Freeze-Dried Versus Cryopreserved Amniotic Membranes in Corneal Ulcers Treated by Overlay Transplantation: A Case–Control Study

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Cornea: March 2022 - Volume 41 - Issue 3 - p 280-285
doi: 10.1097/ICO.0000000000002794

Abstract

Purpose:

The purpose of this study was to assess cryopreserved amniotic membrane (C-AM) versus chorion-free freeze-dried amniotic membrane (FD-AM) overlay transplantation for corneal ulcers in a French tertiary ophthalmology hospital.

Methods:

Between March and July 2020, when C-AMs were not available because of the COVID-19 pandemic, 28 corneal ulcers underwent FD-AM overlay transplantation and were retrospectively compared with 22 corneal ulcers treated with C-AM during the same period in 2018. All patients had at least 3 months of follow-up, and those who underwent combined surgeries were excluded. Ulcers were assessed at baseline and then at 72 hours, 1 month, and 3 months. Population demographics, follow-up time, ulcer etiologies, epithelial defect size, ulcer depth, and complications were also recorded.

Results:

Baseline characteristics and clinical features of both groups were comparable. There was no statistically significant difference in the number of overlay AM transplantations ($P = 0.52$) or early detachments ($P = 0.57$). At 3 months, the corneal healing rate was almost the same in both groups (89% and 91% for FD-AM and C-AM, respectively; $P = 0.87$). Complications were equally uncommon (11% and 9%, respectively; $P = 0.92$). In logistic regression, the type of the membrane did not influence corneal healing at 1 month ($P = 0.42$) or 3 months ($P = 0.99$), regardless of the depth of the ulcer. However, whatever the type of AM used, the deeper the ulcer was, the less likely it was to heal at 3 months ($P = 0.02$).

Conclusions:

This is the first study that provides positive insight into the effectiveness of FD-AM compared with C-AM when used as overlay transplantation for treating corneal ulcers.