

# THE ANATOMY LESSON OF DR TULP

A. C. MASQUELET

*From the Department of Orthopaedic, Traumatologic and Reconstructive Surgery, Hospital Avicenne, Bobigny, France*

**The anatomy lesson of Dr Tulp is one of the most famous paintings by Rembrandt. A detailed examination of the scene leads us to believe that Dr Tulp was demonstrating the function of the flexor digitorum superficialis. Therefore, the painting is a true lesson in physiology which is in keeping with the spirit of the 17th century, which was the century in which the modern theory of movement in physics evolved. The anatomy lesson of Dr Tulp also symbolizes the break with the descriptive anatomy of Vesalius which occurred during this century.**

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## INTRODUCTION

The anatomy lesson of Dr Tulp, painted by Rembrandt in 1632, is a fascinating painting. I would like to demonstrate that this masterpiece of humanity can give us the key for understanding the social, intellectual and spiritual environment of the 17th century. I shall try to answer two connected questions:

1. What was Dr Tulp doing exactly from an anatomic point of view?
2. What could be the symbolic meaning of the scene?

## ANATOMY IN THE 17TH CENTURY

In 1555, the Amsterdam Guild of Surgeons was given permission every year to dissect the body of an executed criminal for the purpose of teaching anatomy. The Ordinance on Anatomy of 1606 detailed that the anatomical training should be delivered to surgeons assistants. The master surgeon who did the teaching was called the Praelector. He was a qualified doctor of medicine and was appointed by the city. Usually he was a well known and influential person who was involved in the political life of Amsterdam.

Anatomy lessons were open to members of the Guild and also to outsiders. Public dissections were popular events in the life of the city and most lessons took more than 1 day. They were held in the winter so that the corpse remained in a good condition for as long as possible.

It became traditional for the surgeons of the Guild to be portrayed attending a dissection carried out by the praelector. The collection of paintings of the Amsterdam Surgeon's Guild is unique and the majority are now found in the Amsterdam Historic Museum. The surgeons paid for their own portraits, perhaps with the exception of the praelector.

## COMPOSITION OF THE PAINTING (FIG 1)

Nicolas Tulp was a very important person in Amsterdam, and he was elected burgomaster of the city on several occasions. He was elected as the Guild's Praelector Anatomiae in 1628 and gave his second public anatomy lesson on 31st January, 1632. In the tradition of his predecessors, Tulp wanted to have himself painted with a group of surgeons of the Guild. The opportunity for a dissection occurred in January 1632 with the execution by hanging of Aris Kint who had enjoyed a long career as a robber. The body was made available to the surgeon's Guild. The composition of the painting is a revolution when compared to the other Anatomy lessons. The diagonal placing of the subject relative to the picture gives considerable importance to the corpse and reinforces the dramatic sense of the scene. This disposition is combined with the audience gathered on the left of the canvas, while Tulp is alone on the right. The composition and the interplay of light and dark reinforces the impression of an invitation to the spectator to share the event and to take up a position at the dissecting table where the body is displayed. The great difference between this painting and the others is that the praelector, Dr Tulp, is actually engaged in a dissection and that all the surgeons are paying attention to the demonstration and are not looking at the painter. The surgeons attending the dissection are linked by two imaginary triangles: a large one with a smaller within it. The outer triangle draws the eye of the spectator to focus progressively on the centre of the painting which is the dissection. In the background, on the right, Hartman Hartmansz holds a sheet of paper on which the names of the surgeons attending are written.

The apex of the outer triangle is occupied by Frans Van Loenen who invites the spectator to follow Tulp's demonstration, with his gaze and half pointing gesture. In the left angle, Adrian Slabbaen makes the connection between practice and theory by looking at the volume open on the lectern in the right foreground. On



Fig 1

the extreme left, the portrait of Jacob Koolvelt was added at a late stage. His place in the composition was described as unfortunate and it is possible that this addition was made by a painter other than Rembrandt.

In contrast to those of the outer triangle, the surgeons within the inner triangle are paying close attention to what Tulp is doing. They do not observe his face as it had always been assumed. Matthis Calkoen, the surgeon next to Tulp with the flat ruff, has a slightly converging gaze proving a close focus; he is looking at the left hand of Tulp and not at the open volume on the lectern. Jacob Block behind him is also watching the hand of Tulp, while Jacob de Wit is looking at the forearm of the subjectum anatomicum. The slight discrepancy in the proportion of the left and right upper limb of the body may be explained by the fact that Rembrandt was working from a prepared forearm. It is surprising that initially the right forearm ended in a stump! This is clear on X-rays of the picture, and Rembrandt chose to cover the stump with a well-painted hand, certainly not that of a robber. It is possible that Aris Kint had been punished previously by amputation of his right hand.

### THE DEMONSTRATION OF DR TULP

So what is Tulp demonstrating on the left forearm of the corpse? He is using forceps to lift muscle bellies connected with the long flexors of the fingers and we may assert that the mobilized muscle is the flexor digitorum superficialis, as the insertions of the tendons are at the bases of the middle phalanges. In addition the division of the tendons into two slips is clearly visible (Fig 2).

