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Could the Life of Admiral Nelson in Trafalgar Be Saved?

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ABSTRACT

Could the life of Admiral Nelson in trafalgar be saved?

The Authors, after carrying out an historical reconstruction of the war and socio-political events inherent to the Battle of Trafalgar which took place on 21 October 1805, focus and place the emphasis on the physiopathological events that led to the death of Admiral Nelson. They highlight the probable traumatic injuries he suffered and subsequent development of the morbid mass determining an example of ex post reconstruction with profiles of forensic medicine and history of medicine, definitely interesting and original.

Keyword: Chest Injury from Firearm - Hemorrhagic Shock - Infirmary on Board of a Battleship

Introduction

Great emotion had aroused in England the news of the victory of the British fleet over the Franco-Spanish one at Trafalgar on 21 October 1805, a joy however clouded by the death of Admiral Nelson caused by the bullet from a musket fired by an arquebuser of the French vessel *Redoutable*.

The bullet passed through vital organs but the death did not occur immediately but about three hours after the injury. A fact that animated debates between historians and doctors and it also left questions to be answered such as the one of a well-known English Surgical Association: if the accident would have happened today in a large London hospital, could it have been possible to save the life of the admiral?

In order to answer this question, it is necessary to take a step back to understand how and why we arrived to the naval combat which has been defined as the greatest battle of the sailing navy.

On March 25, 1802, the peace treaty between Great Britain and France was signed in Amiens to end a long conflict, but in reality, it was a fragile agreement. The pact was violated several times and Napoleon continued with determination his program of increasing the French fleet with the aim of invading the British Isles.

Because the British were well aware of the threat, the hostilities were resumed and the Royal Navy's strategy was to block the French ports.

The situation became worst in December 1804 following the declaration of war by Spain against Britain, while in France Napoleon was crowned emperor at Notre Dame in the presence of the pope Pius VII.

In October 1805 the Franco-Spanish Allied fleet commanded by Admiral Pierre Villeneuve, who succeeded at Latouche-Treville who died on August 20, 1804 aboard his flagship *Le Bucentaure*, was anchored in the port of Cadiz, the British ships under Nelson's command stationed offshore: 27 vessels, four frigates and two brigantines for a total of 17,000 men and 2148 guns.

Villeneuve, a very prudent man by nature, would not have left the safe shelter of the port that October 19th if he did not receive the news from his informants that six British vessels were in Gibraltar for refueling of food and water, therefore the fleet was heavily reduced. Another element was added as the French admiral who received the notice of his imminent replacement with Admiral Francois de Rosily wanted by Napoleon who was unsatisfied with his conduct. Villeneuve was pushed by the Minister of the Navy Decrès to take a more determined attitude: His Majesty - wrote the Minister - wants to extinguish the circumspection that reproaches his Navy, that defensive system that kills audacity, doubling that of the enemy on the other hand ... we must not hesitate to attack inferior or even equal forces. He makes no account of the loss of his vessels, in order to lose them gloriously.

Discussion

Thus, the joint Franco-Spanish fleet (the latter commanded by Admiral Francesco Gravina) left Cadiz and headed towards Gibraltar. It was composed of 33 vessels (18 French), five frigates and two corvettes for a total of 22,000 men and 2,626 cannons. A numerical situation for ships, men and artillery apparently favorable to the French; but it is necessary to consider some factors that change the balance of power: first, with all the training in sea maneuvers, the English sailors were superior in navigation and they could count on their strong fighting spirit. In terms of artillery, it is enough to consider that the British managed to fire one shot per minute from each cannon while the French needed twice as much time.

Another important factor was lack of the French commanders, replaced after the Revolution by officers, who were rapidly promoted to the highest ranks, more often based on their republican faith rather than on their skills and competences.

Despite all these considerations, what substantially decided the fate of the battle was the strategy prepared by Nelson which differed from the classic combat tactics contained in the "Fighting Instructions": based on the latter, the opposing teams would arrange themselves with opposite and parallel routes, facing each other when they were side by side and within range for the artillery to be effective.

An ordinance made by Louis XV the 25 March 1765, commanded the exclusive adoption of the line as a row and established among other things that no captain could leave the line during the fight to rescue a vessel in danger, unless an admiral decided to do so. Nelson's plan of attack is contained in the famous Memorandum of which I quote some passages: "I order that the team is placed on two columns of 16 vessels each, composing an advanced team of 8 two-deck vessels, the finest sailing ships, so that, if necessary, a line of 24 vessels can always be formed with that of the two columns that the Commander in Chief will designate....My column will penetrate towards the center, while the light squad will move to the second or third vessel of the center itself in order to help us reach and surround the enemy admiral vessel ... in this way I admit that 20 enemy vessels of the rear will not be attacked, but it will take some time before they can unite in sufficient numbers to fight a part of our army or to rescue their comrades ..."

