Amniotic membranes in ophthalmology

The amniotic membrane (AM) is the inner layer of the fetal membranes and is comprised of 3 distinct layers; epithelium, basement membrane and stroma, the innermost layer that further consists of an inner compact layer, middle fibroblast layer and an outermost spongy layer. Since 1910, AM has been used to graft skin ulcers and burns and in reconstructive surgery for skin transplantation. The earliest reports of AM transplantations in ophthalmology date back to the 1940s when De Rott and Sorsby and Symons described the use of AM grafts for caustic burns. However, the use of this valuable tissue has become common practice only in the last two decades. The benefits of AM can be attributed to its anti-inflammatory and anti-microbial properties and low immunogenicity.

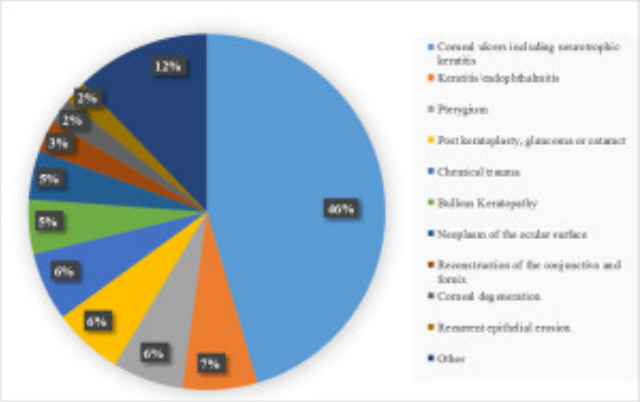

Fig. 1. Percentage of pathological conditions treated over the last 12 years.

Nowadays, the use of AM is a widespread clinical practice for eye surgeries and the treatment of an increasing number of ocular surface pathologies. The placenta was sourced from donors undergoing elective caesarean sections and processed shortly after retrieval. AM was carefully detached from the chorion, decontaminated with antibiotic cocktail and all the mandatory serological analysis on the blood donor were performed.
In this work, we describe the AM collection data over the last 12 years; during the period 2003-2014, a total of 5,604 membrane patches were collected from 215 placentas; of these, Treviso Tissue Bank Foundation (FBTV) in collaboration with Veneto Eye Bank Foundation (FBOV) distributed 5,349 membranes to 220 centers throughout Italy for the treatment of several ocular pathologies. Collective data for the total amniotic membrane patches deployed to treat various ocular diseases are summarized in Figure 1.
Success was determined based on the scope of the surgery and the presence of one or a combination of the following criteria: resolution of inflammation, relief of symptoms, restoration of regular and stable corneal epithelium, and restoration of the structural integrity of the eye. For 9 pathologies a 100% success rate was reached, these data are obtained with an extensive follow-

up. The results suggest that the procedures and protocols used by FBTV and FBOV for collection, preservation, distribution and follow-up are of an optimal standard. The safety and efficiency of the proposed procedure for the therapeutic use of AM to treat various ocular pathologies are reproducible, with additional evidence favoring the use of AM as an alternative to conventional medical treatment for certain ocular conditions.

Publication

Amniotic membranes in ophthalmology: long term data on transplantation outcomes.
Paolin A, Cogliati E, Trojan D, Griffoni C, Grassetto A, Elbadawy HM, Ponzin D.
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