

THE MYTH OF SURGICAL DEVELOPMENT DURING THE
AMERICAN CIVIL WAR

by

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The American Civil War has long been considered the developing grounds of the field of modern medicine. However, overworked physicians were hampered from providing superior medical care by a lack of proper education in military medicine, appropriate conditions, basic supplies, and time. As a result, military medicine during the American Civil War did not make amazing leaps forward in knowledge or techniques. Civil War medicine merely provided the best care possible under terrible circumstances.

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would not have been possible.

War is one of the greatest tragedies of human civilization. Spanning the centuries since the beginnings of recorded time, war has always brought pain and suffering to its participants through death and physical anguish. In the midst of numbing loss and misery, society often tries to find some good in the destruction. It tries to convince itself that despite all the horror of a war, some good was achieved. Despite the uniqueness of the American Civil War, society's response was no different. In the years after the war society has attempted to convince itself that among the human carnage physicians were making amazing advances in medicine. Both doctors and historians have concluded that with countless injuries of the same nature and a concentration of doctors medicine must have made improvements during the Civil War. However, the evidence does not exist. The Civil War introduced new weaponry that created distinct and horrific wounds. Medical historians and society in general have been eager to claim that while these wounds were a terrible tragedy of the war, they allowed medicine to develop the field of orthopedics and new techniques for treating bone injuries. Yet, many of the "new" techniques had been developed, tried, and discussed in the teaching hospitals and contemporary medical journals before the war even began. At the onset of the war there was a dramatic shortage of military physicians and insufficient qualified civilian physicians to adequately develop the Surgeons Corp. Records show that the Union Army employed 98 doctors as the war began and the Confederacy had only 24 physicians. As the war escalated the situation became even grimmer. Physicians were recruited, but they sent home accounts of a lack of supplies, time, training, sanitation, and space. In addition, surgery was still viewed as a final option in the civilian world and was only attempted in major hospitals under the care of specialized surgeons who had frequently

trained in Europe. Military physicians, when they did have sure knowledge of the best course of treatment, often opted for faster procedures or no treatment of all. Physicians were no longer in the esteemed hospitals of major cities. They were practicing medicine on the battlefields of one of the bloodiest encounters in the history of the United States. The truth of the American Civil War is that army surgeons had the best of intentions and the worst of conditions. They were not the innovators of amazing medical breakthroughs; they were simply the doctors who did their best to save the bodies that the war around them was attempting to destroy. The Civil War was not a shining moment of medical discovery and advancement in the midst of human suffering. The American Civil War was a disaster of overwhelmed physicians attempting to provide the best medical care possible in the most trying of conditions.

The American Civil War battlefield was a sight that few soldiers and few physicians were prepared to face. One physician wrote to his wife, "Louisa, I have seen what I never once expected I should see-a battlefield-a field where brother met brother-where the closest ties of consanguinity and blood are forgotten. When the evil passions of men are let loose and hellish deeds of cruelty are perpetrated-where blind with rage and maddened with pain, men forget their God and die blasphemers."¹ Wounds were horrific and conditions were terrible. Physicians were dramatically outnumbered by the seriously injured soldiers requiring their care. One surgeon honestly described the situation writing "I have under my charge the wounded of the Division-have but one assistant and about 225 men to take care of. This is more than we can attend to, to do

¹Daniel M. Holt M.D., ed. James R. Griener et. al., A Surgeon's Civil War: The Letters and Diary of Daniel M. Holt M.D. (Kent, Ohio: The Kent State University Press, 1994), 20.

them justice...."² Physicians wrote home to their families and colleagues describing some of the situations they were experiencing. Dr. Black wrote to his wife describing battlefields. In one letter he writes, "The loss will be counted by thousands on both sides. Bro. Tebbs told me tonight that he passed over part of the field today, and the ground the Yankees occupied before where our division fought he could step from one dead body to another."³ In a more graphic letter he writes to his wife, "I have seen, stretched along in one straight line, ready for interment, at least a thousand blackened, bloated corpses with blood and gas protruding from every orifice, and maggots holding high carnival over their heads."⁴ Seemingly without exception, the surgeons recorded their experiences with shock at the gruesome battlefields covered with the carnage of war. They write of endless streams of patients without the proper staff, supplies or structures in which to treat the wounded.

Medical education in the United States was at a turning point when the American Civil War began in 1861. Many future physicians received their training as apprentices to established physicians in a system that was centuries old. However, many major American cities had also established medical schools which were becoming the more modern sources of a medical education. Schools "included lectures and perhaps demonstrations in the newer sciences; and some provision for clinical or hospital instruction."⁵ While the only requirement for admission was an ability to pay tuition, these schools were reliable sources of learning for future physicians, they served as focal

²Harvey Black M.D., ed. Glenn L. McMullen, A Surgeon With Stonewall Jackson: The Civil War Letters of Dr. Harvey Black, (Baltimore: Butternut and Blue, 1995), 38.

³ Ibid., 39.

⁴Daniel M. Holt, M.D., ed. James R. Griener et. al., A Surgeon's Civil War: The Letters and Diary of Daniel M. Holt M.D. (Kent, Ohio: The Kent State University Press, 1994), 28.

⁵ Thomas Neville Bonner, Becoming a Physician: Medical Education in Britain, France, Germany, and the United States, 1750-1945, (New York: Oxford University Press, 1995), 217-8.

points for the sharing the knowledge of established physicians. The Massachusetts Medical Society was established in Boston, and hosted discussions and lectures among members at several medical schools. The Society's meetings were forums to discuss interesting medical cases, new techniques, and other issues of the medical community. Similar societies existed in other cities such as Philadelphia and New York. The Boston Society's publication, the Boston Medical and Surgical Journal, the precursor of the modern New England Journal of Medicine, was the first to publication dedicated to the experiences and medical interests of its members and its modern publication remains the established expert in the field of new medical developments. When the war developed these journals devoted pages to the experiences of the military surgeons on the front. While, many of these letters included interesting cases, the majority of them simply described the terrible conditions of the war.