Once in contact with the enemy, it will be given full freedom of action at the commanders. There is only one weak point in this plan: the exposure of the first English ships to enemy crossfire without the possibility of reacting for a time that is a function of the speed which in the specific case (due to the lack of wind) did not exceed the two knots to British units.

When Nelson read it to the commanders in the Victory council chamber, he raised a wave of al enthusiasm and approval.

On the morning of October 21, the enemy teams are facing each other, the French one is arranged in a single row about 5 miles long, while the English one moves on

two parallel columns as ordered by the Commander in Chief, the first column has at the head the Victory and the second the Royal Sovereign with Admiral Collingwood. There are a few miles left for the contact and at that point Nelson gestures to one of the Staff Officers to approach and orders him: “Mr. Pasco, transmit this signal to the Army: England is waiting for everyone to do their duty”.

The British vessels solemnly raised the flag of San Giorgio; the French in response hoist the tricolor with their crews deployed who were shouting the martial cry: Vive l’Empereur! At the same time, the yellow and vermilion banner of the two Castles rose was raised at the peak of the Gravina ships.

The first cannon shots were launched from the French vessel Fougueax which opened fire against the Royal Sovereign who arrived first, favored by the recent change of the copper lining of the hull, but it did not cause damage. Collingwood’s ship then set its aim on the Santa Ana and engages it in fierce combat forcing it to surrender; then it was the turn of the Victory which approached the Bucentaure and opened fire immediately: the damage was considerable, the rigging is damaged, and the main-cage mast swept away with all the cutters., the tiller was smashed so much that the ship was to be steered through hoists from below.

The response of Nelson’s vessel was prompt and effective: as many as 20 guns from the Bucentaure were dismantled and the sailors were torn to pieces; The Redoubtable, commanded by Captain Lucas was sent to Villeneuve’s rescue, who also garnished the coffees and musketry of the French with fusiliers scourging the Victory deck. Nelson along with Commander Hardy was on the deck between the steering wheel and the hatch leading to the ladder leading to his cabin.

He was in full uniform with showy gold epaulets while 4 decorations sparkled on his chest: they are the insignia of the Order of the Bath, that of the Imperial Order of the Half Moon (*), which was granted by the King of Naples of San Ferdinando and finally that of San Gioacchino. A clear, easy and paying target^{1,2,3}.

At an hour and a quarter after noon a sharpshooter stationed on a nest of the Redoubtable mizzen at a distance of about 16 meters hit Admiral Nelson with his musket. The bullet, we learn from the autopsy, pierced the left shoulder, it injured the acromion, and it fractured the second and third left ribs, perforated the left lung near the hilum. Moreover, it hit a branch of the pulmonary artery, it touched the sixth and the seventh dorsal vertebra, affecting the spinal cord, and it finally stopped in the soft tissues of the right back about two inches (five centimeters) below the angular angle of the scapula^{4,5,6}.

Nelson immediately realized the severity of the wound and turning to Hardy told him “I am a dead man Hardy”. He was then rescued and was taken to the bridge below the waterline where the infirmary was located as it was considered safe from the enemy’s fire. It was cluttered of wounded, a cramped space, poorly lit by lanterns and candles, stinking from poor ventilation, and permeated with damp. The admiral placed on a cot, didn’t lose the lucidity of his spirit, managed to take his handkerchief out of his pocket

and covered his face so that his sailors in the under bridge couldn't see him injured. While the Purser, Mr. Burke, helped him to undress, the surgeon William Beatty rushed to the Admiral who said: "You can't do anything for me, Beatty, I have little time to live"^{7,8,9,10}.

But what was the service of a Royal Navy surgeon like? The activity was disciplined by the Regulations with relative instructions of the Naval Service of Majesty established in 1731 which provided a surgeon and three assistants for the ships of the line. In some cases, there was a hospital unite in the naval teams (they were sick transport ships) on which the fleet doctor, responsible for the health of the crews, was on board. He carried out weekly inspections at the surgeons of the various ships, periodically informing the admiral with detailed reports^{11,12}.

The marine surgeons were all volunteers and had the duty to visit the sick twice a day (there were frequent epidemics of dysentery, typhus, scurvy, malaria, and yellow fever) and they also had to present the list of patients to the Commander every day and keep a register of activities carried out.

