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Struggling Back From War’s Once-Deadly Wounds

By DENISE GRADY

PALO ALTO, Calif. - It has taken hundreds of hours of therapy, but Jason Poole, a 23-year old Marine corporal, has learned all over again to speak and to walk. At times, though, words still elude him. He can read barely 16 words a minute. His memory can be fickle, his thinking delayed. Injured by a roadside bomb in Iraq, he is blind in his left eye, deaf in his left ear, weak on his right side and still getting used to his new face, which was rebuilt with skin and bone grafts and 75 to 100 titanium screws and plates.

Even so, those who know Corporal Poole say his personality - gregarious, kind and funny - has remained intact. Wounded on patrol near the Syrian border on June 30, 2004, he considers himself lucky to be alive. So do his doctors. “Basically I want to get my life back,” he said. “I’m really trying.”

But he knows the life ahead of him is unlikely to match the one he had planned, in which he was going to attend college and become a teacher, get married and have children. Now, he hopes to volunteer in a school. His girlfriend from before he went to war is now just a friend. Before he left, they had agreed they might talk about getting married when he got back.

“But I didn’t come back,” he said.

Men and women like Corporal Poole, with multiple devastating injuries, are the new face of the wounded, a singular legacy of the war in Iraq. Many suffered wounds that would have been fatal in earlier wars but were saved by helmets, body armor, advances in battlefield medicine and swift evacuation to hospitals. As a result, the survival rate among Americans hurt in Iraq is higher than in any previous war - seven to eight survivors for every death, compared with just two per death in World War II.

But that triumph is also an enduring hardship of the war. Survivors are coming home with grave injuries, often from roadside bombs, that will transform their lives: combinations of damaged brains and spinal cords, vision and hearing loss, disfigured faces, burns, amputations, mangled limbs, and psychological ills like depression and post-traumatic stress.

Dr. Alexander Stojadinovic, the vice chairman of surgery at Walter Reed Army Medical Center, said, “The wounding patterns we see are similar to, say, what Israel will see with terrorist bombings - multiple complex woundings, not just a single body site.”

[American deaths in Iraq numbered 2,225 as of Jan. 20. Of 16,472 wounded, 7,625 were listed as unable to return to duty within 72 hours. As of Jan. 14, the Defense Department reported, 11,852 members of the military had been wounded in explosions - from so-called improvised explosive devices, or I.E.D.’s, mortars, bombs and grenades.]

So many who survive explosions - more than half - sustain head injuries that doctors say anyone exposed to a blast should be checked for neurological problems. Brain damage, sometimes caused by skull-penetrating fragments, sometimes by shock waves or blows to the head, is a recurring theme.



Tyler Hicks/The New York Times

Cpl. Jason Poole, recovering from war wounds, practiced riding buses to a hospital in Palo Alto, Calif., with Paul Johnson, left.

More than 1,700 of those wounded in Iraq are known to have brain injuries, half of which are severe enough that they may permanently impair thinking, memory, mood, behavior and the ability to work.

Medical treatment for brain injuries from the Iraq war will cost the government at least \$14 billion over the next 20 years, according to a recent study by researchers at Harvard and Columbia.

Jill Gandolfi, a co-director of the Brain Injury Rehabilitation Unit of the Veterans Affairs Palo Alto Health Care System, where Corporal Poole is being treated, said, “We are looking at an epidemic of brain injuries.”

The consequences of brain injury are enormous. Penetrating injuries can knock out specific functions like vision and speech, and may eventually cause epilepsy and increase the risk of dementia. What doctors call “closed-head injuries,” from blows to the head or blasts, are more likely to have diffuse effects throughout the brain, particularly on the frontal lobes, which control the ability to pay attention, make plans, manage time and solve problems.

Because of their problems with memory, emotion and thinking, brain-injured patients run a high risk of falling through the cracks in the health care system, particularly when they leave structured environments like the military, said Dr. Deborah Warden, national director of the Defense and Veterans Brain Injury Center, a government program created in 1992 to develop treatment standards for the military and veterans.

THE WOUNDED

Surviving Multiple Injuries

So many military men and women are returning with head injuries combined with other wounds that the government has designated four Veterans Affairs hospitals as “polytrauma rehabilitation centers” to take care of them. The Palo Alto hospital where Corporal Poole is being treated is one.

“In Vietnam, they’d bring in a soldier with two legs blown off by a mine, but he wouldn’t have the head injuries,” said Dr. Thomas E. Bowen, a retired Army general who was a surgeon in the Vietnam War and who is now chief of staff at the veterans hospital in Tampa, Fla., another polytrauma center. “Some of the patients we have here now, they can’t swallow, they can’t talk, they’re paralyzed and blind,” he said.

