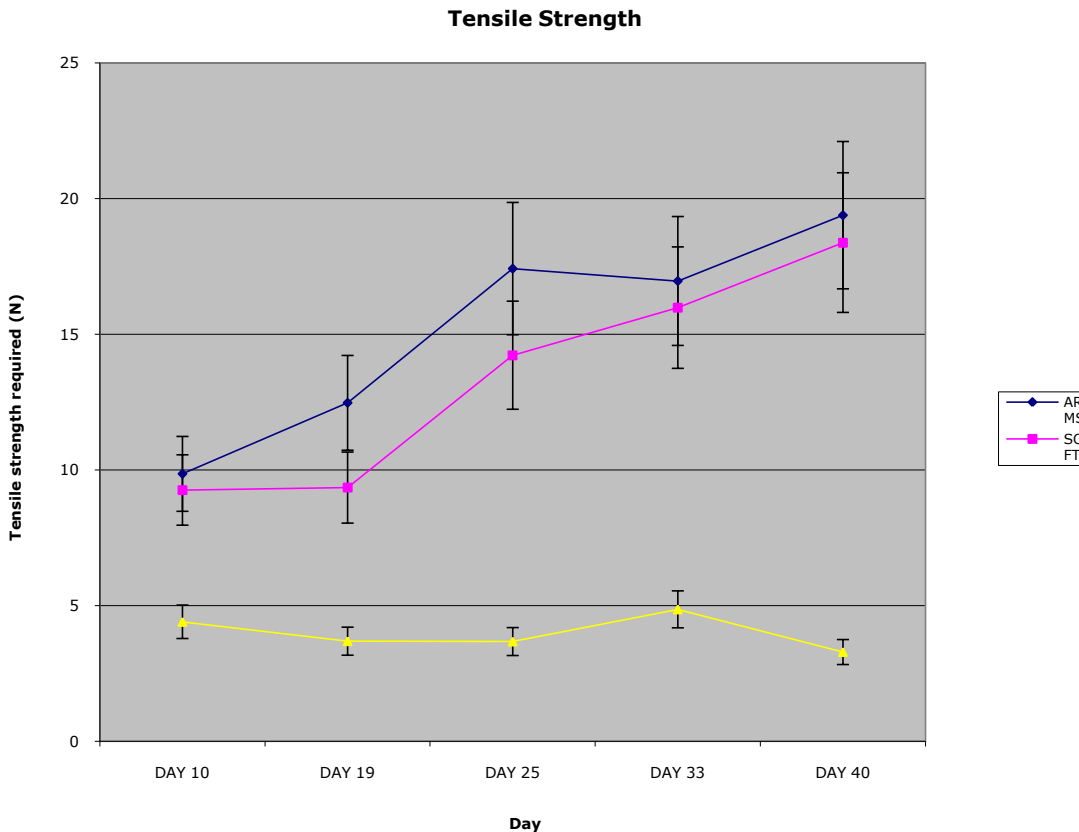
Forty five female Wistar rats were subcutaneously implanted with one of three types of mesh, elastic low density monofilament polypropylene mesh (high friction arm of MonarcTM suburethral sling), soft monofilament polypropylene mesh (PerigeeTM, AMS), and SIS porcine mesh (Surgisis, Cook Medical). Tensile strength was tested at days 10, 19, 25, 33 and 40 by mobilising the meshes using a dynamometer. The meshes and overlying tissue were histologically examined for tissue integration using the parameters inflammatory response, degree of fibrous tissue formation and collagen deposition.

RESULTS

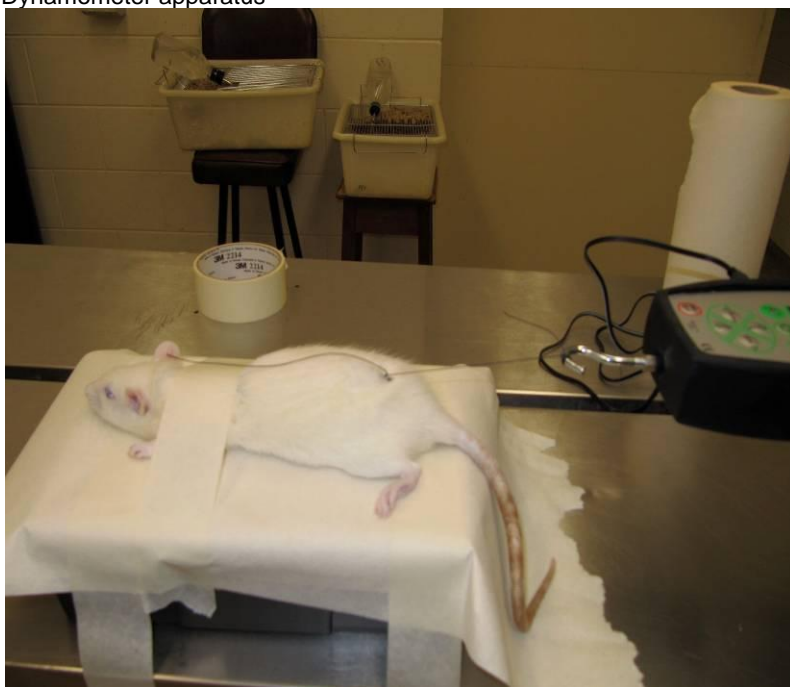
We found an essentially linear increase in tensile strength over 40 days in both polypropylene meshes, the highest being an average of 19.385 N at Day 40. The high friction arm mesh had higher tensile strength at Days 19 and 25 of the study compared to the soft section of polypropylene mesh. There was no appreciable difference between the two at Day 40. There was a significantly lower tensile strength in the SIS mesh across all stages of healing, with no increase in strength over time. This mesh from Day 25 onwards was unable to be separated in one piece from the tissue.

CONCLUSION

The high friction arm of the MonarcTM mesh had higher tensile strength earlier than the soft polypropylene mesh of PerigeeTM. But there was no difference in both meshes by day 40 and both had higher tensile strengths than the SIS. The SIS mesh separation point was within the mesh, rather than between the mesh-tissue interfaces, suggesting stronger tissue integration than internal mesh strength.



Dynamometer apparatus



<i>Specify source of funding or grant</i>	Nil
<i>Is this a clinical trial?</i>	No
<i>What were the subjects in the study?</i>	ANIMAL
<i>Were guidelines for care and use of laboratory animals followed or ethical committee approval obtained?</i>	Yes
<i>Name of ethics committee</i>	James Cook University Animal Ethics Committee