While medical training and education was developing in the United States, it was still considered inferior to many of the older schools of Europe which were viewed as superior sources of medical knowledge and practice. Surgery was frequently learned in Europe. The most illustrious American physicians spent a year or more visiting Europe's hospitals and medical experts. The journals were also fond of discussing the latest findings or theories of European physicians. Without the modern knowledge of microbiology and sanitation, surgery was a risky endeavor. Surgery was usually only attempted in the most desperate cases where there was no other option to save a life or eliminate suffering because any surgery was a life-threatening event. As a result, surgical procedures were judiciously attempted in America. When a surgery was conducted it was a major event occurring in a major teaching hospital and was not only an opportunity

for a patient to be healed, but also a viewing event for other inexperienced physicians and students. Later if the case or recovery was at all unique, it was written up in a medical journal to be shared with other physicians. So, while surgery was definitely not unheard of in American medical society before the Civil War, it was not a common event. Many experienced physicians had never seen, let alone performed, a major surgery.

Medicine was also a far different field in the 1860's than it is in the modern day. Today medicine has the benefit of knowledge about genetics and cells on the most minute and molecular level, but just before the Civil War, medicine had none of these pieces of information. Microbiology had yet to be truly developed and had not yet been applied to human medicine in any practical way. As a result, doctors knew nothing about germs or infection. Joseph Lister's famous paper on sanitation in surgery would not be published until 1865 and it would take a decade to be accepted in common practice. The creation of copious amounts of pus by the body was considered a normal part of the healing process. In fact, it was noted as very odd if a wound did not become infected and produce pus and other bodily fluids. While a few doctors were noticing that certain chemicals improved the healing of wounds, it was not understood why and their use was rarely adopted by physicians. In fact, cleanliness, in general, occurred infrequently in medical treatment during the Civil War. It was not properly understood that diseases could easily pass from patient to patient with mere contact. There was also no time between patients immediately following a bloody battle to clean instruments or physicians. As a result of the conditions and the state of knowledge, few doctors even washed their hands between amputations. The lack of modern, or even contemporary civilian, medical cleanliness

meant that "surgical infections were the leading cause of death after surgery."⁶ While infection was commonly seen throughout the war, its presence did nothing to change the sanitary conditions of military surgeons or their operations. The medical conditions before 1860 were very different from the modern methods and knowledge, but the conditions during the Civil War were beneath even the normal practices of the time.

As the war began, there were very few doctors in either the Union or Confederate armies. As a doctor stated in 1861, "Service as a militia surgeon, in time of peace, showed me that, if war should come upon us suddenly, it would find the Massachusetts regiments very poorly supplied with medical officers."⁷ As part of the general war mobilization, physicians had to be found and enlisted quickly. Military Surgeons were not simply responsible for medical care. As the only trained medical personnel for a large group of fighting men, surgeons were responsible for multiple tasks. In the broadest sense, "He [the military surgeon] stands between the government and its just demands on one side, and the passions, interests and inclination of the soldier on the other."⁸ Surgeons were first responsible for establishing a hospital. This required them to hire all the support staff from hospital cooks, who were recruited from the company, to surgical assistants, who usually only received training on the job and had frequently been injured in earlier fighting. Dr. James Bryan reported finding a Surgeon's Mate, a position similar to a surgical nurse, who was a druggist without any medical education. Surgeons were also responsible for the sanitation in the camp and the daily health of the men. They

⁶ Jilian E. Kuz M.D. and Bradley P. Bengtson M.D., Orthopedic Injuries of the Civil War: An Atlas of Orthopedic Injuries and Treatments During the Civil War, (Kennesaw, Georgia: Kennesaw Mountain Press Inc., 1996), 16.

⁷ "Surgeons in the State Militia," The Boston Medical and Surgical Journal (Boston, Massachusetts: Medical Society of Massachusetts, May 9, 1861), 312.

⁸ James Bryan M.D., "Qualifications and Duties of the Regimental Surgeon" The Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, January 16, 1862), 503.

were required to perform the administrative tasks of reporting on the number and types of injured and ill and ordering supplies which frequently did not arrive. One doctor reported back to *The Boston Medical and Surgical Journal* that "arriving on the camp-ground at Concord, at the time of the State encampment, I was applied to within an hour by officers from four different headquarters, to know if I had certain medicines in my possession, the surgeons at posts being without any supply. I could, on my return, have proved that several surgeons on that field had not so much as a catheter, or a vial of laudanum."⁹ Dr. Geo. B. Willson of Michigan reported, "at present it requires generally over two weeks for us to get medicines on requisitions from Washington. The obvious detriment [is] to the efficiency of the medical officers, and even to the health of the men, resulting from the total want of indispensable medicines and hospital supplies, such as quinine and hospital blankets..."¹⁰ They were accountable for establishing ambulance groups when they were available, and for the transportation of the wounded off the battlefield and eventually to hospitals behind the lines.

Finally, military surgeons were responsible for conducting surgery and caring for injured men during battle. Or as a minor line of Dr. Bryan's description mentions, "The first great duty of the surgeon, of course, is to attend to the wants of the sick."¹¹ In most cases the desperate need to recruit surgeons meant that physicians had no experience with surgery or violent wounds, and in some cases meant these new military doctors had not yet finished medical school. Describing some of the physicians recruited into the military this doctor commented. "...and [there were some] who would not themselves have dared

⁹ "Surgeons in the State Militia," *The Boston Medical and Surgical Journal*, (Boston, Massachusetts: Medical Society of Massachusetts, May 9, 1861), 312.

