

Review

# Finochietto's retractor: from the surgeon to the eponym

Henry Martins Soares Fortes<sup>1</sup> , Pedro Pinheiro Barros<sup>1</sup> , Beatrice Martins da Costa e Silva<sup>1</sup> ,  
Luiz Rafael Pereira Cavalcanti<sup>2</sup> , Wolfgang William Schmidt Aguiar<sup>3</sup> 

<sup>1</sup>Universidade de Pernambuco, Recife, Pernambuco, Brazil

<sup>2</sup>Pronto Socorro Cardiológico de Pernambuco Prof. Luiz Tavares, Recife, Pernambuco, Brazil

<sup>3</sup>Hospital Universitário Oswaldo Cruz, Recife, Pernambuco, Brazil



Henry Martins Soares Fortes  
henry.fortes@upe.br

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Marcelo M. Valença

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## Abstract

### Introduction

The exposure of the affected organ is essential for the proper operative technique in thoracic and cardiovascular surgeries. In this context, Enrique Finochietto contributed to the development of the rib retractor, fundamental for the improvement of surgical techniques in the area. The present review proposes to evaluate Finochietto's contributions to modern surgery and discuss complications and alternatives to the famous retractor that bears his name.

### Methodology

Search in Pubmed and Google Scholar databases with the descriptors: "Enrique Finochietto", "Finochietto rib spreader", "Rib spreader" AND "Thoracotomy".

### Results

Finochietto was a very influential surgeon at the beginning of the 20th century, founding a Latin American school of surgery and contributing with numerous innovations to the area, especially to thoracic surgery. With the invention of a rib retractor for surgical access to the thoracic cavity, the surgeon contributed to the advancement of the surgical technique in thoracotomies and to a better surgical approach to chest affections.

### Conclusion

Despite the minimally invasive alternatives, the Finochietto retractor is essential for open chest surgery and was of unique importance for the development and evolution of this surgical specialty.

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## Introduction

During a surgical access, adequate exposure of the organ to be operated is a fundamental factor for the success of the procedure.<sup>1</sup> In the chest, the rib cage acts as a mechanical barrier to protect the intrathoracic organs and as a stabilizer for the thoracic spine.<sup>2</sup> However, such a structure hinders a satisfactory visualization of the lung and the surgeon's access in open thoracic surgery.

With the development of a rib retractor device used worldwide,<sup>3</sup> Enrique Finochietto became an exponent of modern Latin American surgery and of development of new surgical instruments.<sup>4</sup>

With the invention of such an instrument, Finochietto provided better surgical access to intrathoracic procedures, facilitating the manipulation and visualization of lesions and structures located within the bone framework constituting the chest wall.<sup>5</sup> Due to its robustness and practicality, the retractor is currently used in open intrathoracic surgeries.<sup>6</sup>

However, the literature presents scattered information about the role of the aforementioned instrument and its inventor in the history of world thoracic surgery and the complications triggered by the use of the device in thoracic fibroelastic tissue.

Thus, a narrative review of the literature was carried out in order to summarize and discuss the importance of the Finochietto rib retractor in thoracic surgery and the main complications associated with its use. In addition, it is proposed to describe the surgeon's story behind the instrument.

## Methodology

This is a descriptive and exploratory study, a narrative review of the literature, conducted from searches in Pubmed, Scielo and Google Scholar databases. Independent searches were performed for each of the three questions of the present work: (a) biography of Dr. Enrique Finochietto and his main contributions to surgery; (b) relevance of the Finochietto retractor for thoracic surgery; (c) use of the instrument in current practice. Searches were performed according to the descriptors: "Enrique Finochietto", "Finochietto rib spreader" and "Rib spreader thoracotomy." Full articles published in English, Portuguese and Spanish published from 1930 to 2022 and which answered the proposed questions were included in the study.

## Biography

The last part of the nineteenth century was marked by intense socioeconomic transformations in Latin America. This fact boosted the migration of Europeans who, in the search for more development opportunities and motivated by the incentives provided by local governments, moved with their families to American countries.<sup>7</sup> In this context, the Italian immigrant couple Ana and Tomás Finochietto settled in Buenos Aires where, on March 13, 1881, they had their first child - Enrique Finochietto.



