

## HISTORICAL NOTES

## AMBROISE PARÉ - FOUNDER OF MODERN SURGERY AND PIONEER OF MILITARY MEDICINE

**Anna-Maria Axioti<sup>1</sup>, Eirini Geramani<sup>1</sup>, V. Sârbu<sup>1,2</sup>, Marianna Karamanou<sup>3</sup>**

<sup>1</sup>“OVIDIUS” University, Faculty of Medicine, Constanta, Romania

<sup>2</sup>Surgery Clinic II, Emergency Clinical Hospital of Constanța, Romania

<sup>3</sup>History of Medicine Department, Medical School, University of Athens, Greece

Corresponding author: Axioti Anna-Maria

Phone no. 0040 721024782

E-mail: axiotianna\_maria@msn.com

### Abstract

*Ambroise Paré is considered to be one of the fathers of surgery and a pioneer in surgical techniques. He was one of the first surgeons to encourage primary amputation for the treatment for gunshot wounds, he designed "bec du corbin", the predecessor to modern hemostats, he designed limb prostheses and some ocular prostheses and he also aimed for the progress of obstetrics. Besides from being an extraordinary scientist, Ambroise Paré had a compassionate character and he spent his whole life helping others. The motto that characterized his scientific personality and his life was "I treated him, but God healed him".*

**Keywords:** *Ambroise Paré, history, surgery*

Ambroise Paré was born in 1510, in Bourg-Hersent village in France, and he is considered to be one of the fathers of surgery and modern forensic pathology, as well as a pioneer in surgical techniques. As a child he watched and was apprenticed to his older brother who was a barber-surgeon in Paris. It should be mentioned that in those days barbers and surgeons worked together.

Paré, in his earlier career, was a pupil at “HOTEL-DIEU”, the oldest hospital in France. During the campaign of Francis I he was first a battle medic, at Piedmont. (Figure 2)

In 1536, he joined as a surgeon the French army and stayed at the service of the Kings Francis II and Henri II until the end of his life. Remarkable is that in 1563 and after the Siege of Rouen, he became the first surgeon and chamberlain to King Charles IX, Henri III, and Catherine de Medici.



Figure 1 - Barber pole, which was a vestige of an era, when barbers were primary surgeons and not physicians. The design is a representation of bloody bandages wrapped around a pole. (Image source: <http://www.razorsbarbershop.com/wp-content/uploads/2013/03/pole.jpg>)



Figure 2 - "HOTEL-DIEU" (image source: <https://soundlandscapes.files.wordpress.com/2013/03/013.jpg>)

One of his scientific problems came after the discovery and use of gunpowder, which actually changed the nature of the battlefield injuries. Until that time, for the treatment of these traumata they were using boiling oil as a cauterizing method, because they believed gunpowder was poisonous. The use of boiling oil as the only solution, was mentioned in the book "Wounds in General" by Jean de Vigo, and so Paré practiced it. Unfortunately one day Paré ran out of oil, and so he had to think quickly for another solution. Then he remembered that in Roman times, an ointment was applied to heal these wounds. The ointment was made of three ingredients, egg yolks, oil of roses and turpentine. He then prepared this medication and applied to the gunshot wounds of the soldiers. But he was afraid that the patients treated with this "new" method would be dead, and the others who had received the treatment with the boiling oil would be healed. Fortunately, Ambroise Paré was surprised, with his new medicament, because the patients' wounds were not swollen nor inflamed. Instead, the other patients were feverish, felt much pain and had swelling on their wounds. So, he decides this new treatment for every gunshot wound. (Figure 3)

Sometimes the gunshots were causing very deep wounds, which were complicated and frequently resulted in gangrene and for this, the amputation was the only effective treatment (Figure 4). No doubt that after this surgical procedure, severe complications such as hemorrhage, infections, and death occurred. During and after the amputation, bleeding was a "challenge" for Paré who tried to overcome it differently, as at that time the simplest way to stop the blood loss was cauterizing by the iron

method (Figure 5). More specifically, the red-hot cautery applied to the limb and the heat of the cautery sealed off the blood vessels, but the pain caused by the heat was excruciating.

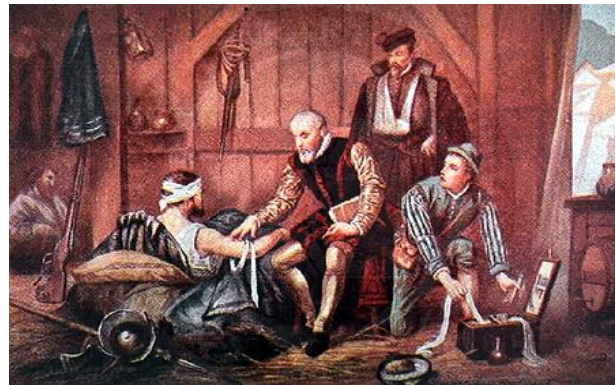


Figure 3 - "Then I determined never again to burn thus so cruelly the poor wounded by arquebuses (portable long barrelled guns)." Ambroise Paré - "The method of curing wounds caused by harquebus and firearms", published in 1545. (Image source: [http://www.robotspacebrain.com/wp-content/uploads/2013/05/Ambroise\\_Pare.jpg](http://www.robotspacebrain.com/wp-content/uploads/2013/05/Ambroise_Pare.jpg))



Figure 4 - Ambroise Paré was one of the first military surgeons to encourage primary amputation for the treatment for gunshot wounds. (Image source: <http://www.lefigaro.fr/medias/2012/07/29/b4256e64-cc35-11e1-ab47-03a33215defe-493x328.jpg>)