¹⁰Geo. B. Willson M.D., "When Doctors Differ, Who Shall Decide" *The Boston Medical and Surgical Journal*, , (Boston, Massachusetts: Medical Society of Massachusetts, December 5, 1861), 373.

amputate a finger."¹² These were not the prime candidates to be making medical breakthroughs. Dr. John Brinton, later the first curator of the Army Medical Museum, wrote in his memoirs after the war, "the surgeons under me were willing, but as surgeons, they were inexperienced, and I had to do many operation, and also teach them how to do them."¹³ He described the experience of one military surgeon,

In his hospital lay a patient whose leg, seriously injured, demanded amputation. The surgeon came to my office one afternoon, confessing that he had never done, and had never seen an amputation, and moreover had no idea how one should be done, and begged me, at the appointed time, to perform the operation for him. I explained that to him that this would never do; his position in the regiment demanded that he himself should remove the limb. And then I explained to him how the amputation should be done, and made him go through the motions, promising him that I would help him through when the time came. On the following morning I did so, and he operated very well, and to the satisfaction of the lookers on. Somehow or other this amputation established his reputation. He at once took rank as an experienced surgeon.¹⁴

Proof of credentials was also not required to become a military physician. This problem was probably due to the variety of training possibilities and the immediate requirement for military surgeons. A Boston Medical and Surgical Journal article from October of 1861 infers that several "physicians" were able to slip into military service without any real medical training. According to the editors,

Among other instances which have recently occurred of improper persons being appointed as surgeons to U. S. volunteer troops, is that of Mr. John J. Craven, of Newark, N. J., to the office of Brigade Surgeon. He is represented as having been engaged in mechanical and mercantile pursuits till about two years since, when he set himself up as a 'Doctor,' without

¹¹James Bryan M.D., "Qualifications and Duties of the Regimental Surgeon," The Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, January 16, 1862), 504.

¹²"Surgeons in the State Militia," The Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, May 9, 1861), 312.

¹³ John H. Briton M.D., Personal Memoirs of John H. Briton (1832-1907): Civil War Surgeon 1861-1865 (Carbondale and Edwardsville IL: Southern Illinois University Press, 1996 (originally 1914)), 90-91.

¹⁴ *Ibid.*, 90-91.

having attended medical lectures, and without a diploma or a license. He obtained the office of surgeon to one of the three months regiments....¹⁵

However, the army and the medical community did their best to provide soldiers with excellent and qualified physicians. According to Dr. James Bryan, the Brigade Surgeon to General Burnside's expedition, a qualified physician ideally possessed the following traits:

The qualifications of a regimental surgeon, should be, First, a good general medical education, accompanied with a knowledge of as many modern languages as possible. Secondly, he should have had eight or ten years' experience in the practice of his profession, with a disposition to pay particular attention to the surgical portion of it. Thirdly, he should be a man of good constitution, in good health, with considerable amount of executive energy. Fourthly, he should be a gentleman, and accustomed to good society. Fifthly, *he should not use intoxicating drinks as a beverage.*¹⁶

Once a doctor committed to military service there was no special training to prepare him for his service. Being a physician, it was assumed that he was a sufficient gentleman to be an officer in the military. However, this was the easiest portion of a military surgeon's tasks. Most surgeons had never treated gunshot wounds and had certainly never treated the victims of Minie balls on a regular basis. As a result, few physicians were prepared for the injuries they would be required to treat, much less prepared to be creating new surgical techniques. At the beginning of the war the military did not even provide these surgeons with a handbook of their duties and a medical handbook for treating these specialized injuries was virtually not thought of by the army. However, as the war progressed the American medical community attempted to compensate for their lack of experience by drawing on the knowledge of the capable

¹⁵ "Irregular Practitioners in the Army," The Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, October 24, 1861), 259.

physicians that did exist. The Boston Medical and Surgical Journal is full of book reviews of new European military medical works and new American guides for military surgeons. In addition, many medical schools and medical societies quickly arranged crash courses to prepare physicians for treating the wounds of the front lines. The May 23, 1861 edition of The Journal gave a complete report of the "gratuitous course of lectures on Military Surgery, at the Medical College in Grove St.,"¹⁷ by Professor H. J. Bigelow M. D. Two hundred physicians in Boston attended for several days,

The course comprised of a complete resume of all the topics embraced by the copious subject treated of; from ligation of all the principal arteries, every form of amputation, fractures, dislocation, gunshot and other wounds, to the diseases peculiar to armies, the important hygienic precautions for protecting the health of soldiers, the peculiar duties of army surgeons in the field, the progression status of the military surgeon and his relations to other departments of the service, and concluded with a very able lecture on venereal complaints.¹⁸

The lectures also attempted to have life-like examples to truly prepare future military surgeons. At Dr. Bigelow's lecture series the examples were quite realistic. The Journal reported,

Having been furnished by the Adjutant General with the various kinds of arms likely to be used, Dr. Bigelow inflicted bloodless and painless wounds on a dead body before the class. An opportunity was thus given, for example, of witnessing the fearful effects of the "Minie" ball upon the bones, crushing and completely disorganizing the large joints, where a common musket ball made a simple and direct perforation.¹⁹

While the entire series may seem a little gruesome after that description, it does prove that the doctors of the time recognized that they were grossly unprepared for the injuries

¹⁶James Bryan M.D., "Qualifications and Duties of the Regimental Surgeon," The Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, January 16, 1862), 503. (Author's italic).

¹⁷ "Professor H. J. Bigelow's Lectures on Military Surgery," The Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, May 23, 1861), 352.

