

Docs optimistic, but Giffords in for long recovery

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Dr. G. Michael Lemole, Jr., left, speaks about the condition of U.S. Rep. Gabrielle Giffords, D-Ariz., as Dr. Peter Rhee looks on at University Medical Center during a news conference in Tucson, Ariz., Sunday, Jan. 9, 2011. Giffords was shot in the head the Saturday during a speech at a local supermarket. (AP Photo/Chris Carlson)

(AP) -- Recovering from a gunshot wound to the head depends on the bullet's path, and while doctors are optimistic about Rep. Gabrielle Giffords' odds, it can take weeks to months to tell the damage.

Doctors say the bullet traveled the length of the left side of the Arizona congresswoman's brain, entering the back of the skull and exiting the front.

Fortunately, it stayed on one side of her brain, not hitting the so-called "eloquent areas" in the brain's center where such wounds almost always prove fatal.

Importantly, Giffords was responding nonverbally Sunday to simple commands in the emergency room - things like "squeeze my hand."

That implies "a very high level of functioning in the brain," said Dr. Michael Lemole of Tucson's University Medical Center, Giffords' [neurosurgeon](#).

Now, her biggest threat is brain swelling. Surgeons removed half of her skull to give the tissues room to expand without additional bruising, Lemole said.

That bone is being preserved and can be reimplanted once the swelling abates, a technique the military uses with war injuries, added his colleague and trauma surgeon Dr. Peter Rhee.

Adding to Giffords' good prospects is that paramedics got her to the [operating room](#) in 38 minutes, her doctors said. Now she is being kept in a medically induced coma, deep sedation that rests her brain. It requires a [ventilator](#), meaning she cannot speak. Doctors periodically lift her sedation to do tests and said she continues to respond well to commands.

The brain's left side does control speech abilities and the movement and sensation of the body's right side, Lemole noted. But he wouldn't speculate on lasting damage, saying, "we've seen the full gamut" in such trauma.

That's the mystery of [brain injury](#): There's no way to predict just how much disability a wound that traverses multiple regions will leave, because our [neural connections](#) are so individual.

"The same injury in me and you could have different effects," said Dr. Bizhan Aarabi, chief of neurotrauma at the University of Maryland's Shock Trauma Center, who has long studied penetrating brain injuries.

"The belief is if you get shot in the head, you're dead, but it isn't like that," agreed the University of Miami's Dr. Ross Bullock, chief of neurotrauma at Jackson Memorial Hospital. He cared for a man shot in the head with an AK-47 who two years later is back to work full-time and "a normal person."

"Every patient is an individual and more so with a gunshot than anything else," he said.

There are few statistics, but doctors agree that well over 90 percent of [gunshot](#) wounds to the head are fatal. Aarabi cited his own study of 600 Maryland cases that found 95 percent were dead before arriving at the hospital.

Survivors have something in common with Giffords, Aarabi said: A good "Glasgow coma score," a way to measure responsiveness, upon arriving at the hospital. That pre-surgery outlook is important because doctors can't reverse the bullet's damage, just remove fragments to fight infection and swelling. Giffords' surgeons said they didn't have to remove a lot of dead brain tissue.

The amount of disability depends on how much damage is done to what [brain](#) region. A bullet that crosses into both sides, or hemispheres, can leave extensive lasting damage. That's what happened with James Brady, President Ronald Reagan's press secretary, who was left with slurred speech and uses a wheelchair after being shot during the 1981 assassination attempt on Reagan.

In contrast, one of neurology's most famous cases was Phineas Gage who

in 1848 survived a 3-foot iron rod blasting into his skull but suffered personality changes from damage to the prefrontal cortex.

It can take weeks to tell the extent of damage, and months of intense rehabilitation to try to spur the brain's capacity to recover. In addition, more than half of survivors go on to suffer seizures and need anti-epilepsy medication, Miami's Bullock said.

"We talk about recovery in months to years," said Griffords' surgeon Lemole.

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