Military otolaryngology and its impact on civilian trauma care

BY G RICHARD HOLT

Over the centuries, military conflicts and wars have caused both death and injuries and led to improvements in the care of the combat wounded. Military otolaryngologist-head and neck surgeons have been at the forefront of these developments and advances. War injuries to the face, head, and neck have always been a significant source of functional disabilities and severe alterations in appearance – as well as clearly being life-threatening. The knowledge gained from advances made by military otolaryngologist-head and neck surgeons' surgical care of war casualties has been translated in many ways over the decades to the care of civilian trauma casualties with similar critical injuries. Additionally, military otolaryngologist-head and neck surgeons retire from or serve their duty time in the military and begin practising in the civilian sector, further propagating the lessons learned in combat medicine.

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The majority of advances in face, head, and neck trauma care in the military has occurred since World War I (WWI), beginning with the improved management of the airway in patients wounded in the lower face and jaws. During WW1, patients were initially transported on stretcher in ambulances or medical trains placed on their backs, whereupon the airway would be lost. However, two simple, but important, measures were implemented during the course of the war that saved many lives – placing the casualty on his side during transport, and stabilising the lower jaw and face with a Barton's dressing. The figure-of-eight dressing, known as Barton's dressing after Dr John Rhea Barton, a US surgeon, had its proof of concept during the civil war and was extensively used in WWI. One of the great surgeons of this war was Dr Harold Delf Gilles, a London-based otolaryngologist-head and neck surgeon who is considered to be the 'Father of Plastic Surgery.' It was during this war that he developed many extraordinary surgical procedures to repair facial injuries. He was later knighted for his medical service in WWI.

WWII was also a time of great experience in the management of head and neck trauma, with more forward-placed surgical units with surgeons capable of placing emergency tracheotomies and controlling bleeding in the neck. Many of the field hospitals, a higher echelon of surgical care that included otolaryngologist-head and neck surgeons, were deployed with entire medical, surgical, and nursing staff from major academic institutions in the Allied countries. One of the deployed academic surgeons was Major (Dr) John J Conley, who learned and developed (on the job) reconstructive procedures for severe facial, head, and neck wounds that he translated into the surgical repair of traumatic and neoplastic defects. His teachings are still pertinent to this day.

In the Korean Conflict, two advances led to increased survival of battlefield casualties, especially with facial, head, and neck injuries – the very forward-placed mobile army surgical hospitals (MASH), and the battlefield evacuation of wounded personnel by helicopter. Life-saving surgery, including securing the airway and controlling bleeding in the neck and oral cavity, were the hallmarks of these amazing surgical units. The practices and protocols for helicopter evacuation of the wounded in Korea formed the foundation of military casualty evacuation as well as the future civilian medical evacuation systems.

During the Vietnam Conflict, under the astute planning of then Colonel, later Major General Spurgeon Neel, air evacuation of combat casualties, as well as those critically ill with non-combat illnesses, was refined. Called 'Dust-Off' for obvious reasons, lives were saved at the highest rate ever seen in major combat zones, especially because casualties could often be flown from the site of injury to a second echelon treatment facility within the 'golden hour' of injury, which greatly improved survivability. Allied otolaryngologist-head and neck surgeons serving in Vietnam played a major role in the primary and secondary surgical care of patients with injuries in the head and neck region.

Following the experiences in Korea and Vietnam, civilian medical evacuation of traumatically injured patients became more sophisticated, effective and efficient. All major cities in the western world began to build their medical evacuation capabilities, and to link these emergency air transport aircraft with high level trauma centres. Otolaryngologist-head and neck surgeons became an important part of the receiving trauma team, primarily managing the surgical airways and performing emergency and reconstructive surgery on victims of gunshot / knife wounds, motor vehicular accidents, and industrial trauma. Many of the Vietnam veteran otolaryngologist-

Figure 1: Military casualty evacuation helicopter in Operation Iraqi Freedom.

head and neck surgeons were now practising in the community or on the faculty of academic medical centres, and their combat surgical experiences were being translated to another generation of specialists.

Most recently, since 2001, the wars in Iraq and Afghanistan have provided a new opportunity for advancements in the care of military and civilian personnel wounded in combat situations. Initially, the US military did not include otolaryngologist-head and neck surgeons in the deployed medical assets to Iraq and Afghanistan. However, through the efforts and wisdom of Colonel (Dr) Joseph Brennen, now chief of surgery at the San Antonio Military Medical Center, nearly 30 tri-service otolaryngologist-head and neck surgeons have been deployed to combat support hospitals (CSH) in these two countries to provide the necessary expertise in the emergent and secondary care of combat casualties wounded in the face, head, and neck. Military otolaryngologist-head and neck surgeons participated in the training of aeromedical medics and flight surgeons who were instrumental in the life-saving transportation of combat casualties through the casualty evacuation (CASEVAC) system in both Iraq and Afghanistan (Figure 1).

Additionally, further tertiary care by otolaryngologist-head and neck surgeons at Landstuhl Regional Medical Center in Germany was provided following their air evacuation from the Theater of Operations. Finally, patients from Germany were transported after stable to one of the US military medical centres closest to their home for quaternary care, usually involving multiple reconstructive procedures for osseous and soft tissue loss in the face or reconstructive surgery of the airway. Experienced military otolaryngologist-head and neck surgeons provided the expertise for these procedures, and in doing so, taught the techniques to many resident physicians in the specialty, who will later become a part of the community and / or academic practice of otolaryngology-head and neck surgery.

Otolaryngology-head and neck surgery as a specialty has become enriched over the course of recent history by the surgical experiences, dedication, and advances made by military practitioners of this specialty. We have always been strongly supported by our otolaryngologist-head and neck surgery veterans and practising otolaryngologist-head and neck surgeons in the community and academia. The continuum of exposure to horrific combat wounds and the ingenuity and surgical expertise in developing novel emergency and reparative techniques exposes the inherent and important interactions between military and civilian otolaryngology-head and neck surgery. We all benefit, but the injured patients benefit the most.

Disclaimer

The views of the author do not necessarily reflect those of the US Army and the US Department of Defense.

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Declaration of Competing Interests
None declared