

# 4<sup>th</sup> International Conference on **Tissue Science and Regenerative Medicine** July 27-29, 2015 Rome, Italy

## ***In vivo* tissue engineering trachea using adipose derived mesenchymal stem cell and cadaveric tracheal scaffold**

**Aysegul Batioglu-Karaaltin**  
Istanbul University, Turkey

Tracheal transplantation appears promising especially for the patients who have been followed in intensive care units for a long time and who have received recurrent operations after traffic accidents or malignancies and as a result have to live with a tracheostomy for the remainder of their lives because of the diagnosis of tracheal stenosis. The treatment of tracheal defects longer than 6 cm (approximately half of the total length of trachea) is still controversial. Autograft materials, cadaveric tracheal allotransplantations, vascularized allotransplantation, cadaveric trachea de-cellularization were tried. Cadaveric trachea de-cellularization followed by seeding with autologous stem cells of the recipient is the best method with no need to use immunosuppressive medication, no requirement for the second major surgical procedure. Successful human transplantations have also been performed using this technique with bone marrow-derived MSCs. We published first successful *in vivo* tissue engineered trachea regeneration from a decellularized cadaveric trachea matrix with seeded adult adipose tissue-derived MSCs which was integrated into the recipient tracheal sides. It is required to protect the three dimensional structure of the trachea and its extracellular matrix during decellularization process. The previous studies mostly employed detergent enzymatic method (DEM) and its modifications for tracheal de-cellularization. Although ionic detergents used for trachea decellularization are very effective in removing cellular remnants, they damage the natural structure of the tissue by affecting the integration of the extracellular matrix. We used combined decellularization method called protected matrix decellularization (PMD) which was developed by our group. And we control test of decellularization both for rabbit and human cadaveric tracheas. As a result new protected matrix decellularization followed by seeding with autologous adipose tissue-derived MSCs which have same origin with chondrocytes and chondrogenic differentiation is known as higher than other stem cells is promising for tracheal reconstruction.

### **Biography**

Aysegul Batioglu-Karaaltin has completed her MD degree from Hacettepe University and her Residency at the Department of ENT and Head and Neck at Ministry of Health Education and Research Hospital. She is working at Department of Otolaryngology Head and Neck Surgery, Istanbul University Cerrahpasa School of Medicine. She is carrying out more than 10 Research about Regenerative Medicine and Tissue Engineering in the Head and Neck field. She has published more than 15 papers in reputed journals.

[batioglu@yahoo.com](mailto:batioglu@yahoo.com)

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