Other soldiers have been sent home unconscious with such hopeless brain injuries that their families have made the anguished decision to take them off life support, said Dr. Andrew Shorr, who saw several such patients at Walter Reed.

Amputations are a feature of war, but the number from Iraq - 345 as of Jan. 3, including 59 who had lost more than one limb - led the Army to open a new amputation center at Brooke Army Medical Center in San Antonio in addition to the existing center at Walter Reed. Amputees get the latest technology, including \$50,000 prosthetic limbs with microchips.

Dr. Mark R. Bagg, head of orthopedic

surgery at Brooke, said, “The complexity of the injuries has been challenging - horrific blast injuries to extremities, with tremendous bone loss and joint, bone, nerve, arterial and soft tissue injuries.”

It is common for wounded men and women to need months of rehabilitation in the hospital. Some, like Corporal Poole, need well over a year, and will require continuing help as outpatients. Because many of these veterans are in their 20’s or 30’s, they will live with their disabilities for decades. “They have to reinvent who they are,” said Dr. Harriet Zeiner, a neuropsychologist at the Palo Alto veterans center.

No Memory of the Blast

Corporal Poole has no memory of the explosion or even the days before it, although he has had a recurring dream of being in Iraq and seeing the sky suddenly turn red.

Other marines have told him he was on a foot patrol when the bomb went off. Three others in the patrol - two Iraqi soldiers and an interpreter - were killed. Shrapnel tore into the left side of Corporal Poole’s face and flew out from under his right eye. Metal fragments and the force of the blast fractured his skull in multiple places and injured his brain, one of its major arteries, and his left eye and ear. Every bone in his face was broken. Some, including his nose and portions of his eye sockets, were shattered. Part of his jawbone was pulverized.

“He could easily have died,” said Dr. Henry L. Lew, an expert on brain injury and the medical director of the rehabilitation center at the Palo Alto veterans

hospital. Bleeding, infection, swelling of the brain - any or all could have killed someone with such a severe head injury, Dr. Lew said.

Corporal Poole was taken by helicopter to a military hospital in Iraq and then flown to one in Germany, where surgeons cut a plug of fat from his abdomen and mixed it with other materials to seal an opening in the floor of his skull.

He was then taken to the National Naval Medical Center in Bethesda, Md. His parents, who are divorced, were flown there to meet him - his father, Stephen, from San Jose, Calif., and his mother, Trudie, from Bristol, England, where Jason was born. Jason, his twin sister, Lisa, and a younger brother, David, moved to Cupertino, Calif., with their father when Jason was 12.

His interest in the Marine Corps started in high school, where he was an athlete and an actor, a popular young man with lots of friends. He played football and won gold medals in track, and had parts in school plays. When Marine recruiters came to the school and offered weekend outings with a chance to play sports, Corporal Poole happily took part. He enlisted after graduating in 2000.

“We talked about the possibility of war, but none of us thought it was really going to happen,” said his father, who had to sign the enlistment papers because his son was only 17. Jason Poole hoped the Marines would help pay for college.

His unit was among the first to invade Iraq. He was on his third tour of duty there, just 10 days from coming home and leaving the Marines, when he was wounded in the explosion.

A week later, he was transferred to Bethesda, still in a coma, and his parents were told he might never wake up.

“I was unconscious for two months,” Corporal Poole said in a recent interview at the V.A. center in Palo Alto. “One month and 23 days, really. Then I woke up and came here.”

He has been a patient at the center since September 2004, mostly in the brain injury rehabilitation unit. He arrived unable to speak or walk, drooling, with the left side of his face caved in, his left eye blind and sunken, a feeding tube in his stomach and an opening in his neck to help him breathe.

“He was very hard of hearing, and sometimes he didn’t even know you were in the room,” said Debbie Pitsch, his physical therapist.

Damage to the left side of his brain had left him weak on the right, and he tended not to notice things to his right, even though his vision in that eye was good. He had lost his sense of smell. The left side of the brain is also the home of language, and it was hard for him to talk or comprehend speech. “He would shake his head no when he meant yes,” said Dr. Zeiner, the neuropsychologist. But he could communicate by pointing. His mind was working, but the thoughts were trapped inside his head.

An array of therapists - speech, physical, occupational and others - began working with him for hours every day. He needed

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an ankle brace and a walker just to stand at first. His balance was way off and, because of the brain injury, he could not tell where his right foot was unless he could see it. He often would just drag it behind him. His right arm would fall from the walker and hang by his side, and he would not even notice. He would bump into things to his right. Nonetheless, on his second day in Palo Alto, he managed to walk a few steps.