Figure 1. Finochietto's portrait.<sup>4</sup>

Since his childhood, Enrique Finochietto stood out in the educational institutions he attended, especially in the arts and sports. At the age of 16, he was accepted into the renowned medical school at the University of Buenos Aires, where four years later, he would obtain the title of doctor with honors. In his final year at the course, Finochietto did an internship as an observer in the team of the famous surgeon Alejandro Posadas, in the surgery service of Hospital das Clínicas, an experience that aroused great interest in anatomy, leading him to spend a considerable amount of time in the dissection laboratory of corpses from the University of Buenos Aires. Shortly after his training, Finochietto joined the Rawson hospital as an intern, with clinical and surgical assignments for more than 600 hospitalized patients.

However, with the development of medicine in Europe, Enrique decided to leave Argentina to accompany

other services that emerged as a world reference, participating in the teams of doctors known for innovation in the area of surgery.<sup>8</sup> Upon returning to the country, Enrique Finochietto reintegrated the staff of the Rawson Hospital, and was soon promoted to head of a department of surgery for his extensive knowledge in the field and for his ability to equip a modest hospital with the newest surgical techniques known at the time. With great affinity for the arts, Finochietto meticulously documented, through drawings and notes, the procedures he performed.

During the First World War, Enrique Finochietto served in the Argentine Armed Forces as chief surgeon at a military hospital in the city of Passy, France, where he studied in depth the wounds caused by the war and the management of these patients. After such participation, he received the commendation "Légion D'Honneur", the gold medal of the war and a red cross medal for his services.<sup>8</sup> Subsequently, Finochietto traveled the world for work for 20 years and, returning to Buenos Aires, participated in the reconstruction of the Rawson Hospital, making it a great reference.

Throughout his career in medicine, Enrique Finochietto became famous for his ability to plan, for his meticulousness in surgical procedures and for his full dedication to the patient, characteristics that are well summarized by the quote he used to teach his students: "only the surgeon who goes beyond his obligations fulfills his duty"

At the end of his life, Finochietto dedicated his time to writing articles recording his knowledge and operative techniques, since a degenerative disease prevented his participation in surgical procedures. In 1948, at the age of 66, the famous surgeon died due to a health condition that had kept him out of the operating rooms years before.

## Contributions to Surgery

Finochietto is considered by many to be the founder of the surgical school in South America, marking generations of Hispanic-American surgeons. In 1929, he became the first Argentine surgeon to manage a case of traumatic cardiac tamponade and to perform Heller's myotomy in a patient who had megaesophagus. Finochietto was also referenced by contemporary neurosurgeons, with relevant scientific production in brain tumors, management of intracranial pressure and scalp hemostasis. His role in surgery extended to several currently recognized specialties. However, his greatest contributions were

in the surgical interventions of the thorax and thyroid.

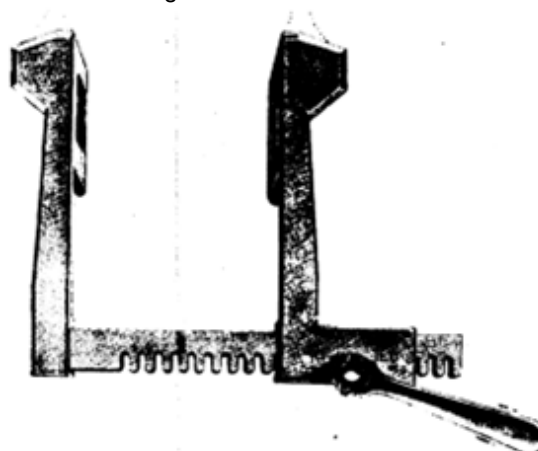
At that time, the foundations of modern surgery began, marked by thorough antisepsis, anesthesia and hemostasis. In this scenario, surgical instruments needed to keep up with the advancement of techniques. Finochietto was one of the greatest developers of surgical instruments, having created in 1936 more than 67 instruments, some of which are still used today (Table 1). According to him, "the surgical technique is not immobile, its knowledge is acquired in a continuous and progressive way, in the task itself and in others".<sup>8,9</sup>

**Table 1.** Instruments credited to Finochietto present in current surgical practice.

Instrument	Description
Mobile surgery table	Mobile operating table where the patient is positioned
Bank for surgeons	Seat used in surgeries to allow greater comfort to the surgeon
Surgical aspirator	Pumped device with the function of aspirating liquids and secretions during the surgical procedure
Finochietto retractor	Rib retractor for surgical access to the thoracic cavity
Photophore	Device provided with a light spot, which is attached to the forehead, used mainly in surgeries and cavity inspections

