

Critical evaluation of the depiction of abdominopelvic viscera in the anatomical works of Leonardo da Vinci and Andreas Vesalius

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Abstract

This study compares the illustrations of the abdominopelvic viscera in the work of Andreas Vesalius in his *De humani corporis fabrica* (On the fabric of the human body) with the remarkable anatomical drawings of his predecessor Leonardo da Vinci, and seeks to examine the possible causes of the inaccuracies found in their depictions of the organs in this complex region. Extensive background research of the lives and careers of both men was undertaken, with a special focus on the opportunities they each had to study the human body and the considerable challenges faced by all the anatomists who performed cadaveric dissection during the Renaissance period. Critical analysis of their illustrations and notes, which were drawn from primary sources as well as translations and facsimile texts, revealed numerous problems in their depictions of the organs in the abdominal and pelvis. These include erroneous functional concepts such as bi-directional flow in the portal vein, drainage of the gastrointestinal tract into the inferior vena cava and the mechanics of the vesicoureteric junction; structural misrepresentations such as a liver with five lobes and a uterus with seven chambers; and the omission of significant organs such as the pancreas and accessory glands of the male reproductive system. Three main causes were identified for these inaccuracies: an over-reliance on the teachings of Galen; the challenging conditions for human dissection during their lifetimes, in particular the lack of effective embalming techniques and female cadaveric material; and consequently, the unjustified extrapolation of data from dissection of different animal species. This study highlights the importance of acknowledging and overcoming these challenges, as many principles are equally applicable to scientific research and cadaveric dissection today. Despite these limitations, however, both Leonardo and Vesalius were able to demonstrate an extraordinary understanding of human anatomy in their illustrations. The widespread publication of Vesalius's *Fabrica* was invaluable in progressing anatomical and medical knowledge, and although Leonardo failed to publish during his lifetime, his amazingly detailed anatomical drawings were certainly innovative and radical by the standards of his time.

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