Abstract of Presentation

Presentation Title:

Corneal reconstruction using tissue-engineered epithelial cell sheets fabricated *ex vivo* from autologous oral mucosal epithelium

Abstract :

Complete loss of corneal epithelial stem cells because of severe trauma eye disease leads to corneal vascularization and opacification with severe visual loss. For corneal reconstruction in patients with such limbal stem cell deficiencies, we have developed a unique method using tissue-engineered epithelial cell sheets comprising only the patient's autologous oral mucosal epithelium

Tissue-engineered epithelial cell sheets were fabricated ex vivo by culturing harvested oral mucosal cells on temperature-responsive cell culture dishes. In this method, all the cultured cells are detached as an intact transplantable cell sheet from the surfaces simply by lowering temperature. At the time of surgery, conjunctival fibrovascular tissues were surgically removed from corneal sites and a cultured autologous cell sheet harvested was transplanted directly to patients' denuded corneal surfaces. Corneal transparency was restored and postoperative visual acuity improved in the long run.

Tissue-engineered epithelial cell sheet grafts fabricated ex vivo from autologous oral mucosal epithelial stem cells are effective for restoring vision in patients with total corneal stem cell deficiencies.