3 - Clinical Anatomy

FS - (23846) - ENHANCING AND RECREATING ANATOMY WITH ARTIFICIAL INTELLIGENCE AND OTHER DIGITAL TOOLS

D. Pais (Portugal)[2]; **D. Casal** (Portugal)[1]

1 - Assistant Professor. Department of Anatomy, Nova Medical School – Nova University of Lisbon, Portugal;
2 - Professor and Chairman. Department of Anatomy, Nova Medical School – Nova University of Lisbon, Portugal

Diogo Pais
Lisbon

Diogo Casal
Lisbon

Symposium General Presentation/Abstract

Anatomy is one of the oldest disciplines. Arguably, it is also one with the most potential to gain from the input from artificial intelligence (AI) and other digital tools.

AI has garnered increasing interest and application globally, revolutionizing fields from engineering to medicine. One area where this innovation holds exceptional promise is anatomy. The capability to accurately and efficiently simulate, replicate, and optimize complex structures opens new avenues for surgical planning, patient education, and tissue regeneration therapies.

Medical schools stand to benefit significantly from integrating these tools into their curricula. For instance, students studying human anatomy can create tangible representations of various bodily systems, facilitating a clearer visualization of concepts compared to traditional textbooks or cadavers. Additionally, educators can access customized learning resources tailored to their students' needs and abilities.

The use of 3D planning and printing in medical applications began gaining traction around two decades ago when it became possible to produce physical models from MRI or CT scans. Initially, these models were limited to external body parts, such as ears, noses, and prosthetic limbs, due to the complexity of internal organs. However, advancements in materials science have led to the development of sophisticated biocompatible substances that better mimic the properties of organic tissues. This breakthrough has enabled the use of these printed models for preoperative planning, allowing surgeons to virtually dissect digital replicas of patients' bodies and thoroughly examine their conditions without any risk. Consequently, they can devise precise surgical strategies tailored to each individual, significantly reducing complications and improving overall outcomes.

Perhaps one of the most promising applications of AI and other digital tools is in biomedical research. This technology facilitates the creation of new biomaterials that have the potential to replace damaged or missing tissue. While still largely in the experimental phase, there are already successful cases demonstrating the practical application of these techniques in clinical settings.

In this symposium, speakers will share their teaching, research, and clinical experiences with digitally enhanced anatomical models in different contexts.

Palavras-chave : Artificial Intelligence