The gesture of Tulp's left hand is intriguing. The wrist is fully extended and only the proximal interphalangeal joints are flexed to 90°. This is not the gesture of a man speaking. The anatomy lesson by Tulp is a demonstra-

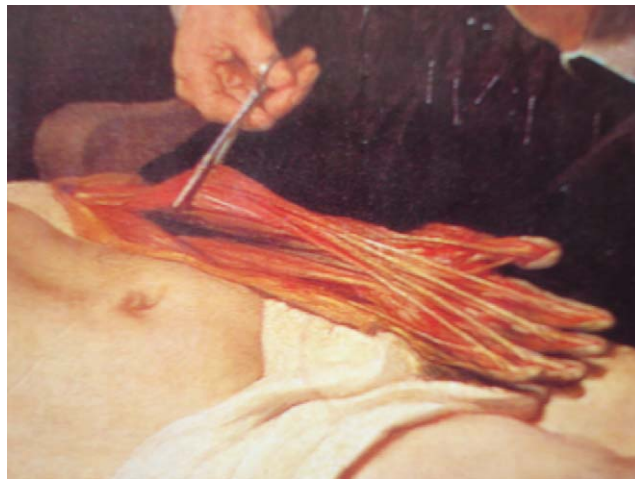


Fig 2



Fig 3

tion of the function of the flexor digitorum superficialis with Tulp lending weight to his demonstration by reproducing the movement with his own left hand. He is going to exert traction on the muscle bellies with the forceps to show the action, distally, on the proximal interphalangeal joints of the fingers. This interpretation is reinforced by the direction of the gazes of the surgeons, close to the dissecting table. Jacob de Wit is watching the hand of the corpse, while Calkoen is looking at the left hand of Tulp (Fig 3). Moreover it seems that Calkoen is reproducing the same movement of flexion of the proximal interphalangeal joints with his own left hand. This indicates what the surgeons are expecting when Tulp pulls on the muscles: flexion of the proximal interphalangeal joints of the cadaver. This moment, which is the most important for the narrative and the restitution of the emotions that accompany it, is one of the greatest challenges facing the artist. Rembrandt is a genius!



Dark and light, composition, surgeon's moods, Tulp's gesture: all of these are combined to reach the climax of the demonstration: flexion of the proximal interphalangeal joints of the cadaver by pulling on the muscle belly of the flexor digitorum superficialis.

## THE SYMBOLIC INTERPRETATION OF THE SCENE

A number of points should be considered in order to appreciate the meaning of the painting.

1. The Anatomy lesson of Dr Tulp is not a true demonstration of dissection as it was performed in the 17th century. Usually the praelector began the dissection by opening the abdomen to expose and remove the perishable organs. In the painting the corpse is intact, and therefore Tulp had decided to be painted dissecting a forearm: why?
2. The dissection of a forearm can be linked to the radical theories of Vesalius. In the 16th century, Vesalius had accomplished a true revolution in the knowledge of the human anatomy, similar to that of Copernicus in astronomy. Vesalius, refuting the anatomic descriptions of Galen, had abolished the distinction between theory and practice when teaching medicine and anatomy. On the frontispiece of his major opus *De Humani Corporis fabrica*, published in 1543, Vesalius is represented standing beside the dissecting table with a prepared forearm (Fig 4); He describes the forearm and the hand as the physician's chief instrument "the *primarium medicinae instrumentum*". One century later, Tulp wished to be considered as a new Vesalius and therefore he also chose to be depicted with a dissected forearm.
3. In 16th and 17th centuries public dissections were often preceded by a moralistic introduction in which the audience was encouraged to acknowledge its own mortality. The praelector explained that the science of anatomy was a path towards the knowledge of God. More over the hand was regarded as the most visible proof of God's presence in man. Tulp, when speaking, probably drew the surgeons' attentions to the divinity of Creation, emphasizing the function of the fine mesh of muscles on the motion of the fingers. Finally, far beyond Vesalius, there is the influence of Aristotle, the ancient Greek philosopher who debated against Anaxagore, another Greek philosopher. Anaxagore maintained that "man is intelligent because he has hands" while Aristotle claimed that "man has hands because he is intelligent".

In his lesson of Anatomy, Tulp makes the demonstration that mankind is the finality of the Creation. Tulp is not only a new Vesalius: Vesalius had revolutionized descriptive anatomy, whereas Rembrandt portrays Tulp



Fig 4

as establishing the connection between an anatomic structure and a function. So the painting of Rembrandt opens a new epoch. The 17th century was the century of the modern theory of movement in physics, which was gradually built by Descartes, Gassendi, Galileo, Leibniz and Newton, coincidental with the refutation of Aristotle's theory of movement.

The anatomy lesson of Dr Tulp by Rembrandt encompasses the understanding of both the finality of creation and the modern knowledge. It is the one of the best witnesses of the intellectual atmosphere of the 17th century as it symbolizes an epistemological rupture in the great History of the Humanity, by introducing the modern understanding of movement in Anatomy.

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Dr A.C. Masquelet, Department of Orthopaedic, Traumatologic and Reconstructive Surgery, Hospital Avicenne, Univ Paris XIII, 125 Route de Stalingrad, Bobigny, France  
E-mail: acmasquelet@free.fr

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