

Waterloo

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For the last two years BJUI have kindly allowed me to publish a historical paper in the Supplement for the BAUS annual meeting [1,2]. Last year was the centenary of the start of the First World War and I wrote about the British urologists who volunteered and served in that terrible conflict [2]. By chance, 18th June 2015 (the last day of this year's Annual BAUS meeting) is 200 years to the day since the Battle of Waterloo.

In this paper I will look at two surgeons of the Napoleonic War, Baron Dominique Larrey (1766–1842), surgeon of Napoleon's Grande Armée and George James Guthrie (1785–1856), British Army surgeon. They both were fine, respected military surgeons of the period and they both cared for the wounded of Waterloo and both contributed to the development of urological surgery.

The Battle

The Battle of Waterloo was fought on Sunday, 18 June 1815, near the village of Waterloo in present day Belgium (in 1815 it was actually part of the Netherlands). The French army under the command of The Emperor Napoleon was defeated by an Anglo-Allied army under the Duke of Wellington combined with a Prussian army under the command of Marshall Blücher. The defeat at Waterloo ended Napoleon's rule as Emperor of the French and drew to a close 23 years of war.

The French Revolutionary War began in 1792 between The Republic of France and several European monarchies. The conflict merged into the Napoleonic War from 1803. Napoleon was defeated in 1814 and exiled to the Island of Elba. However, on 1st March 1815 he escaped and returned France to fight his last campaign, known as The Hundred Days, which ended at Waterloo.

French casualties in the Battle of Waterloo are difficult to calculate; up to 30 000 were killed or wounded, while the allies lost about 23 000. Of the British – Dutch force, 3500 were killed and 10 200 wounded. The Prussians lost at least 9,000 [3].

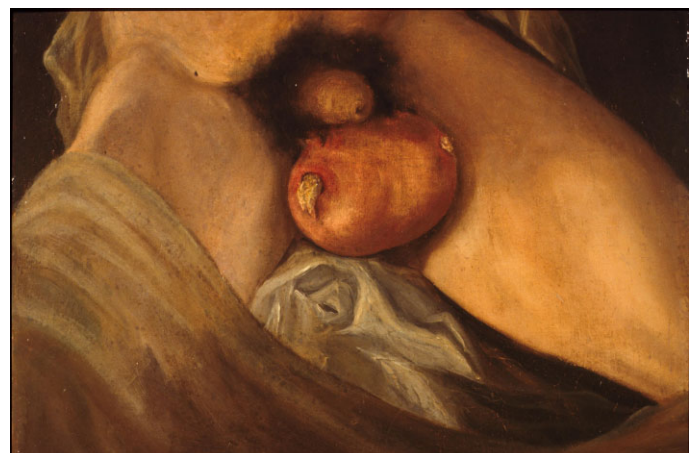
Waterloo was an old fashioned battle where lines and columns of men marched against each other firing muskets and fighting hand to hand with bayonets and swords when they clashed. Cannons fired roundshot (cannon balls), shells (exploding cannon balls) and canister or grapeshot (several small balls at once) at marching columns and stationary lines

and squares of men. Cavalry charged at men on foot and on horses fighting with sabres and lances. As can be imagined, wounds were various and terrible.

Wounds to the urinary tract were unusual but were recorded. Wounds to the kidney, ureter and bladder were usually fatal due to haemorrhage and sepsis. They were recognised in those who survived for a time by the presence of urinary fistulae. Wounds to the pelvis often combined both bowel and bladder injury and several were recorded with faeculent and urinary discharge. Crumplin, in his book on Napoleonic Surgery makes an interesting point that soldiers in battle had little opportunity to pass urine and were often hit when their bladders were full [4]. Urine however, could be useful in battle. Gunpowder often fouled the muskets preventing the spark travelling from the flint to the charge. A good rinse with hot water (or warm urine!) would help remedy this [3].

Wounds to the external genitalia were also seen. Figure 1 is a painting by Charles Bell (1774–1842), a surgeon of the Napoleonic war. The soldier was wounded at the Battle of Corunna, Spain, January 1809. After holding the French, a bedraggled British army were evacuated to England including between 5000 and 6000 sick and wounded. Some 2247 casualties arrived at Portsmouth and volunteer surgeons were asked for; Charles Bell was one of these. He sketched the injured and later painted the wounded in oils for educational purposes [5]. The soldier was hit by a musket ball in the

Fig. 1 Musket ball wound to the Scrotum, by Charles Bell. With permission of the Royal College of Surgeons of Edinburgh.



scrotum which passed straight through. Interestingly, there were no thigh wounds which begs the question as to what position he was in when wounded. Slough can be seen extruding from the red and swollen scrotum reminding us of the lack of antiseptics and antibiotics at that time.

