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Published in:
Journal of Hand Surgery (European volume)

DOI:
10.1177/1753193412454396

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2013

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):

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Download date: 15-09-2023
Bidloo’s and De Lairesse’s early illustrations of the anatomy of the arm (1690): a successful collaboration between a prominent physician and a talented artist

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Abstract
Govard Bidloo (1649–1713) was trained as a surgeon at the Amsterdam Guild of Surgeons, and later in his career, he became a professor of anatomy in The Hague and Leiden. At the end of the 17th century, he performed dissections on the corpses of executed criminals to teach and study anatomy. Based on his findings, he published a magnificent anatomical atlas in 1690, entitled Ontleding des Menschelijken Lichaams (Dissection of the Human Body). The talented painter Gerard De Lairesse, a pupil of Rembrandt, made the drawings of the anatomical dissections for the atlas in close collaboration with the dissector. The drawings of Bidloo and De Lairesse represent, in a unique and artistic way, an early series of anatomical preparations of the arm and hand from more than 300 years ago.

Keywords
Anatomy atlas, art, Gerard De Lairesse, Govard Bidloo, hand surgery, history

Introduction
In the beginning of the 17th century in Amsterdam, anatomy was taught by the praelector anatomiae [lecturer in anatomy] using the corpses of executed criminals in the anatomical theatre of the Amsterdam Guild of Surgeons. At that time, surgeons were trained for several years under the guidance of a master surgeon in a surgeon’s shop (IJpma et al., 2009). In addition to training in a master–apprentice relationship, surgical trainees were expected to acquire knowledge from anatomy lessons in the anatomical theatre. In 1555, the Amsterdam Guild of Surgeons was granted the privilege of dissecting corpses to teach anatomy to their trainees and guild members. The world-famous series of paintings of the guild reminds us of the anatomical education at that time. Probably the most well-known masterpiece is Rembrandt’s Anatomy Lesson of Dr. Nicolaes Tulp (1632) (IJpma et al., 2006 and 2008). The surgical apprenticeship was completed with a rigorous examination (IJpma et al., 2009).

The knowledge of anatomical dissections for the purpose of education of the guild has been preserved in anatomical atlases. Govard Bidloo (1649–1713) was trained as a surgeon under the Amsterdam Guild of Surgeons. In 1690, he published the Dutch edition of his anatomical atlas entitled Ontleding des Menschelijken Lichaams (Dissection of the Human Body) (Bidloo, 1690). His atlas contains some early drawings of the anatomy of the arm and hand. They are based on anatomical dissections carried out for educational purposes. Bidloo (1690) clearly stated that “to understand diseases and injuries, it is necessary to know the anatomy by performing anatomical dissections.” The pioneering efforts of Bidloo and De Lairesse to teach and illustrate the anatomy of the
arm and hand from anatomical dissections remain of interest today. We present a further analysis of Bidloo’s anatomical atlas with special attention to the early anatomical dissections of the arm in the 17th century, based on the original sources available in the special collections of the University of Groningen in The Netherlands.

The physician Govard Bidloo (1649–1713)

Govard Bidloo (Figure 1) was not only a surgeon, but also a successful poet and playwright (Molenaar, 2004). During his training as a surgeon at the Amsterdam Guild of Surgeons, he attended the anatomy lessons of the former praelector anatomiae Frederick Ruysch (Lindeboom, 1984). Later in his career, he was appointed professor of anatomy in The Hague (1688) and Leiden (1694), where he regularly performed anatomical dissections. He was also the personal physician to King-Stadtholder Willem III van Oranje (William III of Orange), who appointed him as superintendent of all doctors, pharmacists, and surgeons, as well as all civil and military hospitals in The Netherlands and England.

The artist Gerard De Lairesse (1640–1711)

Gerard De Lairesse, a talented painter from Liege, illustrated Bidloo’s anatomical atlas (Bidloo, 1690; Molenaar, 2004). De Lairesse was well educated by his teacher and prominent artist Flémalle Bertholet (1614–1675), who was a professor at the Royal Academy in Paris and had drawn various decorative paintings for the palace at Versailles in France. De Lairesse settled in Amsterdam. Bidloo was living in Amsterdam as well. De Lairesse very soon became one of the most successful Dutch artists of his time (Molenaar, 2004). He became a pupil and friend of Rembrandt, who even portrayed him. De Lairesse was a master at making decorative paintings on walls and ceilings, including those in various Dutch palaces and even the stage setting of the City Theatre of Amsterdam. Moreover, Bidloo and De Lairesse had a shared interest in theatre performances. Probably for those reasons, Bidloo commissioned De Lairesse to illustrate his anatomical atlas (Molenaar, 2004). His expertise in painting has been preserved in the form of a Groot schilderboek (Great Painting Manual) (1712), of which editions subsequently appeared in German, English, and French (De Lairesse, 1712). This book was used as a standard work in the leading art academies of the 18th century. De Lairesse unfortunately suffered from syphilis, as a result of which he became blind later in life and from which he eventually died at the age of 51.

