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New technologies in Tissue Engineering and Dental Implantology

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Мы живем в эру великих открытий тканной инженерии и зубной имплантологии. С помощью этих направлений науки мы можем не только максимально приближенно воссоздать ткань, но и стимулировать ее естественную регенерацию. С развитием этой сферы стоматологии и челюстно-лицевой хирургии мы сможем достичь новых высот в лечении зубов и исправлении дефектов.

Nowadays tissue engineering has emerged as an alternative technique to repair and restore function of damaged or diseased tissues, and this research topic is growing quickly in the clinical fields. Through translational and transdisciplinary research, tissue engineering combines the attributes of biochemical and biomaterial engineering with the aim of creating bioartificial tissues and organs.

These new techniques are often combined with new digital approaches in order to plan complex rehabilitation, to guide surgical steps related to the prosthetic plan, or to design custom-made biomaterials for tissue engineering applications, for example.

In parallel to this digital evolution, the stem cells experimental development is a fundamental part of tissue engineering research. Recently, for example, human umbilical cord mesenchymal stem cells (hUCMSCs) have been regarded as a promising candidate for tissue regeneration.

If stem cells and digital developments are important, they are only two elements of the wide range of technologies under development in the domain of tissue engineering. Biomaterials are also a major component of tissue engineering, particularly implantable materials and biological agents as a very active field of clinical regenerative medicine.

These research fields are the most active translational research topics in orofacial sciences. Any research about these new implantable materials or techniques requires basic sciences research, in vitro and in vivo.

In conclusion, we are now living in the early era of tissue engineering and regenerative medicine, and applications are numerous in dental implantology. New biomaterials and technologies are the key for the development of this field, and their development requires a significant endeavor in translational and multidisciplinary research, to satisfy the needs for clarity, efficiency, and reproducibility of this still pioneer field.

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