¹⁸ Ibid., 352.

¹⁹ Ibid., 352.

and requirements of a modern war. While the education was considered "of necessity, much condensed,"²⁰ there was a conscientious effort to prepare for the medical challenges of service. It is doubtful these physicians had a realistic idea of the horrors and hardships of military medical service.

Even when trained physicians arrived at the lines of battle, they had to quickly learn how to perform the new surgical tasks required of them. Physicians learned from experienced military surgeons who had been serving longer, or they learned as they went through their duties each day. As a result, "...conclusions were formed on the basis of anecdotal evidence rather than controlled studies."²¹ As early as September of 1861 a physician was requesting statistical information from the military to make an informed decision on patient care. Dr. Charles Jackson wrote, "Let me ask our army surgeons to prepare statistical tables of their operations in which they use anesthetic agents...."²² After the Civil War medicine worked to solve this problem and created the predecessor to modern medical studies according to the scientific method.

With all of these tasks and no official military training, surgeons were overworked and undermanned for the daunting tasks that faced them on a daily basis. Dr. Derby of the 23rd Regiment, Mass. Volunteers wrote home to the medical journal about his experiences after a battle in Newbern, North Carolina on March 18th, 1862. He wrote

I am sitting at a table, in front of a wood-fire, one seech dip illuminating the room, which is full of wounded men-one behind me, with a wound through the chest, groaning all the time, while soldier nurses are picking their way about the floor, wetting the bandages, and giving water, gruel

²⁰ Ibid., 353.

²¹ Jilian E. Kuz M.D. and Bradley P. Bengtson M.D., Orthopedic Injuries of the Civil War: An Atlas of Orthopedic Injuries and Treatments During the Civil War, (Kennesaw, Georgia: Kennesaw Mountain Press Inc., 1996), 15.

²² Charles T. Jackson, M.D., "Hints to Army Surgeons," Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, September 12, 1861), 111.

and broth to such as I direct. I am interrupted every five minutes. My clothes have not been off since the fight on Friday. While the army are rejoicing at Newbern, the surgeons are keeping watch over the wounded day and night-looking out for bleeding wounds, and keeping the sparks alive in many who will, we hope and trust, yet be strong and well.²³

Military surgeons also had to make many decisions about the care of their patients. Often these decisions were based on the requirements of war and not the requirements of medicine. As the war began, anesthesia was a contested issue of the medical community during the war. For many years the medical community had been attempting to find good and safe forms of anesthesia. Chloroform was discovered first and ether was later developed for medical use. While there had been a great deal of debate about the two forms, by 1861, nearly all physicians agreed that ether was more effective and far safer than its predecessor. An article reprinted from the *American Medical Times* states,

Substitutes for ether, and anesthetic agents, are frequently proposed, and some of them have been practically introduced with some success. None, however, surpass ether in the two most important qualities of efficiency and safety, and there can be no doubt that with respect to safety, ether is far preferable to any and all anesthetics thus far discovered.²⁴

The medical advisory commission to the governor of Massachusetts declared in May of 1861, that, "...chloroform has been unconditionally forbidden for any use whatsoever, and an abundance of ether supplied in its place."²⁵ However, despite all the warnings against chloroform and strong support of ether, chloroform was the most widely used anesthetic during the war. This seems to have been a purely practical decision. Even though ether was medically safer and better, chloroform was easier to use in a military

²³ George Derby M.D., "Letter from Surgeon Geo. Derby," *The Boston Medical and Surgical Journal*, (Boston, Massachusetts: Medical Society of Massachusetts, April 3, 1862), 197.

²⁴ Unknown, "New Anesthetics-Theory of Their Action," *Boston Medical and Surgical Journal*, (Boston, Massachusetts: Medical Society of Massachusetts, July, 16, 1861), 513.

²⁵ Editors, *Boston Medical and Surgical Journal*, (Boston, Massachusetts: Medical Society of Massachusetts, May 9, 1861), 312.

setting. Dr. Bigelow presented his opinion in his military medicine lecture series that was reported by the Boston journal,

Giving unequivocal preference, in his own practice, to sulphuric ether, on account of its entire immunity from danger, he nevertheless considered chloroform to be the best anesthetic for army use: first, from its portability, its bulk being about one-eighth that of ether; second, from its comparative freedom from accidents by fire resulting from breakage, leakage, etc.²⁶

As the war developed, so did the medical discussions about treatment of various battle wounds. While there were many weapons used during the war from cannons to sabers, the most destructive by far was the Minie ball. This was a conical .58 caliber bullet made of soft lead, and it was responsible for over 94% of the injuries of the Civil War²⁷. In addition, according to Union records, 71% of these wounds were to the body's extremities, the type of injury which frequently required amputation.²⁸ The bullet was very large and carried a great deal of force and momentum. As a result, when it struck its victim it did not easily pass through a body like a more modern bullet might. Instead, the Minie ball struck its target at 950 feet per second²⁹ and deformed and tumbled as it passed into the body. The ball caused huge exit wounds and internal damage as it changed shape flattening in diameter. Further more, when the bullet struck a hard object such as a bone, it was capable of unparalleled damage and could shatter the bone in 2-3 inches from the site of impact. For a medical profession unfamiliar with intricate bone

²⁶ "Professor H. J. Bigelow's Lectures on Military Surgery," The Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, May 23, 1861), 353.

²⁷ Mathew Naythons, M.D., et. al. The Face of Mercy: A Photographic History of Medicine at War, (New York: Random House, Inc., 1993), 51.

²⁸ Jilian E. Kuz M.D. and Bradley P. Bengtson M.D., Orthopedic Injuries of the Civil War: An Atlas of Orthopedic Injuries and Treatments During the Civil War, (Kennesaw, Georgia: Kennesaw Mountain Press Inc., 1996), 14.