Anatomical dissections of the arm

The Dutch edition of Bidloo’s and De Lairesse’s anatomical atlas was published in 1690 (Bidloo, 1690). A few years later, the British anatomist William Cowper...
committed plagiarism by publishing Bidloo’s and De Lairesse’s anatomical work under his own name, while using the same illustrations (Molenaar, 2004). The original atlas was published in large format (53 x 35 cm) and contains 105 anatomical illustrations (Bidloo, 1690). De Lairesse would have attended Bidloo’s anatomical dissections to draw the anatomical illustrations. Anatomical dissections were performed in the anatomy theatre on corpses of executed criminals or from the city hospital in Amsterdam. A lesson could take several days. They were mostly held in wintertime, as the corpses remained in a reasonable condition when temperatures were low. In 1677, Bidloo was granted permission by the mayor of Amsterdam to use two corpses for his anatomical dissections. According to Bidloo, the corpses were intended for “his work in which all parts of the body after life would be displayed” (Kooijmans, 2004).

The 67th to 71st images show an anatomical dissection of the forearm and hand (Figures 2–6). Figure 2 demonstrates the extrinsic long flexor muscles of the forearm. The flexor digitorum superficialis muscle is resting on a cabinet and the flexor digitorum profundus muscle is hanging on an iron pin. The central elements in this anatomical image are the intersections of the flexor digitorum superficialis and profundus tendons of the fingers. This anatomical structure would later be called the chiasma tendinum of Camper (IJpma et al., 2010). It was named after Professor Petrus Camper, who was praelector of the Amsterdam Guild of Surgeons in 1755, and who had depicted the chiasma in his anatomical atlas of the 18th century (Camper, 1760; IJpma et al., 2010). The chiasma is an essential element in the gripping function of the hand. During sustained gripping, the flexor digitorum superficialis tendons compress the flexor digitorum profundus tendon, allowing stabilization of the proximal interphalangeal joint, whereby grip on an object can be obtained.

Figure 3 demonstrates the dissection shown in Figure 2 at a more advanced stage. The flexor digitorum superficialis and profundus muscles have been put aside. The intrinsic hand muscles are the key element in this preparation. The intrinsic muscles consist of the thenar, hypothenar, interossei, and lumbral muscles. In the anatomical preparation, the palmar interossei and lumbral muscles are marked with a pin to demonstrate them to the public. The radius and ulna are largely uncovered from muscles. In the forearm, the pronator quadratus muscle and interosseous membrane are clearly visible. The flexor muscles of the forearm are largely detached from their origin and have been displaced. The insertions of the flexor carpi radialis, carpi ulnaris, pollicis longus, and brachioradialis muscles are shown in the central part of the illustration. Further proximally, the anatomical correctness of the image is difficult to assess because of the floating muscles. Nevertheless, it is a beautiful drawing in which the artistic component is very apparent.

Figure 4 shows the skin stripped off the forearm. The extrinsic extensors are displayed. The artist presents the arm, leaning on a wooden board and surrounded by dissection tools, as if posing for the spectators. The individual extensor muscles are well distinguished from one another and appear to be displayed correctly. Figure 5 demonstrates a more advanced stage of dissection of the extrinsic extensor muscles of the forearm. The extensor tendons are...
highlighted with dissection tools in order to give them due prominence. The forceps lift up the tendons of the flexor carpi radialis longus and brevis muscle. On the distal portion of the flexor carpi radialis tendons, the abductor pollicis longus and extensor pollicis brevis tendons course slightly towards the hand. On the stick, which is elevated by the scalpel and Y-shaped dissection instrument, the tendons of the extensor digitorum muscle are exposed. The most radial tendon, which is elevated by the stick, is part of the extensor pollicis longus muscle. Extension of the index and little fingers is generally carried out by two tendons, in contrast to the middle and ring fingers, which have only one extensor tendon. It is clearly visible that the extensor indicis tendon together with the extensor digitorum tendon course over the dorsum of the index finger. Figure 6 shows the final stage of dissection of the extensor muscles. The anatomical specimen is artistically positioned with a textbook in between the elbow joint. The extensor muscles are completely detached from their origins and displaced to expose the radius and ulna. The insertions of the extrinsic extensor muscles in this composition thereby catch the attention of the spectator.

