

## Tissue Engineering and Bone Damages

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Tissue engineering (TE) and related therapeutic strategies, that also act as standard tool for transformation and regeneration, have been studied in vast details. The in depth knowledge and vast application has been the cause by which GFs have been widely applied for treatment of different injuries in orthopedics but also in cardiovascular grafting and tissue sciences related areas. In a body injury, platelets participate in the natural healing process, being responsible for hemostasis and releasing of bio proteins or GFs that are crucial to the wound-healing process. Platelet enriched plasma can be harvested from patients own peripheral blood and after concentration it becomes ready to be administered at the injury site.

Biodegradable biomaterials have also been processed as scaffolds and tissue membranes as these systems can act as drug delivery carriers and also acts a reservoir for new pluripotent cells and mechanisms as which these can be studied.

Another relevant group of injuries located in the ankle region is the tendon lesions. Most tendons have the ability to heal after injury apart from the new tendons that are formed either from birth or after anhealed injury. Achilles tendon pathologies (in their several classifications) have high impact in both high-level athletes and the general population. It shows a magnetic resonance image for these types of a typical Achilles

tendon. Tendon acute tears treatments are managed by direct suturing techniques. Poor tissue vascularization explains the slow healing rate and the observed scar tissue in the repaired tendon. The latter can affect tissue functioning as scar tissue results in adhesion formation, which disrupts tendons. Thus the element of risk is there in such treatments always.

Bone grafts are being initially used in early 19<sup>th</sup> century when the parts of a bone are being utilized to heal a specify portion but now the trend has been changed and new improved techniques have arced this area of treatment as highly sophisticated and improved variant in tissue treatment studies.

Similarly a variety of polymer and biomaterials are being into used that are being widely used for tissue repairments such as chondroitin injuries as these tissues take some time to heal and also are very susceptible to hydrolysis. One such example is ceramic. So far the study has been under clinical trials but has shown tremendous effort in treatments and lesions. A large variety of OCD's and scaffolds are being also used to enable a broader range of tissue repairmen. These tissues are being locally used for ankle and joint injures and as such there is no evidence in getting a practical treatment on other parts of the tissues.

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