²⁹ *Ibid.*, 14.

surgery, these wounds were usually unrepairable and lives could only be saved by amputation. In less severe instances, more conservative treatment was often attempted. The two most likely options were excisement and medical monitoring.

A common surgical procedure that was practiced both before and during the war was excisement. The general principle of excisement was that a portion of bone, generally shattered from the impact of a Minie ball, was removed. First the damaged portion of bone and its extent was determined. Then an incision was made while taking care not to disturb the surrounding muscle, blood vessels, nerves, and tendons. The segment of bone was then removed using a chain saw that could be maneuvered within the incision and around the bone. The remaining portions of bone were then brought together and immobilized so that they could heal and pus could escape. This procedure was originally done with the hope that the remaining pieces of bone would regrow and fill the space. However, as it became clear that this did not occur during the healing process, the procedure was done mainly to preserve a limb. Depending on the injury and the healing process the limb could be left completely useless or it could be almost completely functional. In an ideal case recorded in *The Second Surgical Volume of the Medical and Surgical History of the Rebellion*, the patient made a nearly full recovery. In October 1863 the patient had the head and six inches of his humerus removed. After recovery the report states, "The patient recovered without a bad symptom and with a remarkably useful limb. Without difficulty he can place his right hand on the top of his head; he can lift a weight of 200 pounds or more with the injured limb without pain."³⁰ Because of the possibility of this type of ideal result, excisements were frequently the

preferred treatment of a wound. And because at least the semblance of a limb remained, this was considered a conservative, or less invasive and active, form of treatment. However, this was a much more complicated procedure requiring a greater knowledge of surgery and anatomy. It also required a great deal more time both on the operating table and in the recovery hospital. The surgery took much longer to perform than a quick amputation. Also, during the healing process excisement wounds were more likely to become infected. Finally, the surgery required a stationary and well-ventilated hospital, a condition that was frequently unavailable during the war. As a result, while excisement may have been a better and less disfiguring surgery for many patients, it was also a much less common procedure than amputations.

Amputations accounted for three-fourths of all the battlefield operations during the war, totaling approximately 60,000 operations.³¹ Because of the frequency of the operation and its gory results, the practice is responsible for some of the more horrific descriptions and memories of the war. Dr. Brinton wrote in his later remarks of the inexperienced surgeon,

I found bloodstained footmarks on the crooked stairs, and in the second-story room stood my friend of Cairo [a military medical society] memory; amputated arms and legs seemed almost to litter the floor; beneath the operating table was a pool of blood, the operator was smeared with it and the surroundings were ghastly beyond all limits of surgical propriety. 'Ah, Doctor," said the new-fledged surgeon, 'I am getting on, just look at these,' pointing to his trophies on the floor with a right royal gesture.³²

³⁰ Bradley P. Bengtson, M.D. and Julian E. Kuz, M.D., Photographic Atlas of Civil War Injuries: Photographs of Surgical Cases and Specimens, (Grand Rapids, Michigan: Medical Staff Press, L.L.C., 1996), 7.

³¹ Gordon Dammann M.D., Pictorial Encyclopedia of Civil War Medicine, Instruments, and Equipment, (Missoula, Montana: Pictorial Histories Publishing Company, 1983), 1.

³² John H. Briton M.D., Personal Memoirs of John H. Briton (1832-1907): Civil War Surgeon 1861-1865 (Carbondale and Edwardsville IL: Southern Illinois University Press, 1996 (originally 1914)), 91.

Dr. Holt wrote, "Every house, for miles around, is a hospital and I have seen arms, legs, feet and hands lying in piles rotting in the blazing heat of a Southern sky unburied and uncared for, and still the knife went steadily in its work adding to the putrid mess."³³

Clearly, there was a great deal for the common soldier or civilian to be horrified by in the continuing completion of amputations. However, despite their disfiguring and debilitating results, they were one of the most successful and life-saving surgeries of the American Civil War. Amputations had a remarkably low mortality rate considering the surgical conditions and the severity of injuries that occurred during the war. Only 26.3%, of the Union's recorded 29,990 amputation cases ended in death. Amputations also had very low rates of major infections that were life-threatening.³⁴

In 1861, as the war began, two main types of amputations, circular and flap, were commonly done. The first step in Circular amputations was to separate the skin and other tissues, such as fat, from the muscle. The skin could then be pulled away from the area "much like rolling up the cuff of a shirt sleeve."³⁵ The muscle was then carefully cut and separated from the bone by isolating every possible vein and artery and tying them with a ligature of silk or cotton. Large nerves were also located and cut cleanly so that the stump would retain sensation after healing. The bone was then cut with a saw and smoothed with bone biting forceps or rasps. Finally, the skin could be pulled back over the stump and sewn into place to provide a natural cover for the wound. The circular method was the preferred method of the time. This type of wound was easier to dress,

³³Daniel M. Holt M.D., ed. James R. Griener et. al., A Surgeon's Civil War: The Letters and Diary of Daniel M. Holt M.D. (Kent, Ohio: The Kent State University Press, 1994), 28.

³⁴Laurann Figg and Jane Farrel-Beck, "Amputation in the Civil War: Physical and Social Dimensions," Journal of the History of Medicine and Allied Sciences, Vol 48, no.539, (Ames, Iowa: Journal of the History of Medicine and Allied Sciences, Inc., October, 1993), 459.

easier to transport, fewer blood vessels were severed, and it was safer for the patient.

Circular amputations, due to the care given to blood vessels during the procedure, were much less likely to develop cases of secondary hemorrhage, one of the leading causes of death among post-surgery patients.