"He was extremely motivated, and he pushed himself to the limit, being a marine," Ms. Pitsch said. He was so driven, in fact, that at first his therapists had to strap him into a wheelchair to keep him

"We said, 'Jason, you're sweating. You have to get used to how you look,'" Dr. Zeiner said.

"He was an incredibly handsome guy," she said. "His twin sister is a beautiful woman. He was the life of the party. He was funny. He could have had any woman, and he comes back and feels like now he's a monster."

Gradually, he came out of wraps and tried to make peace with the image in the mirror. But his real hope was that somehow his face could be repaired.

Reconstructive surgery should have been done soon after the explosion, before broken bones could knit improperly. But the blast had caused an artery in Corporal Poole's skull to balloon into an aneurysm,

Dr. Lorenz also repaired Corporal Poole's caved-in left cheek and forehead by implanting a protein made from human skin that would act as a scaffolding and be filled in by Corporal Poole's own cells.

Later, he was fitted with a false eye to fill out the socket where his left eye had shriveled.

Some facial scars remain, the false eye sometimes looks slightly larger than the real one, and because of a damaged tear duct, Corporal Poole's right eye is often watery. But his smile is still brilliant.

In a recent conversation, he acknowledged that the results of the surgery were a big improvement. When asked how he felt about his appearance, he shrugged and said, "I'm not good-looking but I'm still

expressions like "basically" and "blah, blah, blah."

"I thought he would do well," Ms. Klein said. "I didn't think he'd do as well as he is doing. I expect measurable gains over the next year or so."

With months of therapy, his reading ability has gone from zero to a level somewhere between second and third grade. He has to focus on one word at a time, he said. A page of print almost overwhelms him. His auditory comprehension is slow as well.

"It will take a bit of time," Corporal Poole said, "but basically I'm going to get there."

One evening over dinner, he said: "I feel so old." Not physically, he said, but mentally and emotionally.

On a recent morning, Ms. Gandolfi of the brain injury unit conducted an exercise in thinking and verbal skills with a group of patients. She handed Corporal Poole a sheet of paper that said, "Dogs can be taught how to talk." A series of questions followed. What would be the benefits? Why could it be a problem? What would you do about it?

Corporal Poole hunched over the paper, pen in hand. He looked up. "I have no clue," he said softly.

"Let's ask this one another way," Ms. Gandolfi said. "What would be cool about it?"

He began to write with a ballpoint pen, slowly forming faint letters. "I would talk to him and listen to him," he wrote.

In another space, he wrote: "lonely the dog happy." But what he had actually said to Ms. Gandolfi was: "I could be really lonely and this dog would talk to me."

Some of his responses were illegible. He left one question blank. But he was performing much better than he did a year ago.

He hopes to be able to work with children, maybe those with disabilities. But, Dr. Zeiner said, "He is not competitively employable."

His memory, verbal ability and reading are too impaired. He may eventually read well enough to take courses at a community college, but, she said, "It's years away."

Someday, he might be able to become a teacher's aide, she said. But he may have to work just as a volunteer and get by on his military benefits of about \$2,400 a month. He will also receive a \$100,000 insurance payment from the government.

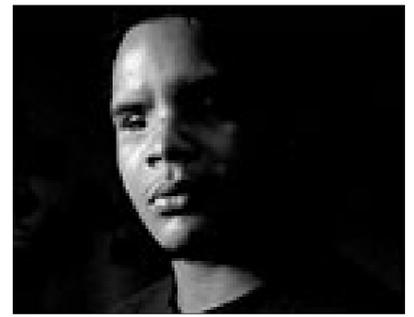
"People whose brains are shattered, it's incredible how resilient they are," Dr. Zeiner said. "They keep trying. They don't collapse in despair."

Back in the World

In mid-December, Corporal Poole was finally well enough to leave the hospital. With a roommate, he moved into a two-bedroom apartment in Cupertino, the town where Corporal Poole grew up. His share of the rent is \$800 a month. But he had not lived outside a hospital in 18 months, and it was unclear how he would fare on his own.

"If he's not able to cope with the outside world, is there anywhere for him to go, anyone there to support him if it doesn't go well?" asked his mother, who still lives in Bristol, where she is raising her three younger children. "I think of people from Vietnam who wound up on the streets, or mental patients, or in prison."