The salary of naval surgeons was modest, but there were extras like Queen Anne and the right to share the sale value of ships caught at sea¹³.

The pay of naval surgeons since 1805 (s stands for shilling and d stands for penny)

	Active service	Active service (after 10 years)	Active service (after 20 years)	Half-pay	Half-pay (after 10 years)	Retirement (after 20 years)	Retirement (after 30 years)
Assistant surgeons	6s. 6d.			2s.-3s. ^a			15s.
Surgeons	10s.	14s. ^b	18s. ^c	6s.		6s. ^d	15s.
Physicans	21s.	29s.		10s. 6d.	21s.		
Hospital surgeons	15s.	20s.					

Tab. 1. Daily rates of pay for naval surgeons from 1805 (shillings/pence)

Despite the admiral request, Beatty visited the patient: he felt his pulse, delicately probed the entrance hole with his right index finger, with the hope of finding the bullet. Then he asked him to describe his feelings. Nelson replied that he felt like a gush of blood in his chest, that he was having difficulty breathing, he also felt a sharp pain near his spine where he believed the bullet stopped and he also didn't feel his lower body^{14,15,16}.

Nelson then gave an order: "Go take care of those whose lives can be saved!" and Beatty obeyed. The wounded were many, in the report made that same evening he listed 102 wounded with their names. He had to perform 11 amputations of upper and lower limbs eight of which were successful and only three of them did not survive (two due to the onset of tetanus).

But what Dr. Beatty and his assistants Neil Smith and William Westenburg, could have done with the instruments and drugs supplied to a ship of the line? The objects available were various types of saws for amputations, splints, pliers, probes, drills, scissors, knives, bleeding needles, tourniquets, linen threads, gauze, laudanum and alcohol for anesthesia, olive and flaxseed oil, cold vinegar which was often mixed with white lead to treat burns and a few other medications. For the wound that the admiral had suffered (as confirmed by Beatty himself when he will perform the autopsy two months later) a branch of the left pulmonary artery was damaged. Instrumental examinations such as CT or MRI would have been necessary to locate the bullet and to assess the damage caused in its path and they were also needed to formulate a precise diagnosis that would allow an emergency intervention. With an operating room, a surgical team, with the possibility of restoring the mass of blood lost thorough transfusions, the practice of an intervention with extracorporeal circulation in the case of a pneumectomy, they could certainly do a better job^{17,18,19}.

It was very hot in that infirmary and Nelson insistently asked for water and the request was met with lemonade, while his need for air was solved by ventilating with a paper. Commander Hardy announces the victory, Nelson asked him to bring his hair to Lady Hamilton and not to have his body thrown overboard. Hardy reassured him, that the admiral's body would have been placed in a barrel with brandy and, according to historian Christopher Hibbert, with the addition of camphor and myrrh.

Now we must answer the question we asked ourselves at the beginning of this article: Could Admiral Nelson be saved? But first we need to make the diagnosis and we will use four elements^{20,21,22,23,24}:

1° the subjective symptomatology deduced from the story and from the memories of those who assisted him and in particular the Reverend Scott, Commissioner Burke, Commander Hardy and Doctor Beatty they noted:

- worsening dyspnea
- burning thirst
- reported numbness of the lower body
- unbearable pain in the left side under the shoulder blade (where the bullet had finished its run)
- the pain increased so much that to a subsequent question from Beatty, Nelson replies that he continued to be so excruciating that he wished he were dead
- feels a “gush of blood on the chest”

2° the clinical examination performed by the ship's doctor Beatty who ascertained

- pallor of the skin that appears cold to the touch on the forehead and limbs.

- Sweating
- weak, small and irregular pulse (after an hour the pulse became indistinct)

3° the results of the autopsy performed on 11 December 1805 by Beatty himself:

The bullet hit the front of His Lordship's shoulder pad and entered the left shoulder ahead of the acromial process, fracturing it slightly. It then descended obliquely into the chest, fracturing the second and third ribs, then penetrating the left lobe of the lung, injuring a large branch of the pulmonary artery. It entered the left side of the spine between the sixth and seventh dorsal vertebrae, fracturing the left transverse process of the sixth dorsal vertebra, injuring the spinal cord, fracturing the right transverse process of the seventh dorsal vertebra. It continued its run on the right side of her spine, stopping on the back muscles, about two inches from the lower edge of the right shoulder blade. By removing the ball, a portion of the golden chevron and the padding of the shoulder pad, and a piece of fabric from the jacket were adhered to the bullet

