

Traumatic intracerebral hemorrhage epidemiology

Intracerebral hemorrhage or contusion occurs in up to 15% of the patients with traumatic brain injury (TBI)

Contusion occurs in 20–30% of severe head injuries.

TICH usually produce a much less mass effect than their apparent size. Most commonly occur in areas where sudden deceleration of the head causes the brain to impact on bony prominences (e.g. temporal, frontal and occipital poles) in coup or contrecoup fashion. TICH often enlarge and/or coalesce with time as seen on serial CTs. They also may appear in a delayed fashion. Surrounding low density may represent associated cerebral edema. CT scans months later often show surprisingly minimal or no [encephalomalacia](#).

Traumatic intracerebral hemorrhage (TICH) represents 13-48% of the lesions after a [traumatic brain injury](#) (TBI). The frequency of TICH-hemorrhagic progression (TICH-HP) is estimated to be approximately 38-63%. The relationship between the impact site and TICH location has been described in many autopsy-based series. This association, however, has not been consistently demonstrated since the introduction of computed tomography (CT) for studying TBI. This study aimed to determine the association between the impact site and TICH location in patients with moderate and severe TBI. We also analyzed the associations between the TICH location, the impact site, the production mechanism ([coup](#) or [contrecoup](#)), and hemorrhagic progression. We retrospectively analyzed the records of 408 patients after a moderate or severe TBI between January 2010 and November 2014. We identified 177 patients with a total of 369 TICHs. We found a statistically significant association between frontal TICHs and impact sites located on the anterior area of the head (OR 5.8, $p < 0.001$). The temporal TICH location was significantly associated with impact sites located on the posterior head area (OR 4.9, $p < 0.001$). Anterior and lateral TICHs were associated with impact sites located at less than 90 degrees (coup) (OR 1.64, $p = 0.03$) and more than 90 degrees (contrecoup), respectively. Factors independently associated with TICH-HP obtained through logistic regression included an initial volume of <1 cc, cisternal compression, falls, acute subdural hematoma, multiple TICHs, and contrecoup TICHs. We demonstrated a significant association between the TICH location and impact site. The contrecoup represents a risk factor independently associated with hemorrhagic progression ¹⁾.

A cerebral laceration is a similar injury except that, according to their respective definitions, the pia-arachnoid membranes are torn over the site of injury in laceration and are not torn in contusion.

The injury can cause a decline in mental function in the long term and in the emergency setting may result in brain herniation, a life-threatening condition in which parts of the brain are squeezed past parts of the skull.

¹⁾

Cepeda S, Gómez PA, Castaño-Leon AM, Munarriz PM, Paredes I, Lagares A. Contrecoup Traumatic Intracerebral Hemorrhage: A Geometric Study of the Impact Site and Association with Hemorrhagic Progression. J Neurotrauma. 2016 Jun 1;33(11):1034-46. doi: 10.1089/neu.2015.4153. PubMed PMID: 26391755.

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