## Finochietto retractor

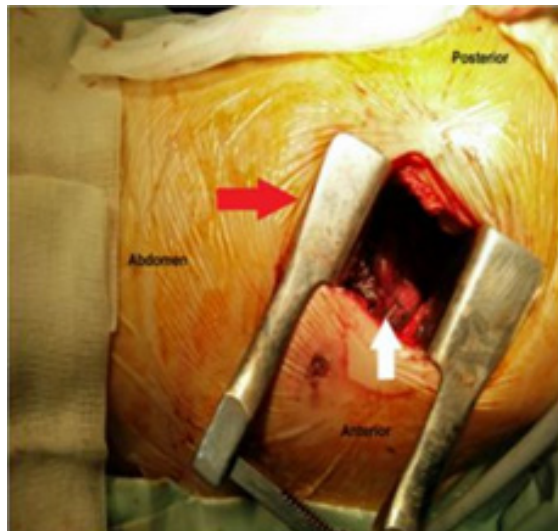
In 1936, Finochietto developed a rib retractor that was named after him: Finochietto retractor. Its function is to allow access to the thoracic cavity through traction on the ribs. The instrument consists of two fenestrated blades associated with a crank system (Figure 2). The original instrument was adapted for the most diverse surgical specialties, being used in abdominal, lumbar and cardiac surgeries.<sup>3,6,10</sup>



**Figure 2.** Finochietto's Retractor<sup>6</sup>

Thoracotomy (Figure 3) has been the standard approach to the chest since the beginnings of thoracic

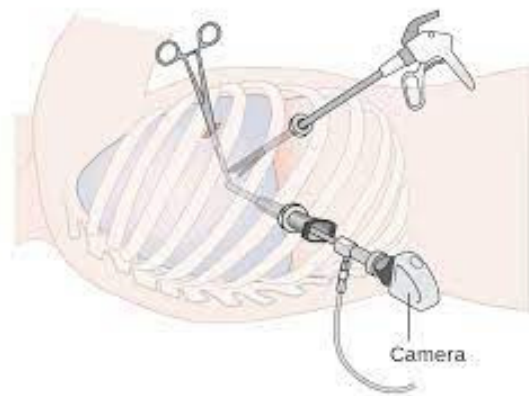
surgery. The incision is commonly made through the posterolateral approach, dividing the latissimus dorsi, serratus anterior and intercostal muscles. The Finochietto retractor is used to spread the ribs and to allow exposure of the chest cavity. This access provides excellent exposure of the pulmonary hilum and allows great mobility for the surgeon.<sup>11</sup>



**Figure 3.** Thoracotomy using the Finochietto Retractor.<sup>12</sup>

However, this approach is associated with greater morbidity and less favorable results when compared to minimally invasive techniques. The trauma generated by the wide access and traction of the ribs can generate neuropathic pain due to trauma to the intercostal nerves, in addition to other complications, such as atelectasis and pneumonia.

An alternative to thoracotomy is video-assisted thoracoscopic surgery (VATS), a technique that allows access to the lung with minimal incisions, eliminating the need for a rib retractor (Figure 4). Added to this, is a more efficient exposure of the thoracic cavity, including regions that are difficult to visualize by the open technique. Studies point to more satisfactory results in relation to pain, length of stay, lung function and preservation of immunity in patients undergoing VATS compared to thoracotomy. Despite this, in some cases, there may be a need to convert to open surgery. Similar to VATS, the latest innovation in thoracic surgery is robot-assisted thoracoscopic surgery (RATS), in which the surgeon operates seated via an interface with robotic arms, allowing a significant increase in surgeon comfort and greater precision and refinement of the operative technique.<sup>11-13</sup>



**Figure 4.** Video-assisted thoracoscopic surgery (VATS). Source: Cancer Research UK.

## Conclusion

The present review does not intend to describe all of Finochietto's influence, given his numerous contributions, which can not be described in a single article. Finochietto was of unparalleled importance for the development of modern surgery, especially chest surgery. Although today it is losing ground to minimally invasive methods, thoracotomy using the Finochietto retractor allowed access to essential anatomical structures for the surgical treatment of thoracic diseases, enabling the development of new approaches and techniques, which was fundamental for the development of modern thoracic surgery.

Henry Martins Soares Fortes

<https://orcid.org/0000-0003-3963-9058>

Pedro Pinheiro Barros

<https://orcid.org/0000-0002-0577-430X>

Beatrice Martins da Costa e Silva

<https://orcid.org/0000-0001-8829-9462>

Luiz Rafael Pereira Cavalcanti

<https://orcid.org/0000-0002-5407-4553>

Wolfgang William Schmidt Aguiar

<https://orcid.org/0000-0002-3556-7248>

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