4° the diagnosis and cause of death according to William Beatty:

The direct cause of His Lordship's death was a wound in the left pulmonary artery, with blood leaking into the pleural cavity. The amount of blood lost at the time did not appear to be particularly severe, but since the bleeding came from a vessel so close to the heart, the blood was lost rapidly, causing death in a shorter time than it would have produced. hemorrhage of an artery of a further part of the body. The injury to his spine would have fatally led to his death, even if his Lordship could have survived, even if in great suffering, for another two or three days

Conclusions

The evaluation of all these elements allows us to easily hypothesize that the exit was determined by a hemorrhage of a secondary branch of the left pulmonary artery, obviously excluding the main one that would have led to the admiral's death within a few minutes^{25,26,27,28}.

Finally, in regard to the question of whether an emergency intervention nowadays could have saved his life, numerous experts, historians and doctors, have addressed this topic. As an example, I will mention a 2005 article by the British historian M. Crumplin published on *J. Royal Naval Medicine Service* titled: *The Most Triumphant Death* and another article, titled "*The Case of the Fearless Mariner With a Mortal Chest Wound*", published in 2008 titled *Medscape* by the American surgeons Lowenfels, Liston e Burris. Crumplin first studied the ballistic aspects of the trajectory and its impact on the left lung, concluding that the oblique direction of the bullet affected the main branch of the pulmonary artery; he evaluated that the low hemothorax found in the autopsy and the long time elapsed between the injury and death^{29,30,31}.

He therefore believed that the loss of blood from the soft tissue vessels, intercostal and paravertebral, together with the collapse of the left lung reduced the blood pressure in

that area and slowed the consequent blood loss. The hypovolemic shock in each case was responsible for the exit.

As for the question about the chances of survival in our days, his answer is positive: intubation, infusion therapy, drainage, thoracotomy with exploration of any extra-pulmonary bleeding vessels, resection of a lung lobe or the entire lung in the case of hemorrhage involving a large vase would have increased the chances of survival^{32,33,34}. Obviously, they were not feasible possibilities in 1800, just based on the fact that the first pneumectomy in the world was performed by William Macewen in 1895 on a patient suffering from tuberculosis and emphysema.

But, moving to the second scientific article published by surgeons Lowenfels, Liston and Burris, they excluded that the bleeding could originate from a large pulmonary vessel and they considered that the fracture of the second and third ribs could also have involved intercostal vessels, which led to bleeding and consequent hypovolemic shock. They argue that Nelson's life could have been saved also if the injury had occurred on an aircraft carrier or in the vicinity of a US hospital ship such as the *Comfort* or the *Mercy*, both equipped with 12 operating theaters with excellent surgical teams. The Battle of Trafalgar had numerous consequences such as the end of the Napoleonic dream of invading the British Isles, and the affirmation of the supremacy of the English fleet over that of the other navies and therefore the British dominion over the sea, a dominion that would have maintained for a long time. But the concomitant glorious death of Nelson highlighted the problems and the delicacy of the role of the naval surgeon, who couldn't deal with particularly serious and critical clinical situations alone and therefore prompted the maritime powers of the time to evaluate the possibility of acquiring real ships, hospital with dedicated health teams and adequate medical equipment^{35,36}.

Italy was among the first to equip itself with this important aid in the first naval trial of the young Kingdom of Italy in the battle of Lissa on 20 July 1866 where the *Washington*, a hospital ship strongly desired by the first Inspector of Health of the Royal Navy Luigi Verde, accompanied the fleet.

Since then, in the colonial wars, in the Great War and in the Second World War, over 40 white ships transported and treated a large number of wounded and sick people, who were recovered to health and often to life in metropolitan hospitals.

"Each one of us in getting on the *Gradisca* has turned his grateful thought more intensely to the Highest who wanted to place our fragile and already lost rafts on the route of the white ship. We are now going to leave it, but we do not want this to happen without first having said our hearts deeply grateful to those who with the passionate tenacious search and with the affectionate constant care, have given us life again, and we think that the expression simpler and more beautiful than this gratitude is to be the first to confide in them our pride in having also given the homeland an odyssey, whose brightest and brightest stones bear the name of the Fallen - in the great sea south of Candia".

From of Hospital Ship Gradisca, 7 aprile 1941 (shipwrecked by the destroyer Carducci, sunk in Cape Matapan on 27.03.1941).

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(*) It was a knightly order established by Sultan Selim III in 1799 for Nelson after the victory of the admiral in the battle of the Nile against the French troops who had invaded Egypt which depended on the Sublime Door.

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