



Art in Science

Nicolaes Tulp: The Overshadowed Subject in *The Anatomy Lesson of Dr. Nicolaes Tulp*

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A Note from the Column Editors,
Berardo Di Matteo and his colleagues at the Rizzoli Orthopaedic Institute in Bologna, Italy have provided another outstanding contribution to “Art in Science” with their discussion of the story behind another iconic painting in the history of medicine, *The Anatomy Lesson of Dr. Nicolaes Tulp* by Rembrandt van Rijn.

While the Greeks, including Herophilus of Chalcedon and Erasistratus

of Chios, recognized the value of human dissection well before the Common Era, this momentum was lost with the rise of Christianity. Galen, in the 2nd Century AD, resumed the search for understanding human physiology, but his prolific contributions were limited and often erroneous, as he depended primarily upon animal dissections, especially apes and swine. Still, his conclusions were strongly embraced for at least 12 to 14 centuries [15].

Fittingly, the revival of human dissections can be traced to Bologna. Mondino de Luzzi and, in particular, his student Niccolò Bertuccio, recorded their anatomic findings and conclusions in the early 14th Century. In 1341, Gentile da Foligno conducted a public dissection of a human cadaver at the University of Padua [4]. The anatomy of Galen was finally and convincingly replaced by the work of Flemish-born and Italian-trained Andreas Vesalius (1514–1564) [8], with important contributions from Egypt, Spain, and the Middle East. Dr. Nicolaes Tulp, and medicine in general, owes much to the art of dissection and the Bolognese medical tradition.

— Gary E. Friedlaender MD, Linda K. Friedlaender BA, MS

Note from the Editor-in-Chief:

I am pleased to present the next installment of our “Art in Science” column coedited by Gary and Linda Friedlaender. Linda Friedlaender is the Curator of Education at the Yale Center for British Art; Gary is the Chair of the Department of Orthopaedics and Rehabilitation at Yale School of Medicine. In this month’s column, Berardo Di Matteo MD and his colleagues from the Rizzoli Orthopaedic Institute in Bologna, Italy present a guest column on *The Anatomy Lesson of Dr. Nicolaes Tulp*, a classic portrait by the renowned artist, Rembrandt van Rijn.

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Introduction

In and out of prison most of his life, Aris Kindt [12] was known as a petty thief prone to violence. Such a misery was Kindt that he was even banned from his hometown of Leiden in South Holland. In the winter of 1632, Kindt was back in a Holland prison for assault and robbery, having been apprehended while stealing a man’s

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cloak [10]. Worse yet for the jailed thief, the Amsterdam Guild of Surgeons' annual "anatomy lesson" was fast approaching, and the Guild needed a body.

Each winter—the low temperatures helped preserve the cadavers—the Amsterdam Guild of Surgeons held a public anatomic dissection open to both paying visitors and the Dutch elite alike [9]. Originally aimed to students for educational purposes, the annual event became a staple of the Dutch Republic social life [6]. The anatomic theaters annually grew in size to better accommodate the important guests [1, 10]. These events became so popular that the Guild commissioned an artist to immortalize the meetings and the anatomic dissection. The paintings would be displayed in the boardroom of the Guild of Surgeons. The Guild needed an artist, a lecturer, and, of course, a cadaver for dissection. The church frowned upon dissecting the bodies of ordinary citizens, but were more forgiving if the body was a criminal and preferably, who was outside of the church.

Kindt was sentenced to death for his crime and hanged on January 31, 1632.

The Guild had a body.

The Guild had an artist as well, commissioning a 26-year-old Dutch painter who had only moved to Amsterdam a year earlier. The decision was all-the-more curious considering this

artist had painted few portraits in his career, and was considered far-less experienced than homegrown artists like Thomas de Keyser or Nicolaes Pickenoy [16]. Nevertheless, the artist they selected, Rembrandt van Rijn, would prove to be a wise choice.

Although a newly-minted Amsterdam citizen, Rembrandt was considered a rising star in the art business. He made his fame thanks to the patronage of celebrated art dealer Hendrick van Uylenburgh, a true talent scout who made the young Rembrandt chief painter of his studio. Van Uylenburgh was an influential personality of the Dutch Golden Age, and his studio was very popular [14]. When the Guild asked Van Uylenburgh for a painter to invite for the public dissection of 1632, instead of other, more established painters, van Uylenburgh suggested Rembrandt. It was the first big commission for Rembrandt, who is now known as the greatest artist of Holland's Golden Age [7].

The Guild already had their lecturer: Dr. Nicolaes Tulp, appointed praelector (lecturer) of the Amsterdam Guild of Surgeons, and widely considered one of the most brilliant anatomists, physicians, politicians, and socialites of the era.

Add it all up—the body, the artist, and the lecturer—and few paintings symbolize the Golden Age of the Dutch Republic better than *The*

Anatomy Lesson of Dr. Nicolaes Tulp (Fig. 1).

Who Is Nicolaes Tulp?

Sometimes when examining a work of art, we overlook the importance of the subject. We are so fascinated by the peculiar technique or by the skills of the artist that we lose sight of our subject. Perhaps this happened to Dr. Tulp—the scene overshadowed the achievements of the subject.

Nicolaes Tulp was born in Amsterdam in 1593 with the name Claes Pieterszoon, youngest son of the successful linen merchant Pieter Dierckzen. At 17, he studied medicine at the prestigious Leiden University, under some of the most celebrated teachers of the time, including Reinier de Bondt (1576–1623), and Pieter Pauw (1564–1617), one of the first Dutch physicians to obtain permission to dissect cadavers [5]. Back in Amsterdam in 1614, he began his career as a physician, his practice blossoming to the point that he needed a single-horse carriage to help him answer patient calls [5].

