Surgeons Repair the Ravages of War

Marine Corps Cpl. Aaron P. Mankin tells the story of his facial reconstruction. Mankin survived a bomb blast in Iraq and has had more than 60 surgeries.

Popularized recently by the HBO drama Boardwalk Empire, wartime facial reconstruction surgery has held a place in restoring normalcy to life for countless veterans in the wake of devastating injuries. One might speculate that reconstructive plastic surgery was born in the trenches of World War I, but war is merely the catalyst that has driven this practice into modern maturity.

In actuality, there is evidence to suggest that this medical specialty has been in practice for more than 4,000 years to treat and repair facial injuries. Documentation from as early as 800 B.C.E. shows physicians in India had discovered how to use skin grafts to reconstruct damaged tissue in patients.

World War I
The Great War was, however, the force that shifted the
otherwise slow-moving field into overdrive. Twenty-one million men were wounded in the fighting of World War I, many returning from the battlefield with unprecedented catastrophic facial disfigurements that challenged and overwhelmed an unprepared medical community. Each war sends home soldiers bearing the unique scars of a particularly brutal era of fighting. During World War I, it was the machine gun and the advent of artillery warfare.

British physicians during the war pioneered the early efforts of plastic surgery, often asked to completely reconstruct gaping facial wounds having only the prior experience of repairing a cleft lip. This is truly when the specialty began to take artistic shape, as physicians enlisted the help of sculptors and artists to aid in recreating faces to their closest original likenesses. Sir Harold Gillies, a New Zealander living in Paris, and sculptress Katheen Scott began working together to refine skin-grafting techniques and the aesthetics of the reconstructive work.

It is reported that during a single day in 1916, more than 2,000 combat-wounded patients were sent to Gillies for reconstructive work for facial injuries. Eventually, the 3rd London General Hospital established the Masks for Facial Disfigurement Department to meet the need for many of these men whose injuries were too extensive. It was here at the “Tin Noses Shop,” as soldiers called it, where artists like Francis Derwent Wood and Anna Coleman Ladd would craft specialized metallic prosthetic masks to cover facial wounds that were beyond a surgeon’s capability to repair.

World War II
The U.S. Army Medical Department’s Office of Medical History notes the maturation and specialization of plastic surgery between the span of the First and Second World Wars. At the onset of World War II, the specialty had not yet reached its full function, but two factors had aggressively advanced the field since World War I. The Army credits two decades of
civ­il­ian ex­pe­ri­ence and im­proved pa­tient trans­por­ta­tion fol­low­ing a se­vere in­jury. Ad­dit­tion­ally, the in­tro­duc­tion of chemo­ther­a­py al­lowed for bet­ter treat­ment of in­fec­tion.

Ar­my plastic sur­geons were stag­ed in the the­ater of op­er­a­tions at the evac­u­a­tion hos­pi­tal level to treat com­pound fac­ial in­juries and at gen­eral hos­pi­tals for fol­low-on treat­ment of maxillofa­cial wounds, burns and ex­tre­me soft-tis­sue dam­age. The prin­ci­ple the­ory of treat­ment for war­time fac­ial in­juries, brought for­ward from World War I and the Span­ish Civil War, was to close or par­ti­tion­ally close wounds and re­place mas­sive tis­sue dis­place­ments as soon as pos­si­ble.

By the end of World War II, there were 70 Ar­my plastic sur­geons stag­ed in the the­ater of op­er­a­tions, but due to ad­min­is­tra­tive as­sign­ments only 27 were ac­tu­ally prac­tic­ing clin­i­cal work. At this point, docto­rs had rec­og­nized the crit­i­cal im­por­tance of skin graft­ing to heal ex­ten­sive burn wounds. The Ar­my notes this time pe­ri­od as the start of a “more ag­gres­sive method of war wound man­age­ment,” which began “as soon as the med­i­cal of­fi­cers had an op­por­tu­nity to start tak­ing care of ca­sual­ties.”

