

Abstract

**Application of Freeze Dried Amniotic Membrane Composite
With Mesenchymal Stem Cell Seeding as a Graft for Urethral
Reconstruction
(Experimental in New Zealand Rabbit)**

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Objective :

To determine the mechanism of urethral remodeling induced by using scaffold of human freeze dried amniotic membrane with and without Adipose Derived Mesenchymal Stem Cell (ADMC), through analysis of the expression of FGF, CTGF, TGF β , p63, CK19 and the thickness of collagen

Material and methods:

A total of 24 experimental male New Zealand rabbit are divided into three groups, 8 rabbits per group. First group acted as a control group that undergo a sham operation, rabbits in Group II had the urethra excised and substituted with scaffold of freeze dried human amniotic membrane without ADMCs, and the third group of treatment group as the second group with ADMCs New Zealand rabbit cells.

Clinical observation of the experimental animal was done at day 3, 7, 14, 21 and 28. After clinical observation at day 28 all the experimental animals were sacrificed and the excised urethra were examined for FGF, CTGF, TGF β , P63, CK 19 expression and collagen thickness. The data obtained were analyzed using Analysis of Variance and Mann Whitney U test

Results :

Urethral integrity and healing were found and by day 28 there were no scaffold remnants. Scaffolds cannot be seen nor be differentiated from the native urethra both macroscopic and microscopically. In the scaffolds with ADMC, significant effect on the expression of FGF ($p=0.000$) were noted. Regression analysis showed similar result on the FGF expression ($p=0,001$. $B=0,539$). P63 expression were negatively altered on the ADMC group ($p=0,000$, $b=-1,000$) which might be caused by satisfactory wound healing on day 28. The ADMC also did not affect ck19 expression. All urethra in ADMC the group healed uneventfully.

Conclusions :

Clinical use of freeze dried amniotic membrane with ADMC can be used on urethral defect. Other factors besides TGF β , CTGF, p63, ck19 and collagen should be considered in urethral healing

Keywords :

Scaffold human membrane amnion, remodeling urethra, Adipose Derived Mesenchymal stem cells