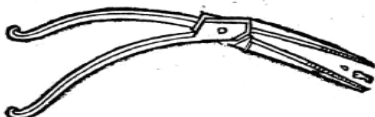
Figure 5 - Instruments for cauterization. (Image source: <http://www.uh.edu/engines/pare2.gif>)

Paré was sure that there had to be a better way to stop the hemorrhage. He practised his method consisting of silk threads tied around the blood vessels and then closed up carefully. The silk threads were called “ligatures” and they provided a very effective way of stop bleeding. This meant that Paré could stop using the cautery which he called “the old and cruel way of healing”. Even if this idea was not totally new, it had never before become so popular, because surgeons still believed it was high-risked. Paré’s “new method” did not really work, because in the battlefield his technique was a slow one and the cauterizing iron was much more effective and quickly. Furthermore another problem about ligatures was that surgeons did not know about germs and the wound could have been easily infected causing death. Unfortunately antiseptics were not invented for another 300 years, but in the 19th century Joseph Lister developed Paré's work on ligatures by using sterilization.

Another important step was the “Bec de Corbin” (Figure 6) that Paré designed, and was a predecessor to modern hemostats.

LA CVREDES PLAYES  
 nommè maistre Nicole, l'un des Chirur-  
 giens de monseigneur le Dauphin,  
 & depuis fut tost guery. Parquoy est  
 bon chercher la ballotte, non seulemēt  
 avec la sonde, mais (cōme i'ay predict)  
 avec les doigtz, en maniant & trai-  
 Etant le lieu & enuiron, ou l'on comie-  
 Etire la ballotte auoir penetré. Et peu-  
 uent les choses estranges estre ostées  
 par telz instrumens, cy apres figurés:  
 comme cestuy nommè bec de corbin,  
 pour ce qu'il represente vn bec de cor-  
 bin: & doit estre dentelé pour mieux  
 tenir & tirer lesdictes choses estranges.  
 Bec de Corbin.

Divers  
 instru-  
 ments  
 sont re-  
 quis  
 pour ex-  
 traire  
 les cho-  
 ses estrā-  
 ges.



Le

Figure 6 - “Bec de Corbin” (Image source: <http://gallica.bnf.fr/ark:/12148/btv1b21000359/f1.highres>)

In his book “Dix Livres de La Chirurgie” published in 1564, he explained with details the technique of using ligatures to prevent hemorrhage that was actually in contrast with his book about cauterization, published in 1552.

The military French Surgeon Ambroise Paré was a great figure, because except of the practice of amputation, he also designed limb

prostheses (Figure 7). Moreover he invented some ocular prostheses by making artificial eyes from enameled gold, silver, glass and porcelain.

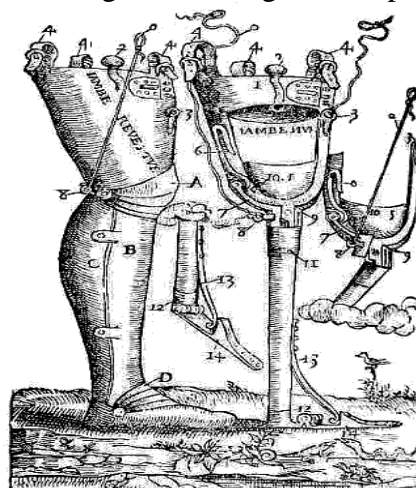


Figure 7 - Limb prostheses , designed by Ambroise Paré (Image source: <http://www.musees-haute-normandie.fr/IMG/jpg/protheses.jpg>)

He also aimed for the progress of obstetrics (Figure 8) in the middle of the 16th century. He revived the practice of podalic version, and showed how even in cases of head presentation, surgeons with this operation could often deliver the infant safely, instead of having to dismember the baby and extract him piece by piece.



Fig. 23.—Pregnancy with 11 fetuses (after Paré).

Figure 8 - Ambroise Paré. Pregnant women with 11 fetuses. (Image source: <http://www.neonatology.org/classics/gould/gould.4.html>)

Expect from being a brilliant scientist, his actions prove that he was also a prominent personality with a compassionate character. During the wartime he spent his life in the army and treated soldiers, and in peaceful periods he

was attending the sick and the poor in Paris. Unquestionably he was a man with a strong faith, but his exact religion is unknown. Paré may have been sympathetic to the Huguenots (The Huguenots were an ethno-religious group who were members of the Protestant Reformed Church of France during the 16th and 17th centuries), but to cover his religious beliefs, he baptized his children in the Catholic faith.



Figure 9 - Ambroise Paré (1510-1590) (Image source: [http://upload.wikimedia.org/wikipedia/commons/6/6a/Ambroise\\_Par%C3%A9.jpg](http://upload.wikimedia.org/wikipedia/commons/6/6a/Ambroise_Par%C3%A9.jpg))

He had 3 children with his first wife and 6 with his second one. Several of his children died

and unfortunately no son survived to continue his medical carrier.

In addition, he seemed to be also a good businessman who owned several houses and provided well for his family.

Ambroise Paré died in Paris in 1590 from natural causes at the age of 80.

The motto that characterized his scientific personality was:

“I treated him, but God healed him” which was also inscribed above his chair in the College de St-Cosmé.

---

## References

- [1]“Ambroise Pare II: Pare’s contributions to amputation and ligature”-Phillippe Hernigou. Review article. *International Orthopaedics (SICOT)* (2013) , 37:769-772 , DOI 10.1007/s00264-013-1857-x.
- [2]“Ambroise Pare’s life (1510-1590)- Part I. Phellippe Hernigou. Review article. *International Orthopaedics (SICOT)* (2013) , 37:543-547 , DOI 10.1007/s00264-013-1797-s.
- [3]Paget, Stephen (1897). *Ambroise Paré and his times, 1510-1590*. G.P. Putnam’s Sons. P.26. Retrieved 2 November 2012.