Discussion

Anatomical education was, and still is, important in the training of surgeons. The 17th century anatomical atlas of Bidloo and De Lairesse is interesting because it emerged from an intensive collaboration between a prominent doctor and talented artist, and is based on anatomical dissections carried out for surgical training. De Lairesse drew a series of anatomical preparations, as they were exposed on the dissection table by Bidloo and supported by dissection instruments, to demonstrate the anatomical structures to the public. They are clearly still lifes in which the artistic component of the artist is undeniable. “Anatomy intended as a science, but also as a theatrical spectacle” — that is what Bidloo must have had in mind when he decided to publish his anatomical atlas (Molenaar, 2004). The texts that refer to the drawings show what the readers could have seen themselves if they had been present at the anatomical dissection (Molenaar, 2004).
drawings clearly demonstrate a certain system in the way the anatomical specimens are displayed. The first and second preparations are focused on the intrinsic and extrinsic flexor muscles, whereas the last three preparations show the extensor muscles of the forearm and hand. In the successive drawings the dissection gradually reaches a more advanced stage.

Bidloo and De Lairesse’s anatomical illustrations of the arm (1690) fit into the early series of anatomical images of the arm; for example, those of Vesalius (1555), Tulp (1632), Albinus (1747), and Camper (1760) (Albini, 1747; Camper, 1760; IJpma et al., 2006, 2008, 2010; Vesalius, 1555). All were based on anatomical dissections of the arm and focused on anatomical education. Vesalius set off a revolution in anatomy in the 16th century by abandoning the theoretical approach of his predecessors and propagating the practical and functional anatomy, as based on anatomical dissections. His work, entitled *De humani corporis fabrica* (1555), can be considered one of the pillars of anatomy in Europe. The work contains a portrait of Vesalius that demonstrates the flexor muscles of the arm in a corpse (Vesalius, 1555). He considered the hand to be a physical counterpart of the psyche, an instrument to use other instruments, and a representation of God’s wisdom. Vesalius collaborated with the artist Jan Stefan van Kalkar to compose the illustrations for his seminal work on anatomy. Kalkar was a pupil of the famous Italian Renaissance painter Titian. He created large woodcut illustrations of the anatomical dissections for Vesalius’s *opus magnum* on anatomy. From a historical point of view, anatomists and artists relied heavily on each other in their efforts to extend the knowledge of anatomy.

In Rembrandt’s famous group portrait, the *Anatomy lesson of Dr. Nicolaes Tulp* (1632), Tulp displays the anatomy of the arm in the presence of members of the Amsterdam Guild of Surgeons (IJpma et al., 2006 and 2008). De Lairesse was a friend of Rembrandt and, at the same time, a pupil of the master himself. In Figure 2, Bidloo and De Lairesse lift up the extrinsic flexor muscles of the forearm like Rembrandt did in his anatomical demonstration. Albinus, a professor of
anatomy in Leiden, depicted each muscle of the arm and hand separately in his 18th century anatomical atlas (Albini, 1747). The nomenclature, origin, and insertion are meticulously indicated. He was convinced that an anatomist should understand the construction of the human body in the same way as an architect understands how the foundations of a building are designed (Hildebrand, 2005). The anatomical atlas of Petrus Camper, with its detailed view of the intersection of the superficial and deep flexor tendons, is remembered by the eponym chiasma tendinum of Camper, as mentioned above. Altogether, these works provide a contribution to the early anatomical knowledge of the arm and hand.

The anatomical illustrations of Bidloo and his artistic counterpart De Lairesse are detailed and accurate anatomical illustrations of the arm and hand in early history. These series of original drawings from the anatomical atlas of Bidloo and De Lairesse demonstrate that physicians in the 17th century had gained substantial knowledge of the anatomy of the arm based on their anatomical dissections. Understanding the anatomy of the arm and hand from their drawings was the first step in understanding and treating diseases and injuries of the upper extremity. From the anatomical, educational, and artistic points of view, these anatomical illustrations therefore justify a place in the early history of anatomical images of the arm and hand.

**Conflict of interests**

None declared.

**Funding**

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

**References**


De Lairesse G. *Groot schilderboek*. Amsterdam, Hendrick Desbordes, 1712.


Vesalius A. *De humani corporis fabrica libri primus*. Basileae, Ioannem Oporinum, 1555.