When secondary hemorrhage occurred a blood vessel would suddenly tear and the patient would bleed to death within a few minutes. There was very little a surgeon could do even if the situation was discovered quickly, and it was considered one of the many deadly possibilities in surgery. As a result, reducing the risk of secondary hemorrhage, along with its other benefits, made the circular method the recommended method of amputation during the period of the war.³⁶

The other method of amputation was known as the Flap method. In this method the major arteries, veins and nerves were severed similarly to the Circular method. The amputation knife was then placed slightly below the point of amputation, directly against the bone, and skidded across and up the bone in a crescent motion. This created, in one swift motion, a flap of skin, tissue, and muscle while severing the bone. This was done on both sides of the bone completing the amputation and creating two flaps. These flaps were then sutured together at the middle of the stump. The advantage to the Flap method was the ease with which it could be preformed. Flap amputations were very fast and it was easier to find adequate tissue in the muscle flap to support a stump.

While there are certain advantages to both, the circular method seems to have been the more sound operation with the better chances of recover. A review of military

³⁵Jillian E. Kuz M.D. and Bradley P. Bengtson M.D., Orthopedic Injuries of the Civil War: An Atlas of Orthopedic Injuries and Treatments During the Civil War, (Kennesaw, Georgia: Kennesaw Mountain Press Inc., 1996), 24.

³⁶ Ibid., 24.

surgical techniques of the time concluded that the circular method was the best method for most surgeries and especially those of the forearm and leg, which were the most common injuries. The Boston Medical and Surgical Journal reported that "where time is of great importance, Hamilton (a physician who wrote a work on military surgery) advises the flap operation."³⁷ However, time was always of importance on the Civil War battlefield where patients were plentiful and doctors were not. A flap amputation could be performed in three to five minutes depending upon the body part being removed and the individual surgeon. Circular amputations, on the other hand could take many times longer to perform. As a result, while most doctors probably knew that circular amputations were the preferred method, "flap amputation was the most common Union method."³⁸ Union doctor A.J. Phelps even reported, "I have thought that our success would be greater if the circular method was adopted more generally."³⁹ This may not have been the case on the Confederate sides where it was reported that the circular method was used more liberally. However, it is difficult to determine the results of Confederate surgery since all the military medical records were lost in a during the fall of Richmond in April 1865.

The differences between these surgeries often called into question which method should be used. Time restrictions and war conditions changed the options available to a physician and how he made medical decisions. When does a surgeon sacrifice a limb to save a life? When is it worth the time and effort to excise a bone and when is it necessary

³⁷ Medical and Surgical Reporter, "Period for Primary Amputation in Gun-Shot Wounds," Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, November 14, 1861). 317.

³⁸ Laurann Figg and Jane Farrel-Beck, "Amputation in the Civil War: Physical and Social Dimensions," Journal of the History of Medicine and Allied Sciences, Vol. 48, no. 539, (Ames, Iowa: Journal of the History of Medicine and Allied Sciences, Inc., October, 1993), 458.

³⁹ *Ibid.*, 458.

to simply remove the limb? When do the surrounding conditions and the mounting number of injuries force a surgeon to simply operate as quickly and efficiently as possible and not evaluate the diverse injuries before him? Few doctors were willing to write to the civilian medical journals admitting that the soldiers on the front were receiving anything other than the best civilian care possible. However, it seems inevitable that shortcuts were made in surgical treatments in the interest of the general battalion over the single individual. The conditions were horrendous and the injuries too numerous for every patient to be carefully evaluated and treated. The Sanitary Commission, the largest private organization that coordinated relief and hygiene efforts to Union soldiers, issued a report at the beginning of the war stating,

In army practice, attempts to save a limb which might be perfectly successful in civil life, cannot be made. Especially, in this case in compound gunshot fractures of the thigh, bullet wounds of the knee joint and similar injuries to the leg, which, at first sight, amputation may not seem necessary. Under such circumstances attempts to preserve the limb will be followed by extreme local and constitutional disturbance. Conservative surgery is here in error; in order to save life, the limb must be sacrificed.⁴⁰

However, other sources offered advice on the conditions when an amputations should be attempted. In an article in the Boston Medical and Surgical Journal, Thomas Welsh, the Acting Assistant Surgeon, made suggestions for when an amputation should be done. Amputations, he wrote,

may be indicated in three principal conditions:

- 1st, As a consequence of complete or incomplete tearing off of a limb by a projectile of large caliber.
- 2nd, In complicated fractures caused by splinters of shell, and fragments of wood or iron, torn from the vessel or fallen from the mast.
- 3rd, In gun-shot wounds, properly called, with lesion of bones or articulations, produced by balls.

⁴⁰Gordon, Dammann M.D., Pictorial Encyclopedia of Civil War Medicine, Instruments, and Equipment, (Missoula, Montana: Pictorial Histories Publishing Company, 1983), 1.

In the first case there is no possible hesitation. Amputation, when it is practicable, ought to be done immediately, in the surgical sense; that is to say, when the depression has disappeared, and the accidents of the wound have not yet supervened in twenty-four hours after the accident.⁴¹

Excisements, it was argued, should be conducted only when amputations were absolutely not indicated. The official advice was to be cautious in performing amputations; yet, they also warned against being too cautious: "If we hesitate in doubtful cases, or if we rely too much upon conservative surgery, we are not long in repenting of it on seeing patients die of wounds when amputation would have saved them."⁴² The cautious advice of the experienced military surgeons of other nations was mixed with a heavy load of battle injuries to help the exhausted surgeon of the Civil War to make decisions for the course of treatment of patients. Inevitably it seems likely that physicians were more eager to save lives than to carefully analyze each case and evaluate its long term potential under different surgical procedures. The realistic practice seemed to follow the wisdom of a surgeon who warned, "Too often the surgeon is disarmed by considerations of personal condition, age, etc. and sees his patient die with four limbs when he could have lived with three."⁴³ It was better to amputate when unsure than to be mistaken and lose a life. Medicine was a precarious occupation under trying conditions, but it was still careful to try to save as many lives as possible, even if that meant losing limbs.

