



## Amniotic membranes as biological dressings for treatment of severe experimental burns in rabbit

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### Abstract

**Burns** have estimated as one of the most destructive conditions in emergency medicine affecting the population in developed and developing countries, lead to physical and chronic disabilities due to psychological scars. Various natural and synthetic materials have been used for treatment and coverage of burn wound. Nonetheless, disadvantages associated with these materials are including high price which prohibits their widespread use, especially in developing countries. Among all, human amniotic membrane

(AM) is an excellent candidate for use in cellular therapy and regenerative medicine. Moreover, it is the only easily available and cost-free coverage. This study intends to determine the healing effect of amniotic biological dressing in the regeneration of experimental induced severe burn wounds in the rabbit. Four male rabbits randomly divided into two equal groups. All rabbits were exposed to 3rd-degree burn wound using a hot plate the first group left without treatment and consider as control, while the second group (treatment group) was treated with prepared biological dressing amniotic membrane. Amniotic membrane collected from an elective human caesarean delivery. The donor was screened and was seronegative for hepatitis B and C, syphilis and human immunodeficiency virus. Amniotic membrane was prepared by separating it from chorion of the placenta. Processing of the amniotic membrane was carried out under sterile conditions using an antibiotic cocktail. After 21 days of therapy, a skin biopsy was collected from the burned areas and examined for histological evaluation. Application of amniotic biological dressing resulted in complete healing of the burn wounds and absence of inflammation after 14th days. Re-epithelialization was prominent in the treatment groups in compare to non-AM treatment group. In the treated group, epidermis exhibited well-structured layers without any crusting. There were spindle-shaped fibroblasts in a fascicular pattern, oriented parallel to the epithelial surface with eosinophilic collagen matrix. In conclusion, this study approved that amniotic membrane as an available and inexpensive biological product revealed to be a suitable substitute in the healing of burn wounds especially when dressing form was applied directly after burning. For the author's knowledge, this is the first study regarding the application of amniotic membrane in the treatment of burns injuries in Iraq. The authors recommend moving the results of this preliminary studies to clinical studies after standardized the method of preparation of amniotic membrane dressing.

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