

Advancement in tissue engineering promotes oral wound healing

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Oral tissue engineering for transplantation to aid wound healing in mouth (oral cavity) reconstruction has taken a significant step forward with a Netherlands-based research team's successful development of a gum tissue (gingival) substitute that can be used for reconstruction in the oral cavity. Their work was reported in the current issue of *Cell Transplantation* (17:10/11).

According to the study's lead author, Dr. Susan Gibbs of the VU University Medical Centre in Amsterdam, skin substitutes have been far more advanced than oral gingiva substitutes and, until now, no oral tissue-engineered products have been available for clinical applications. The team was the first to develop an autologous (same patient) full thickness skin substitute that Dr. Gibbs says is "proving to be very successful." However, they wanted to develop an autologous, full thickness oral substitute with the correct oral characteristics.

"Reconstructive surgery within the oral cavity is required during tumor excision, cleft palate repair, trauma, repair of diseased tissue and for generating soft tissue around teeth and dental implants," explained Dr. Gibbs. "Drawbacks of using skin as an autograft material in the oral cavity include bulkiness, sweating and hair formation and the limited amount of donor tissue available."

Their current study was aimed at constructing analogous, full-thickness oral substitutes in a similar manner to their skin substitute while maintaining the needed characteristics for successful oral

transplantation. They used small amounts of patient oral tissue obtained from biopsies, then cultured and expanded the tissues in vitro over a three-week period.

Results of their study with a small number of patients showed that the gingiva substitute was "promising" and supported the need to carry out a larger patient study in the future.

"This study emphasized the importance of closely matching the donor site with the area to be transplanted," said Dr. Gibbs. "Our results represent a large step forward in the area of clinical applications in oral tissue engineering which, until now, have lagged behind skin tissue engineering."

"The reported study provides great encouragement in the clinical setting, for the ability to repair gingivitis and other gum diseases that affect a large number of people" said Dr. Amit Patel, a section editor of the journal *Cell Transplantation*.

Source: Cell Transplantation Center of Excellence for Aging and Brain Repair

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