While amputations were the general course of treatment for badly damaged bones and limbs, there were cases when neither amputation nor excisement seemed like the

⁴¹ M. Saurel, trans. Thomas Welsh, M.D., Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, June 19th, 1862), 410.

⁴² *Ibid.*, 412.

⁴³ *Ibid.*, 412.

proper treatment. The closer a wound came to the body core, the more dangerous it was to the patient. One of the most notorious types of deadly injuries was gunshot wounds to the hip. The excisement of a hip was virtually impossible due to the complicated anatomy and the risk of death from prolonged anesthesia exposure and blood loss. However, amputations were not much safer. The mortality rate for hip amputations were 83.3%. Comparing this figure to the 7.6% fatality rate for elbow joint amputations, it becomes clear why only 66 hip amputations were attempted during the entire course of the war.⁴⁴ The general course of treatment for these cases was to follow expectant, or conservative, treatment and hope for the best. Patients were kept as comfortable as possible under the conditions and their bandages were changed. However, no other procedures were attempted. Some of these patients improved and recovered and some died. However, given the incredibly high mortality rates for patients operated on, it was a huge risk and a waste of resources to perform hip amputations. In Dr. Welsh's submission, even his source notes state, "...the disarticulation at the hip-joint is an exception to the rule [when to amputate]."⁴⁵ A civilian surgeon, Dr. G. P. Hachenberg, attempted a hip amputation in New York in 1862. The surgery was so unusual as a elective procedure that his seven page article in the Boston Surgical and Medical Journal began with,

Having had a case, where amputation at the hip-joint was indicated, I took into consideration the expediency of resorting to that rare and formidable operation. In examining into the statistics on the mortality resulting from it, I received but little encouragement to undertake the case. There are many distinguished surgeons who never amputated at the hip-joint, not always for want of an opportunity, but because they follow in the wake of

⁴⁴Laurann Figg and Jane Farrel-Beck, "Amputation in the Civil War: Physical and Social Dimensions," Journal of the History of Medicine and Allied Sciences, Vol 48, no. 539, (Ames, Iowa: Journal of the History of Medicine and Allied Sciences, Inc., October, 1993), 459.

⁴⁵ M. Saurel, trans. Thomas Welsh, M.D., Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, June 19th, 1862), 410.

such old authorities...whose teachings have been to repudiate the operation.⁴⁶

Unfortunately, even with Dr. Hachenberg's constant bedside care in a major hospital, the patient died only a few hours after surgery from hemorrhaging. However, it demonstrates why Civil War surgeons were often reluctant to operate in many cases on the front lines. Clearly, medicine on the front lines of the Civil War was not on the cutting edges of international medicine. Military surgeons were attempting to provide the best care under the circumstances of war, but even they were willing to admit that medicine suffered and was beneath civilian levels.

It is often suggested that the Civil War spurred the creation of many new forms of treatment and surgery due to the repetitiveness of the injuries and the regimentation of the medical community. *The Face of Mercy*, a historical work on military medicine, infers that excisement was a new medical procedure developed during the Civil War. The work first mentions the technique next to several Civil War pictures and the text reads "The technique of bone excision...was developed in the wild hope that the surviving bone could eventually be lengthened and the limb restored to function."⁴⁷ In reality the operation existed well before the war began. However, a quick analysis of the Boston Surgical and Medical Journal shows that not only did these surgeries exist before the war began, but they were used in a number of situations and cities. For example, a medical article from 1860 shows that the excisement procedure was already being used in civilian cases. The article describes a portion of a complicated compound fracture case stating "...the operation of resection was advised, which was performed, on May 5th, 1860, in the

⁴⁶ G. P. Hachenberg, M.D., "A New Method of Amputating at the Hip-Joint," Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, March 20, 1862), 150.

following manner. A longitudinal incision was made along the outside of the arm, about four inches in length...a thin piece was sawed from it. The upper end was severed in the same manner."⁴⁸ Amputations had clearly been done for centuries before the Civil War, but even the techniques employed during the war, like flap and circular amputation methods, were not developed during the war. One physician wrote to the *Boston Medical and Surgical Journal* about a new technique of amputation he had just learned. The editors responded, "In the *Cyclopedia of Practical Surgery* published in 1837, p. 177, it is stated that it [the amputation technique discussed] had been the practice, both in England and on the Continent, for thirty years. In Boston, the operation has been taught for twelve years at least, has been repeatedly practised at the Massachusetts General Hospital."⁴⁹ All the surgical techniques used during the war were developed and utilized in civilian before the war.

The Civil War has also been credited with "creating" the medical field of orthopedics. Multiple texts site this as one of the greatest medical achievements of the war. *The Orthopedic Injuries of the Civil War* states, "the American Civil War provided both the caseload and the surgical training to create orthopedics as a distinct specialty."⁵⁰ However, the evidence for the American Civil War single-handedly creating the field seems limited. While the first orthopedic professorship was created during the war, it was created in 1861 before the nation was fully mobilized for war and before there were a

⁴⁷ Mathew Naythons M.D., et. al. *The Face of Mercy: A Photographic History of Medicine at War*, (New York: Random House, Inc., 1993), 51.

