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Reflections on "Advances in Plastination Techniques" by Dr. Nicolás Ottone

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ABSTRACT: The book Advances in Plastination Techniques by Dr. Nicolás E. Ottone (Springer Nature, 2023) offers a comprehensive and methodologically rigorous overview of plastination, consolidating its role in anatomical education, research, and public engagement. This reflection highlights the book's thorough historical contextualization of anatomical preservation methods and its detailed description of plastination techniques using silicone, epoxy, and polyester resins. Notable innovations such as ultra-thin sectioning and microplastination are emphasized for their value in correlating micro- and macroanatomy, morphometric analysis, and 3D reconstruction. The work also addresses critical topics including biosecurity, ethical considerations surrounding body donation, and the institutional role of the International Society for Plastination. Moreover, the book explores the applications of plastinated specimens in clinical training, comparative anatomy, and forensic science—particularly when integrated with advanced imaging technologies. Ottone's contribution is positioned as an essential reference for morphologists, educators, and biomedical researchers engaged in anatomical preservation.

KEY WORDS: Plastination, Anatomical preservation, Microplastination, Anatomical education, 3D reconstruction

LETTER TO THE EDITOR

Reflections on "Advances in Plastination Techniques" by Dr. Nicolás Ottone.

I am pleased to address you to comment on the recent book "Advances in Plastination Techniques" by Dr. Nicolás E. Ottone, published by Springer Nature in 2023 (Ottone, 2023). This book constitutes an invaluable contribution to the field of anatomy and morphology, providing an important historical context of plastination, the most commonly used anatomical techniques, and a comprehensive analysis of plastination techniques and their application in anatomical teaching and research.

The work is structured in a historical review of anatomical conservation techniques, from the first embalming methods used by ancient civilizations to modern advances that have allowed the preservation of anatomical structures with high fidelity. In this overview, the evolution of traditional methods of cadaveric fixation and the transition to plastination is highlighted, a revolutionary technique developed by Prof. Gunther von Hagens in 1977 (von hagens, 1979; Ottone, 2023). The development of plastination has allowed the creation of durable, odorless, dry, and non-toxic anatomical specimens, which has transformed the teaching of anatomy by reducing the dependence on cadavers embalmed with formaldehyde and improving the quality of samples for study. This advance has promoted more interactive and didactic teaching. In this context, plastination has become an essential tool in training students and health professionals, ensuring a better understanding of the structure and organization of the human body. Furthermore, plastination has surpassed the boundaries of anatomical education and the scientific field since it has become a prominent resource for world exhibitions using plastinated samples (Sora *et al*., 2019).

One of the book's strengths is the detailed description of plastination techniques, including impregnation protocols with silicone, epoxy, and polyester resins, and their applications in teaching and research. Comparative studies between different techniques and the main problems that can occur in the plastination process provide significant value for those seeking to optimize the preservation of anatomical samples.

Dr. Ottone also emphasizes recent advances in ultra-thin sectioning (Sora *et al*., 2019b) and microplastination (Ottone, 2020; Correa-Aravena *et al*., 2024), techniques that allow the visualization of microanatomical structures in thin sections, facilitating the correlation between macroscopic and microscopic anatomy. These innovations are particularly relevant for microstructure analysis, morphometric analysis, and the possibility of three-dimensional reconstructions.

In addition, the book addresses the creation and governance of the International Society for Plastination, highlighting its role in the dissemination and development of this technique worldwide(6). Likewise, a series of anatomical techniques widely used in anatomy laboratories are presented, expanding their applicability in the academic and scientific fields (Brenner, 2014; Skopnik-Chicago *et al*., 2020). Another fundamental aspect developed in the work is the biosecurity elements associated with plastination, a key issue in guaranteeing the safe handling of biological materials in anatomy laboratories (Schill, 2019). Likewise, the author dedicates a section to the ethical considerations of plastination, including body donation as an essential process for anatomical teaching and research, addressing the challenges and responsibilities of this (Riederer, 2016).

In the field of research, the book provides an updated review of the application of plastination in comparative anatomical studies, as well as its use in the generation of three-dimensional models for simulation and clinical training (Toaquiza *et al*., 2024). In this regard, the contribution of plastination in preserving accurate cadaveric material that can be used in the training of surgeons and other specialists in health sciences is highlighted (Qiu *et al*., 2003). Plastinates allow a detailed study of human and animal anatomy and facilitate the validation of new surgical techniques and intervention procedures. Likewise, the use of plastination in forensic research is addressed (Ottone *et al*., 2020), where it has proven to be an effective tool in reconstructing anatomical structures for legal and expert studies (Porzionato *et al*., 2018). Combining plastination with advanced imaging technologies, such as magnetic resonance and computed tomography (Akgun *et al*., 2023), has opened new possibilities in teaching and research, providing highly detailed three-dimensional representations for comparative analysis.

I consider "Advances in Plastination Techniques" an essential reference work for morphologists, teachers, researchers, and professionals in the biological and health sciences interested in anatomical preservation. Its methodological rigor and clarity in presenting the techniques make it an indispensable resource for training and research in morphology.

I appreciate the opportunity to share these reflections with the scientific community and congratulate Dr. Ottone for this valuable contribution to the field of anatomy and plastination.

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