Larrey

Jean Dominique Larrey (Fig. 2) was born in 1766 in Baudéan in the Pyrenees. Orphaned at 13 he was taken in and apprenticed by his Uncle, Alexis Larrey, Professor and chief surgeon in Toulouse. At 21 he went to Paris to train at the Hotel Dieu and subsequently became a Naval Surgeon on the frigate *Vigilante*. This did not last long; he was terribly seasick. He returned to Paris and was present at the storming of the Bastille on 14th July 1789. He joined the French Army becoming a Major in the Army of the Rhine in 1792. He was with Napoleon in Egypt, the Peninsular and on the ill-fated retreat from Moscow in 1812. Larrey was struck down by Typhus, after the Battle of Currenna in 1809. He was so ill his death was reported in the Paris papers. However, did recover after convalescence and in 1810 he was made Baron Larrey by Napoleon [6]. It should be remembered that during these military campaigns, sickness killed more men than battle wounds.

Jean Dominique Larrey observed and recorded all aspects of military surgery. Even as a senior surgeon he treated men in the heat of battle. Larrey was actually on the field at Waterloo. He was observed by Wellington treating wounded under fire, he praised him as 'a man of an age no longer ours' [6]. He was loved by the French and internationally respected. His book was translated into English whilst the war was still being

Fig. 2 Jean Dominique Larrey. With permission of the Royal College of Surgeons of England.



fought with France. His fame saved his life when at Waterloo he was captured by the Prussians and ordered to be shot. Luckily a Prussian Surgeon recognised him as the famous Larrey. He was personally released by Marshall Bulcher, whose son Larrey had previously treated.

Larrey is known for several innovations in war surgery. He was an early advocate of the triage system writing, 'those who are dangerously wounded should receive the first attention, without regard to rank or distinction.' [7] This was similar to the British Royal Navy's first come, first served (regardless of rank) system, but was more sensibly based on medical need as well. Larrey soon recognised the chaos of battlefield casualty evacuation and developed a Flying Field Ambulance Brigade (*Ambulance Volante*). This was inspired by Napoleon's famous 'flying horse artillery' which could move quickly across the battlefield taking the guns to where they were most needed.

Larrey also wrote on bladder wounds. Classical teaching stated, 'cui persecta vesica lethale' – open wounds of the bladder were fatal. Larrey taught that with early catheter drainage death may be avoided [8].

One of Larrey's cases was Lieutenant Burnot, injured at Hanau on 30th October 1813. A musket ball hit him in the scrotum injuring the right testis and then passing into the pelvis across the base of the bladder, through the rectum, ending in the left buttock. Leakage of urine and faeces gave Larrey the diagnosis. He debrided the wound and passed a catheter which he kept in situ. Bear in mind there were no soft balloon retained Foley catheters; Silver catheters had to be tied into place with a ribbon. Gum elastic catheters and sounds were available but, prior the invention of vulcanisation were fragile. Foreign material was expelled from the catheter including small pieces of bone. Despite this high risk wound, Lieutenant Burnot's wounds healed and he was discharged after two months [4].

Larrey recorded several cases of recovery from bladder wounds. Francis Chaumette, a cavalryman was shot at the battle of Tabor. The ball passed through the hypogastric region, across the pelvis, to the left buttock. Faecal matter and urine escaped from both wound orifices. A sound was introduced into the bladder, to divert the urine and facilitate healing. The man was subsequently discharged well [8].

The 27 year old Corporal Dacio, was shot at the battle of Acre in the buttock, the ball passed through the bladder and rectum and exited via the perineum, 'where the operation of lithotomy is generally performed' finally turning back up and out of the right groin. Again with bladder drainage and supportive care the fistulae eventually healed leaving him fully continent of both urine and faeces [8].

Fusilier Desjardins, also wounded at Acre, took a musket ball through the pelvis from the left sciatic notch via the bladder neck and lodging in the scrotum. Unfortunately, he developed Fournier's Gangrene. The scrotal wound was opened and a

gum elastic catheter passed. He survived and eventually the fistula healed [8].

Larrey goes on to describe the course and treatment of these wounds [8]. When the shot perforates the bladder urine flows from the wound, then it stops. This, explains Larrey, is because the eschar (slough) fills the hole. However, when the slough comes away, the urine is then allowed to drain into the tissues leading to infection and death. Hence, early catheterisation is the treatment – even if the flow of urine from the wound appears to have stopped early on.

After the war, Larrey continue to work, teach and travel. In 1836 he visited England meeting some of his English surgical wartime contemporaries. He is said to have wept on hearing the news of Napoleon's death and in 1842 he himself died [6].

Guthrie

George James Guthrie (Fig. 3) was born in London on 1st May 1785. As a boy he was injured and treated by Mr John Rush a surgeon and Inspector General of the Army Hospitals. Rush suggested that Guthrie should train as a military surgeon. He was apprenticed to a London surgeon, Mr Phillips and a physician, Dr Hooper of the Marylebone Infirmary. He also attended the Windmill Anatomy School in Soho. In 1800, even though he was only 15, Guthrie found himself Surgeon's Mate at the York Military Hospital in Chelsea [9]. His boss, Mr Keate was Surgeon General to the Army. In 1800 he ordered that all Surgeon's Mates were required to pass the examination at the new Royal College of Surgeons; Guthrie did so in 1801 and passed; he was the youngest surgeon ever to do so (the minimum age to sit the exam was subsequently raised in 1802) [10].