Vi­et­nam
Those lessons con­tin­ued to ad­vance bat­tle­field med­i­cine and mil­i­tary sur­gi­cal prac­tices in the years to fol­low. The mod­ern ortho­pedic field, in fact, owes a great deal to the ex­pe­riences of the Ko­rean and Vi­et­name con­flicts, in­clud­ing the idea for the U.S. re­gional tra­uma cen­ter sys­tem. To­day, nine out of 10 wounded ser­vice mem­bers sur­vive com­bat in­juries thanks to bet­ter pro­tec­tive equip­ment and more cap­able and san­i­tary facil­i­ties. Also, the types of in­juries greatly and stead­i­ly shifted from World War I to mod­ern times as ene­mies moved from use of ar­til­lery to use of ex­plo­sives in com­bat. This meant fewer maxillofa­cial wounds but greater like­li­hood of burns and ex­tre­mity dam­age.

Past Na­tion­al Com­man­der Ro­ber­to “Bobby” Bar­ra­ra was just 21
years old, serving with the Marines in Vietnam, when his armored personnel carrier was hit by a 500-pound bomb. Barrera was left with severe burns over 40 percent of his body, as well as amputation of his right hand below the wrist and left arm at the shoulder to stave off deadly infection. Doctors also removed his upper lip to prevent the spread of infection to his sinus cavity, and for months prior to surgery his gums were completely exposed.

For Barrera, it took years to overcome the devastating psychological effects of not only his injury, but also the excruciating burn treatments and the taxing reconstruction process.

“They were able to reconstruct my upper lip through plastic surgery, and I remember asking the technician how many surgeries I had gone through,” said Barrera. “He told me 32. At the point, I decided that was my last one. The doctors tried to talk me out of it, saying there was more they could do, but I was tired. I had enough.”

Post 9/11
Today, plastic surgery is a multi-billion dollar industry with many patients undergoing procedures for cosmetic, rather than reconstructive, reasons. The American Society for Aesthetic Plastic Surgery reports Americans underwent 1.6 million cosmetic procedures in 2010, which represents an increase of more than 155 percent since 1997. With such a high demand and advances in medical technology, plastic surgeons have been able to hone their skills to science-fictional levels where total face transplants are no longer an impossibility.

It has been 43 years since Barrera’s initial injury, and he is now on the waiting list to receive a hand transplant through Johns Hopkins in Baltimore, Md. As soon as a compatible donor becomes available, hopefully sometime this year, Barrera will be flown up immediately for the 12-hour surgery. Barrera said with such little focus on upper extremity amputations, he
never expected the medical field would progress to a point where a full hand transplant would be possible.

“After I was evaluated, I started to have real, legitimate fears,” said Barrera. “What if my body rejects it? But then I remembered I would just be back to where I started. I haven’t really lost anything. So I’m excited and a little afraid, but I’ve accepted it’s something I want to do.”

Programs like Faces of Honor and Operation Mend offer pro bono medical and surgical expertise to veterans in need of reparative facial work for wounds suffered in combat.

Oyoala Allende, a 28-year-old Marine Corps veteran, has undergone four of her 10 reconstructive surgeries through Operation Mend, all at no cost to her. Allende was wounded in Iraq in 2005, when her convoy was hit by a truck loaded with explosives. While she and several other passengers were ejected from the vehicle, five fellow Marines were killed in the rollover and subsequent explosion. Allende was evacuated out of the theater with severe burns to her face, hands and knees.

“When I was first able to open my eyes, I remember seeing my reflection in this girl’s glasses, and I knew it was pretty bad,” said Allende. She underwent six scar revision surgeries at military hospitals before receiving a call to apply for the Operation Mend program.

Part of the program’s strategy is to offer more than repairs on the surface level. They also provide mental health support, examination and treatment of reproductive issues, urologic treatment and airway repairs.

Since the earliest days of desperate improvisation to the most modern and sophisticated methods of reconstructive surgery, the role of war is undeniably linked to prosthetology. There is also no telling what advances in medicine today will yield for veterans in the future. While a great deal of knowledge
has transferred from civilian medicine to the battlefield, the unique nature of combat injuries often does more to challenge and advance the field.

While modern plastic surgery may, in some cases, be an attempt to achieve “perfection,” a wounded veteran will likely tell you it’s more about simply achieving a level of comfortability and confidence lost with a traumatic injury. That is a long road for many, lined with countless surgeries.

“It’s when you start to get comfortable that you can see the progress. It does something to you,” said Allende. “Right now, I’m at a point where I feel like if I don’t have any more procedures, I know I’ll be okay.”