

SynDaver® synthetic human cadaver: a 3D simulator for anatomy education and surgical training

Cadáver humano sintético SynDaver®: un simulador 3D para la enseñanza de la anatomía y el adiestramiento quirúrgico

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The teaching of human anatomy and surgical techniques has always been at the basis of medical training and for general surgeons. From its inception, anatomical knowledge and surgical skills have been based on the dissection of human cadavers. However, medical and surgical students and residents face a complex problem due to biosecurity terms, as human cadavers are becoming increasingly difficult to obtain, and even more so are pieces of the central nervous system, not to mention their difficult handling outside of amphitheatres¹.

For this reason, simulators have been manufactured to complement dissection and surgical training in place of human cadavers. One of these simulators is the synthetic human cadaver SynDaver®, from the American company SynDaver Laboratories, made with latex-like polymers that allow for surgical procedures such as sutures, surgical knots, dissections, cholecystectomies, and appendectomies (Fig. 1). Similarly, they are used to visualize large vessels, muscles, organs, and different anatomical planes that allow students and residents to understand the texture and



Figure 1. A: Medical student performing a dissection in the abdominal cavity. B: Exposure of thoracoabdominal cavity.

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dimensions similar to those of a fresh cadaver, compared to cadavers fixed with formaldehyde, which present modifications in their color and shape². On the other hand, it is worth mentioning that the cost of a synthetic human cadaver SynDaver® is US\$ 80,000. However, it is necessary to keep the synthetic human cadaver completely submerged in running water with common table salt and liquid dish detergent, requiring a biweekly water change to keep the material fresh and flaccid³.

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Conflicts of interest

None declared.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that no patient data appear in this article.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

References

1. Uribe-Miranda M, Zamarripa-Varela C, Salazar-García JR. Modelo tridimensional básico y de bajo costo en cerebro de vaca mediante la técnica de Klingler. *Rev Arg Anat Onl.* 2022;13:19-23.
2. Hecht-López P, Larrazábal-Miranda A. Uso de nuevos recursos tecnológicos en la docencia de un curso de anatomía con orientación clínica para estudiantes de medicina. *Int J Morphol.* 2018;36:281-8.
3. Richardson N, Zwambag D, McFall K, Andrews D, Gregory D. Exploring the utility and student perceptions of synthetic cadavers in an undergraduate human anatomy course. *Anat Sci Educ.* 2020;14:605-14.