

Birds-Eye View Animation of a Mild Traumatic Brain Injury In a Car Crash

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Video Link: <http://www.brainline.org/content/multimedia.php?id=846>

Narrator: In addition to the deceleration forces rotational forces are typically involved in most collisions. The combination of rotational and deceleration forces results in traumatic forces on the brain that may be far greater than the force of the collision may imply. This combination of forces is very similar to combining cold temperatures with high winds. Either alone may be tolerable, but when temperatures of 30 degrees are combined with winds of 30 miles per hour the net effect can be quite chilling.

When the skull and brain are viewed in section from above, it can be seen that the brain consists of two halves that are connected by only a few central structures. One of these structures is called the corpus Collosum. The Corpus Collosum consists of axons, that allow for communication between opposite sides of the brain. The front of the Corpus Collosum is called the Genu. The two halves of the brain are separated by a tough, ligamented structure called the Falx. The Falx is rigidly fixed to the skull in the front back top and bottom of the skull.

During the violence in the impact involving the combined sudden deceleration and rotational forces, similar to the one shown in earlier animation sequences, the corpus Collosum can often become injured. The injuries occur because the soft, friable brain reacts in a fluid like way as a result of the violent forces.

The left side of the brain impacts against the Falx, and the right side of the brain pulls away from the Falx. Because the Falx is rigid, the axons that comprise the Corpus Collosum are torn and broken, again thousands of axons may be torn without being evident on imaging studies.