

Adipose Tissue Engineering: Current Surgical Applications and Future Potential Research

Ahmad Sam Fattouh

Swansea University Medical School

Adipose Tissue Engineering (ATE) is a novel technology with many potential surgical and trauma-related applications. The current technique used to treat wounds or scarring in a plastic surgery context is using autologous flaps. ATE aims to provide an alternative to autologous flaps. The main principle of ATE is to use sourced donor adipose stem cell tissue, through using a variety of different three-dimensional scaffolds, to implant this tissue onto the site of injury or reconstruction. Although this technology is new and carries a lot of promise, there are a few limitations to its use; firstly, there is a lack of donor tissue available to use compared to the requirements that need to be met for this technology to be in larger use in practice. Secondly, research is needed to understand how we can better deliver oxygen and nutrients to the implanted tissue. Finally, finding ways of reducing likelihood of tissue morbidity during transport and finding new methods of maintaining tissue health. To conclude, ATE is a new technique to help improve the potential patient-outcome of healing skin-damage related injuries. Currently, only a few studies have been conducted to demonstrate its efficacy in everyday clinical practice. However, there is still a long way to go to make this technology more prominent than other techniques such as autologous flaps.

