Ambroise Paré: pioneer of trauma surgery

This year marks the 500th anniversary of the birth of Ambroise Paré, who made important contributions to trauma and military surgery. A man of humble background, he based his work on personal observations and did not fear to go against established teaching. I have to confess that he is one of my surgical heroes!

Paré was born in 1510, in the little town of Laval, France, the son of a barber. At the age of 22 years, he came to Paris as apprentice to a barber-surgeon and then obtained the post of compagnon-chirurgeon as resident in the Hôtel-Dieu, that great repository of pathology and suffering, in the centre of the city. Now 26 years old, Paré commenced his career as an army surgeon. In those days, there was no organized medical establishment for the humble other ranks of soldiery. Surgeons were attached to individual high-ranking officers and other important personages and might give their services, if they were so inclined, to the other ranks, who otherwise were looked after by a motley crew of horse doctors, quacks and camp followers or their fellow soldiers.

Paré's first of his many campaigns took him to Turin, as surgeon to the Duke of Montejan, Colonel-general of artillery. Here, in 1537, he made a fundamental observation that was to save wounded soldiers from much suffering.

Up to the 15th century, surgeons had been relatively effective in the treatment of war wounds, binding up the lacerations and contusions inflicted by arrows, swords, lances and cudgels. They were all too familiar with wound suppuration, and indeed regarded pus as a good sign – 'laudable pus'. We now know that this does indeed represent the body's response to infection. Unless a vital structure had been damaged, prognosis was reasonable. However, in the 15th century, surgeons encountered a new and dreadful pathology of war – the wounds inflicted by gun powder. These injuries would rapidly swell, become black and gangrenous, exude bubbles of gas, be accompanied by profound toxaemia and early death. Others would die of tetanus. Today, of course, we know that this was the result of clostridial infection of the anaerobic tissues, especially muscle, rendered ischaemic as a result of these new and destructive missiles, the musket and the cannon ball. In those times, long before the science of bacteriology, these fearful complications were ascribed to the poisonous effects of gunpowder. The remedy? Destroy the poison with the red hot cautery or, better still, with boiling oil, the latter recommended in the standard surgical textbook of the day, by Jean de Vigo.

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At Turin, young Paré was called upon to deal with a barn-full of horribly wounded men. Half way through his ministrations, he exhausted his supply of boiling oil. A disaster! Not wishing to leave the rest of the wounded without at least a semblance of care, he applied a 'placebo' dressing, made up of egg yolk, turpentine and rose oil. That night, Paré was unable to sleep, worried about his 'untreated' patients. At first light, he describes how he hastened to the barn, only to find that his placebo group of wounded were comfortable and sleeping, while his 'treated' group were feverish and in great pain. Later, in his great book 'The Apologie and Treatise', he describes how this young surgeon then resolved 'Never to so cruelly burn the poor wounded with gunpowder'. In passing, surely this was the first randomized controlled clinical trial in surgery?

Returning to Paris after the Turin campaign, Paré passed his examination for admission to the Community of Barber surgeons in 1541, married and settled down to practice in the capital. However, in those violent days, he was frequently called away for military service, and was eventually involved in a total of 17 campaigns, continuing to record his shrewd clinical observations. The most important of these was on arterial ligation. This, as Paré pointed out, was not a new innovation on his part, and dated back to ancient times. However, his own contribution was to apply this technique to limb amputation. He first used ligation of the main vessels in amputation of the leg at the siege of Danvillier in 1552, thereby ending the agony of the cauterizing iron or boiling oil, which was the standard method of haemostasis for amputations at that time.

One such case, recorded in 'The Apologie', is described as follows:

'In the year 1583, Toussaint Posson, having his leg all ulcerated and all the bones caried and rotten, prayed me to cut off his leg by reason of the great pain which he could no longer endure. After his body was prepared, I caused his leg to be cut off four fingers below the patella by Daniel Poullet, one of my servants, to teach him and imbolden him in such works, and there he readily tied the vessels to stay the bleeding without application of hot irons. He was well cured, God be praised, and is returned home to his house with a wooden leg'.

So here was Paré at the age of 73 years, a great teacher, passing down his skill and experience to his apprentices. Paré dominated French surgery in the 16th century, he served as surgeon to no fewer than four Kings of France, but his practice continued to include the humblest soldiers. He died in Paris in 1590, at the age of 80 years, a simple, humble man. In his first campaign he ended his description of a gunshot wound of the ankle with his most famous, and often repeated, phrase: 'I dressed the wound and God healed him'. BJHM

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