

# CIVIL WAR EXPLODING BULLETS – A MEDICAL REVIEW OF CASES.

By: Paul R Johnson, MD

I was asked by John D. Hamilton and Dr. Robert Carlson to research the medical and surgical military history of patients afflicted by wounds resulting from explosive rifle bullets, 1861-1865. The intention was to illustrate their use as documented by the US Medical Staff during the Civil War. This was to buttress these gentlemen's presentations at the fall, 2019 ASAC meeting. Review of the multi-volume post war "Medical and Surgical History of the War of the Rebellion"<sup>1</sup>, which was a scholarly attempt to archive the medical care of all types of diseases and trauma sustained by the armed forces during the Civil War, was both revealing and concerning.

The Medical Department (previously the U.S. Army Hospital Department), specifically noted a total of 130 cases/patients who were attributed to have been wounded by explosive musket balls, with nearly all parts of the body having been struck<sup>2</sup> (Table 1). The 'seat of injury' (body locations) are listed which specifies that the face and extremities most commonly wounded. Mortality results are not listed for each patient, but of those patients documented, most recovered and were discharged with disabilities.

Table 1. 130 cases of wounds caused by explosive musket balls reported in the Medical and Surgical History of the War of the Rebellion.<sup>2</sup>

Shot flesh wounds - Scalp .....	2
Shot injuries - Cranium .....	3
Shot wound - Face/Facial Bones .....	40
Shot flesh wounds - Neck .....	nil
Shot injuries - Spine.....	1
Shot flesh wounds - Chest Wall/Ribs.....	4
Shot penetrating wounds - Chest .....	3
Shot penetrating wounds - Abdomen.....	1
Shot flesh wounds - Back .....	2
Shot flesh/penetrating - upper Extremities.....	27
Shot bone fractures - upper Extremities .....	19
Shot flesh wounds - lower Extremities .....	20
Shot bone fractures - lower Extremities.....	8

It is important to note that critical review reveals that these 130 cases are most probably just a small subset of those soldiers wounded; i.e. - patients who managed to seek medical attention. Soldiers killed outright by explosive ammunition are not tabulated – a situation which very much may significantly skew any overall interpretation. Further, observer bias (by the treating surgeons) may be encountered regarding extensive wounds found which may

have been caused by 'normal' wounding projectiles and not by explosive munitions for shoulder arms. Finally, these cases appear to be all Union casualties, no CSA patients are specifically noted, but many histories are incomplete.

It is revealing to note some of the following facts and issues. Explosive projectiles are specifically mentioned and illustrated to be: "the Gardiner explosive bullet or musket shell"<sup>3</sup> (Figure 1). This is described as: "cylindro-conoidal projectile of lead, made in two sizes; the larger of calibre 0.58 weighing 451 grains, the smaller of calibre 0.54 (thought to in fact be 0.52 for Sharps rifles<sup>4</sup>) weighing 363 grains. Within the interior is placed an accurately fitted acorn shaped chamber filled with fulminate and communicating with a 1 and ¼ second time fuse, which is exposed to the charge at the rear of the missile: the fuse is ignited by the discharge of the piece. The bursting charge is sufficient to rend the bullet and transform it into a jagged dangerous missile<sup>5</sup> (Figure 2).



Figure 1 Left: Lithographic illustration of Gardiner explosive bullet; Right: Sectioned Gardiner explosive bullet found at Gettysburg - showing fuse hole and explosive powder charge chamber.

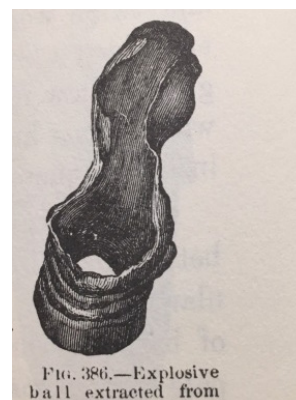


Figure 2: Exploded Gardiner bullet extracted from thigh of 120th NY private.

Should it have penetrated the body before exploding its effects are still more destructive. It is claimed that other forms of projectiles of this nature were used that had a percussion cap which

would explode upon contact with even soft tissues. No specimens of this kind are found in the collection of the Army Medical Museum<sup>6</sup> (but we illustrate a single case of Private Wright, later in this work who may have been hit by a contact percussion fused bullet).

Specifically, regarding Gardiner explosive bullets, the US Ordnance Office records show that 33,350 of this type of explosive shells were issued to the troops in the 'early part of the war', and that over 10,000 were abandoned on the field (Chancellorsville) and captured by CS forces. It should be noted that the earliest documented date of patient wounding by explosive missiles was June 1st, 1862 (prior to Chancellorsville): Corporal. Burlingame, 64th New York at Fair Oaks: missile exploded in left forearm, patient recovered.<sup>7</sup>

And Private Philo White, Co I, 7th Michigan was wounded at Antietam, Sept 17th, 1862- "with the ball entering the right arm above the elbow and traversing the right axilla and exploding in the belly of the pectoral muscle (chest), making a cavity large enough to admit the fist. The 4th rib was fractured and the pleura and lung violated generating frequent bouts of hemoptysis (coughing up blood). He developed severe tetanus body spasms (used to be called lockjaw) requiring opium treatments carried to the point of narcotization resulting in pinhole pupil contraction during whole treatment period. Patient recovered, with disability ½ and temporary" (!)<sup>8</sup>.