During this time, he changed his name to Nicolaes Tulp, where "Nicolaes" was a more elegant version of his original name "Claes", and "Tulp" is the Dutch word for "tulip"—the symbol he chose as an emblem. At the

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Fig. 1 *The Anatomy lesson of Dr. Nicolaes Tulp* by Rembrandt. (published with permission from Mauritshuis, The Hague).



time, the tulip was an expensive and exotic flower, having only recently arrived in the Netherlands by way of traders. The first bulbs were planted in Leiden, and Tulp appropriated it well before it became a Dutch national symbol [8].

Tulp was an ambitious man who wanted to leave a mark in his time, both in science and politics. As early as 1622, he entered the municipal council of Amsterdam in the role of permanent member, and often served as magistrate in the local justice system. Amsterdam was the biggest city of the seven provinces of the Dutch

Republic, with as many as 200,000 inhabitants, and in 1654, Tulp became one of the four burgomasters, in effect, helping to rule the city. For a time, he was also the supervisor of the Amsterdam Exchange Bank and city treasurer [11].

Tulp was a prolific medical writer as well. His most notable contribution to medical history in his career as surgeon and anatomist is the collection of *Observationes Medicae* (Medical Observations) [13], printed in 1641, with six new editions reprinted in the following 100 years. This text is also known as “The Book of Monsters”

because of the many illustrations of exotic animals, like the orangutan (Fig. 2) and narwhal. The book described 231 cases of strange and uncommon medical conditions, such as Siamese twins (Fig. 3) and a hydrocephalic child.

But the *Observationes Medicae* is no mere morbid curiosity. It contains the first comprehensive description of the ileocaecal valve (also known as the “Tulp valve”), the first description of the lacteal vessels, and the *Diphyllobothrium latum* (the fish tapeworm).

Tulp’s book is widely considered a great success both in its time and in

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history [3]. It offered experiences and instructions for Tulp's professional peers and it became a symbol of the state of medical knowledge in 17th-century Europe.

The Anatomy Lesson of Dr. Nicolaes Tulp

During a restoration process in the late 1990s, *The Anatomy Lesson of Dr. Nicolaes Tulp* was analyzed and scanned to understand Rembrandt's artistic

technique. It is interesting to note that the left dissected arm was initially painted in a higher position, less practical from a teaching perspective, and the right arm was originally an amputated stump. The painting shows an amazingly realistic scene in which Tulp appears in the act of demonstrating the anatomy and function of the wrist and fingers' flexor muscles [6, 8].

The fingers of the surgeon's left hand are flexed as if he wanted to demonstrate how the flexor muscles pulled by his forceps will produce a corresponding flexion of the fingers, showing the relation between morphology and function. This careful attention to detail makes the painting more than just a static portrait of important persons in a grand surrounding, but truly a snapshot of a real teaching moment between an experienced anatomist and interested attendants. Notably, in front of the audience, a copy of *De Humani Corporis Fabrica* (On the Fabric of the Human Body) by the eminent anatomist Andreas Vesalius can be seen [2, 9].

Despite these details, the painting has been criticized due to a presumed anatomical error [8]. The flexor muscles in Dr. Tulp's forceps appear to originate from the lateral, instead of the medial, epicondyle of the humerus. But a recent study [6] comparing the

forearm in the painting with the dissected left forearm of a male cadaver set in the same position, sides with the artist. The position of the forearm is extended and supinated, the wrist placed on the groin: this setting "pushes" the medial epicondyle of the humerus pointing towards the body, with the lateral epicondyle turned away from the body and thus not visible by the point of view of the painting.

Although today we are fascinated by Rembrandt and his depiction of one of the most celebrated anatomy lessons

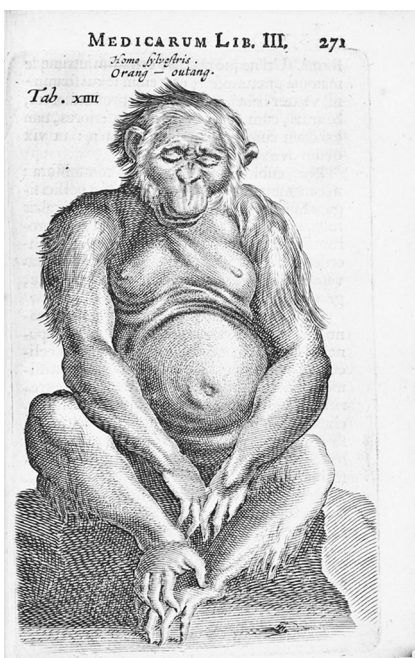


Fig. 2 An orangutan image from the *Observationes Medicae* [13].

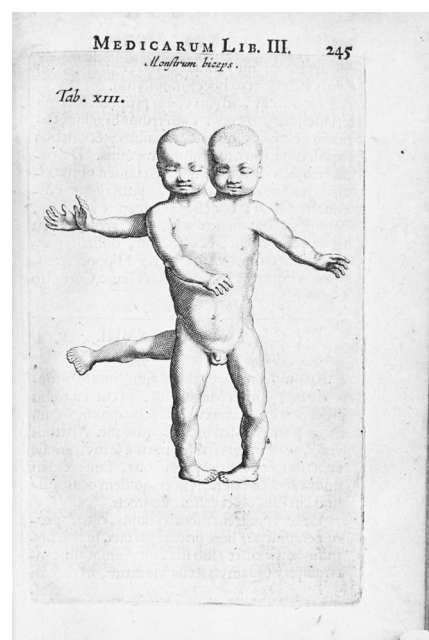


Fig. 3 A representation of Siamese twins from the *Observationes Medicae* [13].

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in art history, we should remember that centuries ago, it was Rembrandt himself who likely was fascinated by the impressive life and personality of his subject, Dr. Nicolaes Tulp.

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