He still needs therapy - speech and other types - several times a week at Palo Alto and that requires taking three city buses twice a day. The trip takes more than an hour, and he has to decipher schedules and cross hair-raising intersections on



Tyler Hicks/The New York Times

Cpl. Poole, 23, sustained a severe brain injury when he was wounded in Iraq. He arrived at a rehabilitation center in California unable to speak or walk, the left side of his face caved in, his left eye blind and sunken, a feeding tube in his stomach and an opening in his neck to help him breathe.

boulevards with few pedestrians. It is an enormous step, not without risk: people with a brain injury have increased odds of sustaining another one, from a fall or an accident brought about by impaired judgment, balance or senses.

In December, Corporal Poole practiced riding the buses to the hospital with Paul Johnson, a co-director of the brain injury unit. As they crossed a busy street, Mr. Johnson gently reminded him, several times, to turn and look back over his left shoulder - the side on which he is blind - for cars turning right.

After Corporal Poole and Mr. Johnson had waited for a few minutes at the stop, a bus zoomed up, and Corporal Poole ambled toward the door.

"Come on!" the driver snapped.

Corporal Poole watched intently for buildings and gas stations he had picked as landmarks so he would know when to signal for his stop.

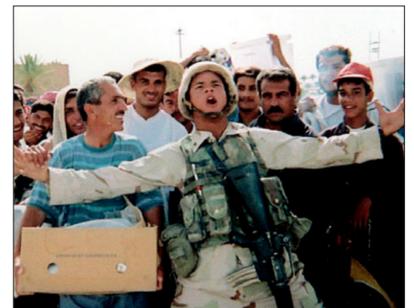
"I'm a little nervous, but I'll get the hang of it," he said.

He was delighted to move into his new apartment, pick a paint color, buy a couch, a bed and a set of dishes, and eat something besides hospital food. With help from his therapists in Palo Alto, he hopes to take a class at a nearby community college, not an actual course, but a class to help him to learn to study and prepare for real academic work. Teaching, art therapy, children's theater and social work all appeal to him, even if he can only volunteer.

Awaiting his formal release from the military, Corporal Poole still hopes to get married and have children.

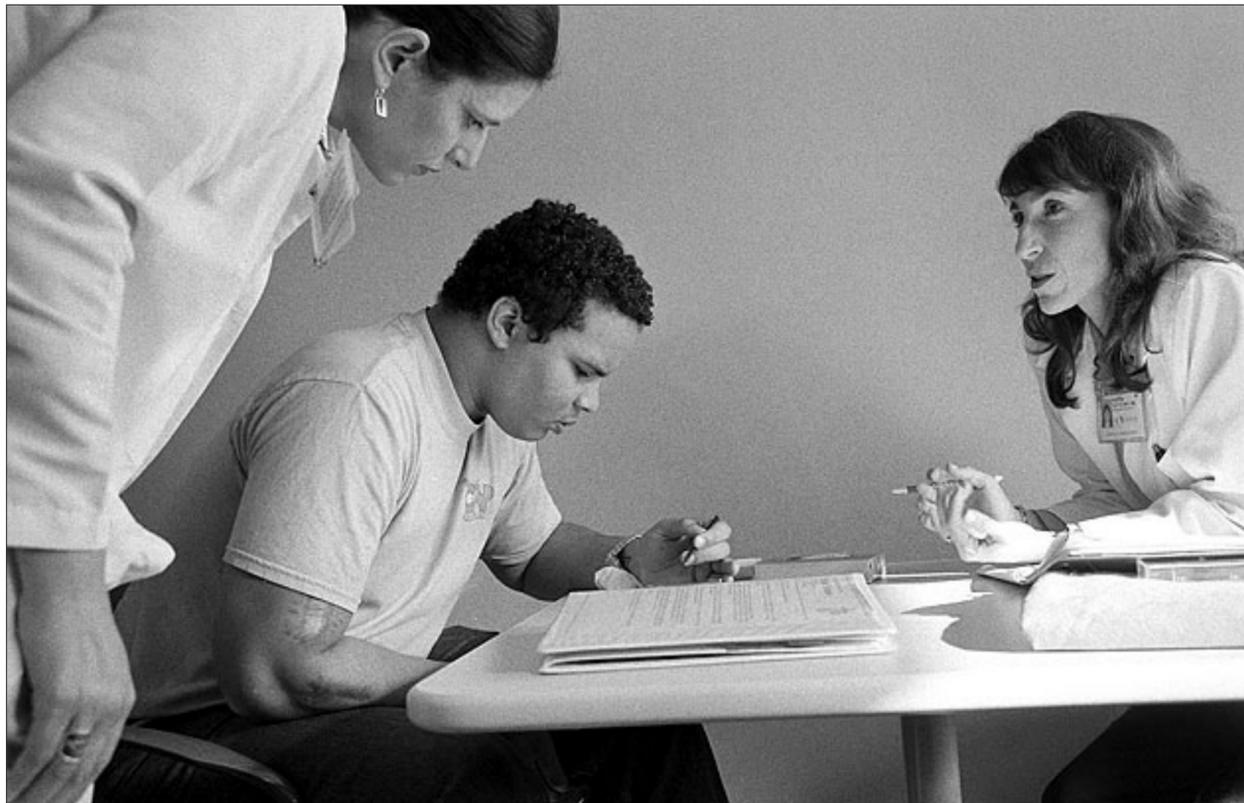
That hope is not unrealistic, Dr. Zeiner said. Brain injuries can cause people to lose their ability to empathize, she said, and that kills relationships. But Corporal Poole has not lost empathy, she said. "That's why I think he will find a partner."

