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Use of Amniotic Membrane May Cause Complications in Strabismus Surgery

Postoperative adhesions are a major complication in strabismus surgery. Amniotic membrane has been used in the hopes of preventing these adhesions by forming a biological barrier during healing. In an article, in the December 2010 issue of the Journal of AAPOS, the Official Publication of the American Association of Pediatric Ophthalmology and Strabismus, a team of researchers from Cairo University have discovered that the new approach may also have the opposite effect.

Dr. Rehab Kassem and coauthors describe, how they wrapped the extraocular muscles with lyophilized amniotic membrane in a patient undergoing a strabismus reoperation on both medial rectus muscles. However, the surgical result was not optimal, and the patient underwent a fourth procedure that included exploration of the medial rectus muscles. Instead of finding less scarring, the surgeons found extensive adhesions and inelastic, fibrotic muscles.

Amniotic membrane may be fresh or preserved. Preserved amniotic membrane may be either frozen, air-dried, or freeze-dried. Frozen amniotic membrane is expensive and it must be stored at -80°C, thus limiting its availability. Dried amniotic membrane is less expensive and does not require special storage conditions.

The authors of the article speculate that their results may have been due to the use of dried, rather than frozen, amniotic membrane. Writing in the article, Rehab Kassem, MD, states, "What caused the fibrosis in our case? Was it related to the use of amniotic membrane or was it coincidental, perhaps the result of excessive dissection to achieve a large recession? If the former, then was the fibrosis related to the nature (lyophilized vs. cryopreserved) of the amniotic membrane used or to its possibly having been placed toward the sclera rather than the muscle? In conclusion, although the cause of the fibrosis in our case is not clear, lyophilized amniotic membrane was ineffective in protecting against its development."

"There are only a few reports of the use of amniotic membrane in extraocular muscle surgery, and the results of those studies are equivocal," says David G. Hunter, MD, PhD, Editor-in-Chief of the Journal of AAPOS. "While this material may have been used successfully in other parts of the eye, strabismus surgeons should only consider using it around extraocular muscles in cases where there is already extreme scarring, and not as a preventive measure, as was done here."

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