Fig. 3 Daguerreotype of George James Guthrie. With permission of The Royal College of Surgeons of England.



As an Army surgeon Guthrie served in North America and then in the Peninsular Campaign with Sir Arthur Wellesley (later Duke of Wellington). He distinguished himself as a surgeon. In August 1808, at the Battle of Vimero, he was shot by musket ball in both legs [10]. Later that year he almost died of Typhoid fever in a very similar episode to Larrey.

On 11th October 1812 he became Deputy Inspector of Hospitals, based at Madrid. Then he moved on to Lisbon as Principle Medical Officer to the Garrison. Horseguards (ie. The Army administration) refused to recognise Guthrie's new rank; as he was too young. This infuriated both him and Wellington, who had noted his reputation in the army. It wasn't until 1814, after intervention by the Duke of York that he was officially promoted [10]. He left the service after serving as senior surgeon in the battle of Toulouse in 1814 when Napoleon abdicated and all felt the war was over.

On Napoleon's escape and return to France the war restarted. Guthrie was on half pay from the army but was not re-commissioned. Nevertheless he travelled to Brussels to treat the wounded of Waterloo. The army never compensated him leaving him out of pocket by some £40.

There were 7000 sick and wounded British casualties from Waterloo and a further 5000 from the Battle of Quatre Bras, the day before. On top of this there were more wounded from the French, Dutch, Belgian and Prussian armies [5]. Most of these were transported (and it must have been an awful journey) north to Brussels. Although, Sergeant Tuittmeyer, of the King's German Legion rode the 15 miles to Brussels after his left arm was taken off at the shoulder by roundshot on the field of Waterloo. He presented himself to the Elizabeth Hospital, was placed in bed and only then fainted [5].

There were six hospitals in Brussels caring for the wounded of Waterloo and Quatre Brae, The Gendarmarie, the Elizabeth, the Jesuits, the Aunnciate, the Orpheline and the Notre Dame [5]. The volume of wounded however overflowed them. Many were nursed in the streets and squares, some were sent further on to Bruges by barge. Charles Bell also travelled to Brussels to help. Bell wrote of how he worked incessantly, until his coat was stiff with blood and his cutting arm ached [5]. Guthrie on the other hand was a senior and well-known surgeon. He travelled between hospitals giving his valuable advice. He did operate on two men, one with persistent bleeding from the calf and one with a severe hip wound. The latter's only chance of survival was a disarticulation of the hip. Larrey had done this dangerous procedure seven times, with one survivor. The patient, Francois de Gay, of Napoleon's 45 Regiment de Ligne would only allow Guthrie to do it. He survived and was transferred to London for Guthrie's ongoing care [10].

Another patient was referred to Guthrie in Brussels and transferred to London. The soldier had been shot in the bladder. He survived but the musket ball remained in his

bladder and subsequently formed a stone. In London, Guthrie carried out a perineal lithotomy to remove the stone; it took him three minutes [10].

Guthrie was later three times President of the Royal College of Surgeons of England in 1833, 1841 and 1854. He studied the diseases of the lower urinary tract and in particular became interested in signs and symptoms of lower urinary tract obstruction [11]. In those men with bladder outflow symptoms but no obvious stricture or prostatic enlargement he deduced that the problem must lie at the bladder neck. He first tried various medical therapies (a very urological trait!), including leeches to the perineum. He also invented an instrument to blindly cut open the bladder neck. He claims to have used this four times making him a very early pioneer of transurethral prostatic surgery.

Guthrie was elected a member of the Royal Society in 1837 but turned down a knighthood. He died on his 71st birthday in 1856.

Conclusion

The Battle of Waterloo was 200 years ago. It was an old fashioned set piece battle where soldiers in brightly coloured uniforms of red (British) and blue (French) stood solidly in disciplined squares to be shot at by cannon and Dragoons and Hussars, Cuirassiers and Lancers charged across the battlefield with plumed helmets and shining breastplates; an old fashioned battle. Equally, the surgeons, Guthrie and Larrey are distant to us. These were true generalists, able to take off an arm or leg, raise a skull fracture and remove a bladder stone. Yet, reading their 200 year old accounts we recognise our own words, 'debride the wound', 'drain the pus', 'divert the urine'. Hopefully, we echo their thoughts in our work, 'why does that

happen?', 'how can I improve things?'. Time moves on as does science and surgery, but the principles and hopefully the passion and dedication remain the same from 1815 to 2015.

Conflict of Interest

There are no conflicts of interest to declare.

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