Of interest is the case of R. C. Wright, 1st U.S. Chasseurs, who was wounded on the skirmish line at Malvern Hill, July 1st, 1862 by "an explosive ball, which entered about the middle of the right clavicle, fracturing the bone, passed through the cavity of the thorax, and was extracted four days after below the spine of the right scapula. Large amount of hemorrhage from the lungs occurred. Sensation at the time of receiving the wound was like that of a 'blow from a man's fist.' Several pieces of brass were extracted from the anterior wound near the collar bone, and others from the shoulder blade wound ("he had no scales on his shoulders or any metal about his person"). These form a portion of an explosive cap attached to a conical ball, which I have no doubt ignited at the moment it struck the clavicle and these fragments were driven through the lung. Wright recovered and was discharged from service November 30, 1862."<sup>9</sup> Unfortunately, no missile specimen is retained in the archives for evaluation or identification; most probably this is not a Gardiner timed fuse bullet, but indeed a percussion capped contact fused projectile.

The extent of the damage from explosive missiles is greater than that ordinarily caused by the simple projectile. Bony structures are more extensively shattered and the area of destruction in soft parts is larger; haemorrhage, both primary and secondary, is more common; extensive sloughing follows and the course of repair is slow and tedious. Clearly infection and extensive morbidity is markedly increased. Many patients with this type of gangrene and sepsis were treated with topical bromine preparations, with varying degrees of success.

The appearance of an exploded musket shell extracted from the thigh of a private of the 120th New York Volunteers<sup>5</sup> is presented in Figure 2. The wound resulting was a flesh wound of the muscles of the thigh, and the bullet was removed by enlarging the opening of the entrance. It appears to have blown out both ends of the Minié ball. This appears to be the only exploding bullet specimen currently found in the US Archive collections.

In conclusion, the US Medical Department catalogs at least 130 soldiers who have been documented by contemporary Physicians and Surgeons as having been struck by exploding bullets during the Civil War. The majority of patients appear to be post Chancellorsville, and Gettysburg, with very many wounded occurring at Spotsylvania and Petersburg, in 1864. Many patients recovered with disabilities. Since some wounding occurred in 1862, other types of C.S. exploding ammunition may have been employed (Figures 3).



Figure 3. Large CS exploded bullets from Richmond and Petersburg battlefields.

Post war, Confederate authorities vehemently denied using poison bullets during the war, and claimed that no exploding bullets were authorized by any central military C.S. Ordnance Departments. No specific C.S. patient cases of exploding bullets have been found or documented at this time.

Gardiner projectiles are found on the collectors' market, but mostly 58 cal. and rarely 52.

Exploding Jacobs's projectiles are very rare – and hopefully these were targeted for opponent's artillery caissons and not actual opponents. Other odd exploding bullets are noted, one currently on eBay auction site (Figure 3).

## Bibliography

- 1 'Medical and Surgical History of the War of the Rebellion' was a United States Government Printing Office publication consisting of six volumes, issued between 1870 and 1888. It was prepared under the direction of Surgeon General, US Army Joseph K Barnes. It was renamed "*Medical and Surgical History of the Civil War*" and reprinted by Broadfoot Publishing Co. in 1992.
- 2 *Medical and Surgical History of the Civil War* (hereafter *MSHCW-1992*), Broadfoot Reprint, 1992, Table CXXI, Volume No. 12, Page 696.
- 3 Ibid, *Volume No. 12*, Page 702.
- 4 On June 8th, 1863, prior to the battle of Gettysburg, the Second New Hampshire Volunteer Regiment was issued 40 rounds per man of 52 Cal. Gardiner explosive bullets. They had been issued 52 Cal. Sharps rifles. One such rare 52 cal. Gardiner dropped bullet was found on the Gettysburg battlefield in the lines of march of the 2nd New Hampshire Regiment. Further, it has been noted in the internet literature that a member of Company C., 2nd NH was apparently hit in his cartridge box with resulting delayed multiple explosions noted originated from said box, inflicting a succession of major wounds which were mortal. This may have lent to the reported fear that soldiers may have felt when carrying this type of ammunition (internet).
- 5 *MSHCW-1992*, Volume No. 12, Page 702. This exploded bullet was extracted from the thigh of a private of the 120th New York.
- 6 *MSHCW-1992*, Volume No. 12, Page 702.
- 7 Ibid, Volume No. 10, Page 923; Volume No. 12, Page 702.
- 8 Ibid, Volume No. 8, Page 494, Volume No. 12, Page 702.
- 9 Ibid, Volume No. 12, Page 703.

