

WW1 surgeons could do little for amputees' pain—and treatment remains a challenge

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Army doctors in the First World War were helpless to stop soldiers who lost limbs from suffering in pain, according to researchers.

A century on, improvised explosive devices (IEDs) have made the loss of limbs common among military casualties once again, but while prosthetic technology has improved dramatically, there is still a shortage of effective treatments for [pain](#) caused by damaged nerves.

The comparison is highlighted in a paper published in *The Lancet* today by historian Dr Emily Mayhew, pain specialist Professor Andrew Rice and army surgeon Major Dafydd Edwards, all from Imperial College London.

The researchers delved into the archives of the same journal to explore how amputation-related pain was understood and treated by [surgeons](#) on the Western Front.

"Our findings were pretty depressing," said Dr Mayhew, from the Department of Humanities. "Not much could be done. Although surgeons worked very hard to understand and resolve the [chronic pain](#) problems that many amputee patients faced during and after the Great War, they really weren't able to get to grips with them."

New weaponry and the scale of the conflict resulted in unprecedented numbers of surviving amputees – 41,000 out of seven million British soldiers deployed during the war. Surgeons had to work quickly, and

most amputations were performed using a guillotine.

During the Battle of the Somme in 1916, Marmaduke Sheild, a senior consulting surgeon who treated many military casualties after they returned to England, wrote that post-amputation pain was "a source of intolerable suffering to [his amputee patients], and of despair to those who fit them with [artificial limbs](#)." He later called for surgeons not to use the guillotine method, reporting in *The Lancet* that it left nerves exposed, causing both stump pain and poor prosthetic fit.

In the following year, fellow surgeon Captain Huggins advocated a two-stage amputation, with surgeons in Britain performing a second procedure to reduce pain after the initial operation at the front.

Later reports in *The Lancet* reflected frustration among doctors that little progress was being made in amputees' treatment. Stump pain disrupted the effectiveness of prosthetic fitting, and hindered soldiers' return to work and civilian life.

Although the journal devoted considerable attention to pain in amputees' stumps, there was very little discussion of the pain they felt in their missing limbs, despite this phenomenon – known as phantom limb pain – having been identified at least 50 years earlier. According to the researchers, phantom limb pain was marginalised in medical discussions of the war, possibly because surgeons were helpless to do anything about it. There was no suggestion that other branches of the medical profession might contribute to solving the problem.

"We can be pretty certain that [phantom limb pain](#) would have been a common problem among the many amputees who survived the war, but at least in this archive, there was curiously little discussion of it or about its management. This rather contrasts with discussions in the modern medical literature regarding the rehabilitation of amputees from today's

conflicts," said Professor Rice, from the Department of Surgery and Cancer.

As in the Great War, limb injuries have been a common feature of recent conflicts in Afghanistan and Iraq. Today, instead of resorting to amputation in the first instance, surgeons use a technique called debridement to remove soft tissue, preserving as much of the limb as possible. Surgeons are part of a multidisciplinary team involving pain medicine specialists, rehabilitation specialists, and physical therapists who all contribute to treating post-amputation pain.

Phantom limb pain is now understood to be a consequence of how the nervous system adapts to damaged nerves and the loss of a limb, and affects around 59 per cent of amputees. However, it is still poorly understood and difficult to manage.

Major Edwards, from the Department of Bioengineering, said: "Even now, we're not entirely sure what the right answer is. There isn't one answer for everyone; it's a tailor-made modality of treatment for each casualty. That's a long departure from 100 years ago, where the chronic pain of amputation was almost brushed under the carpet, probably because they didn't know what to do with it."

Professor Rice added: "In the last century, there have been significant advances in our understanding of how the brain and nervous system respond to amputation and nerve injury, in the rehabilitation process and prosthesis technology; but in terms of our therapies for the chronic pain that can follow an amputation, really we've not advanced much since the First World War."

More information: D.S. Edwards et al. "'Doomed to go in company with miserable pain" Surgical recognition and treatment of amputation-related pain for casualties on the Western Front of the Great War.' *The*

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