⁴⁸ Henry Clarke M.D., "A Case of Compound and Comminuted Fracture of the Humerus, Followed by Pseudarthrosis-Resection-Use of the Silver Wire-Union," *Boston Medical and Surgical Journal*, (Boston, Massachusetts: Medical Society of Massachusetts, October 18, 1860), 230.

⁴⁹ Watson M.D., "Amputation of the Leg at the New York Hospital," *Boston Medical and Surgical Journal*, (Boston, Massachusetts: Medical Society of Massachusetts, September 6, 1860), 125.

great deal of orthopedic injuries.⁵¹ The creation of a professorship requires planning and the position must have been envisioned before the conflict had even reached advanced proportions. In addition, there was research and interest in the area of orthopedics before the war began. The Boston Medical and Surgical Journal is full of articles from doctors who have treated orthopedic cases and are sharing their experiences with their fellow professionals. Given the civilian and pre-war interest in bone injury and surgery, it seems like only a matter of time before a separate field was established to pursue this area of medicine. However, the medical experiences of the American Civil War may have helped to precipitate the official creation of the new field. Before the war, orthopedic surgery was only attempted in the hospitals of large cities by prestigious physicians. However, by the end of the war thousands of physicians from across the country had experience in surgery. Their experience may have occurred in the most rustic and trying conditions, but it was medical experience that could be further developed and put to use in civilian practice. This expanded base of knowledge, interest, and practice of surgical techniques may have sped the recognition of the separate orthopedic field even if it did not create the specialty.

In May of 1862, roughly a year after the war began, William Hammond founded the Army Medical Museum. Its task was specifically to conduct scientific research on military medicine. A letter was issued on May 21, 1862 to all military surgeons requesting their participation. Hammond wrote,

As it is proposed to establish in Washington, an *Army Medical Museum*, Medical officers are directed diligently to collect, and to forward to the

⁵⁰Jilian E. Kuz M.D. and Bradley P. Bengtson M.D., Orthopedic Injuries of the Civil War: An Atlas of Orthopedic Injuries and Treatments During the Civil War, (Kennesaw, Georgia: Kennesaw Mountain Press Inc., 1996), 62.

⁵¹ Ibid., 62.

office of the Surgeon General, all specimens of morbid anatomy, surgical or medical, which may be regarded as valuable; together with projectiles and foreign bodies removed, and such other matters as may prove of interest in the study of military medicine or surgery. These objects should be accompanied by short explanatory notes.⁵²

This request began one of the largest compilations of military medicine up to that date.

The project was managed by Surgeon John Hill Brinton for the first two years from 1862-1864. Dr. Brinton was succeeded by Dr. George Alexander Otis who spent the remaining seventeen years of his life compiling the *Medical and Surgical History of the War of the Rebellion*. When completed this work included nine volumes, 6,000 pages, and 400 pictures. More importantly, it contained the combined medical knowledge and experience of the American Civil War: descriptions of wounds, treatments, outcomes, and even follow-ups several years after the war. While the work did not improve the medical care during the war, it did allow others to learn from the experience of military surgeons. Dr. Briton wrote in his memoirs, "By it the results of the surgery of this war would be preserved for all time, and the education of future generations of military surgeons would be greatly assisted."⁵³ It marked an advancement in medical records, because, a work existed that attempted to systematically catalogue cases and determine if specific treatments were successful. It proved to be an excellent teaching tool that was used by many medical school including the College of Physicians of Philadelphia and the Royal College of Surgeons in Dublin, Ireland.⁵⁴

The American Civil War was a terrible time in the history of the country. Society tries to find some good in the horror of so many years of war. However, historic reality

⁵² John H. Briton M.D., *Personal Memoirs of John H. Briton (1832-1907): Civil War Surgeon 1861-1865* (Carbondale and Edwardsville IL: Southern Illinois University Press, 1996 (originally 1914)), 180.

⁵³ Ibid., 181.

does not always match the needs of society. There were many changes in the Civil War from previous military engagements. The weapons were new. The injuries were new. However, the medicine was not new. Amputations were ages old and did not change. Excisement was a published procedure before the war even began. Sanitary conditions, medical doctor to patient ratios, available medical supplies, and recovery conditions worsened in war rather than advancing. Orthopedic surgery was not invented in the few short years of the war. Surgeons, even though they desired to study the situation, admitted that the conditions did not make it possible. One surgeon wrote of his frustration, "It would be interesting to analyze the character of the wounds and fractures, by comparing the relative amount of destruction of tissues and bond, with the size and kind of missiles used. But time will not permit."⁵⁵ Many physicians systematically treating huge numbers of similar injuries during the war did not create the conditions to make great advancements in medical knowledge or develop innovative new treatments. It merely created suffering soldiers and exhausted surgeons. As one Confederate medical officer wrote, "we did not do the best we would, but the best we could."⁵⁶ The Civil War did allow medicine to develop a systematic record source and spread medical experience. Yet, it did not change the face of medicine. Historically the Civil War was only a dark period in American history that disrupted the progress of the country socially, politically, and medically.

⁵⁴Bradley P. Bengtson M.D. and Julian E. Kuz, M.D., Photographic Atlas of Civil War Injuries: Photographs of Surgical Cases and Specimens, (Grand Rapids, Michigan: Medical Staff Press, L.L.C., 1996), vii.

⁵⁵Adino B., Hall M.D., "Military Medical Reports: Report of Dr. Adino B. Hall," Boston Medical and Surgical Journal, (Boston, Massachusetts: Medical Society of Massachusetts, June 19, 1862), 419.

⁵⁶Jilian E. Kuz M.D. and Bradley P. Bengtson M.D., Orthopedic Injuries of the Civil War: An Atlas of Orthopedic Injuries and Treatments During the Civil War, (Kennesaw, Georgia: Kennesaw Mountain Press Inc., 1996), 63.

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