Corporal Poole said: "I think something really good is going to happen to me."



Poole family photo

Corporal Poole in a light moment with Iraqis before he was severely wounded by a roadside blast while on patrol in 2004. Those who know him describe him as gregarious, kind and funny and say his personality has remained intact.



Tyler Hicks/The New York Times

Corporal Poole works with Evi Klein, left, and Karen Kopolnek, speech pathologists, at the Veterans Affairs Palo Alto Health Care System. At first, Ms Klein said, Corporal Poole was unable to answer a question with more than one or two words.

from trying to get up and walk without help.

By the last week of September, he was beginning to climb stairs. He graduated from a walker to a cane to walking on his own. By January he was running and lifting weights.

"It's not his physical recovery that's amazing," his father said. "It's not his mental recovery. It's his attitude. He's always positive. He very rarely gets low. If it was me I'd fall apart. We think of how he was and what he's had taken from him."

Corporal Poole is philosophical. "Even when I do get low it's just for 5 or 10 minutes," he said. "I'm just a happy guy. I mean, like, it sucks, basically, but it happened to me and I'm still alive."

A New Face

"Jason was definitely a ladies' man," said Zillah Hodgkins, who has been a friend for nine years.

In pictures from before he was hurt, he had a strikingly handsome face and a powerful build. Even in still photographs he seems animated, and people around him - other marines, Iraqi civilians - are always grinning, apparently at his antics.

But the explosion shattered the face in the pictures and left him with another one. In his first weeks at Palo Alto, he hid behind sunglasses and, even though the weather was hot, ski caps and high turtle-necks.

and an operation could have ruptured it and killed him. By November 2004, however, the aneurysm had gone away.

Dr. H. Peter Lorenz, a plastic surgeon at Stanford University Medical Center, planned several operations to repair the damage after studying pictures of Corporal Poole before he was injured. "You could say every bone in his face was fractured," Dr. Lorenz said.

The first operation took 14 hours. Dr. Lorenz started by making a cut in Corporal Poole's scalp, across the top of his head from ear to ear, and peeling the flesh down over his nose to expose the bones. To get at more bone, he made another slit inside Corporal Poole's mouth, between his upper lip and his teeth, and slipped in tools to lift the tissue.

Many bones had healed incorrectly and had to be sawed apart, repositioned and then joined with titanium pins and plates. Parts of his eye sockets had to be replaced with bone carved from the back of his skull. Bone grafts helped to reposition Corporal Poole's eyes, which had sunk in the damaged sockets.

Operations in March and July repaired his broken and dislocated jaw, his nose and damaged eyelids and tear ducts. He could not see for a week after one of the operations because his right eye had been sewn shut, and he spent several weeks unable to eat because his jaws had been wired together.

Jason Poole, so let's go."

But he catches people looking at him as if he is a "weird freak," he said, mimicking their reactions: a wide eyed stare, then the eyes averted.

"I wish they would ask me what happened," he said. "I would tell them."

Learning to Speak

Evi Klein, a speech therapist in Palo Alto, said that when they met in September 2004 Corporal Poole could name only about half the objects in his room.

"He had words, but he couldn't pull together language to express his thoughts," Ms. Klein said. "To answer a question with more than one or two words was beyond his capabilities."

Ms. Klein began with basics. She would point to items in the room. What's this called? What's that? She would show him a picture, have him say the word and write it. He would have to name five types of transportation. She would read a paragraph or play a phone message and ask him questions about it. Very gradually, he began to speak. But it was not until February that he could string together enough words for anyone to hear that he still had traces of an English accent.

Today, he is fluent enough that most people would not guess how impaired he was. When he has trouble finding the right word or loses the thread of a conversation, he collects himself and starts again. More than most people, he fills in the gaps with