Assessment of cryopreserved human tunica albuginea for the surgical treatment of penile defects

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Peyronie's disease, a connective tissue disorder of penile tunica albuginea (TA) associated with penile deformity, curvature, pain and erectile dysfunction, is best managed surgically, but suitable graft biomaterials are not available.

To establish whether cryopreservation affects human TA in view of its use in allotransplants. The effects on TA samples of the two most widely used tissue cryopreservation methods were investigated using an ad hoc panel of histochemical, immunohistochemical and ultrastructural tests. Apoptotic cells were evaluated using the TUNEL assay.

Assessment of tissue integrity and arrangement of collagen and elastic fibers in thawed TA.

Both cryofixation methods provided TA tissue suitable for use as graft material. Significant ultrastructural changes, namely a greater diameter of collagen fibrils, were detected in sections preserved in liquid nitrogen; nonetheless, such increase never exceeded the normal range. The comprehensive panel of assays used proved suitable to characterize the thawed tissue.

Human TA is suitable for cryopreservation; freezing at -80 °C provides better results than preservation in liquid nitrogen.

References

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