**Supplement Methods**

**TBI recurrence**

Recurrence of TBI (defined as composite of TBI admission or fatal TBI) was studied in a subgroup of patients with index TBI admission during follow-up. A recurrent TBI admission was defined as a ward-treatment period with ICD-10 code S06.* as the primary diagnosis. A fatal TBI was defined as S06.* as any cause of death. Patients who deceased within 30 days after discharge from index TBI were excluded. Follow-up began 30 days after discharge from an index TBI admission and lasted for a maximum of 10-years. The median follow-up was 2.0 years (IQR 0.6-4.6). The analysis included 1295 patients with index TBI admission of whom 930 had epilepsy and 365 were non-epileptic.

**Statistical analysis**

Outcome was studied using the Kaplan-Meier estimator and Cox regression with cause-specific design. Additional sensitivity analysis was performed with the cumulative incidence function and the Fine-Gray model accounting for competing risk by non-endpoint-specific death. The results are presented as median, percentage, hazard ratio (HR), or sub-distribution HR (sHR) with a 95% CI or IQR. Statistical significance was inferred at p < 0.05. SAS version 9.4 (SAS Institute Inc., Cary, NC, USA) was used for the analyses.

**Supplement Results**

A recurrent TBI occurred in 216 patients (174 with epilepsy) during the 10-year follow-up period after the index TBI. The cumulative recurrence rate of TBI in patients with epilepsy was 14.5% at 1 year, 23.0% at 5 years, and 30.9% at 10 years after index TBI (Supplement Figure). The corresponding recurrence rates in non-epileptic TBI survivors were 8.1%, 15.8%, and 15.8%, respectively. Epilepsy was associated with recurrence of TBI at HR 1.72 (CI 1.23-2.41; p=0.002) during follow-up after index event when compared with non-epileptic TBI patients. The results of the competing risk analysis agreed with the cause-specific analysis (Supplement Figure). The cumulative incidence of TBI recurrence was 24.1% in patients with epilepsy and 13.7% in non-epileptic patients at 10 years after index event (sHR 1.69; CI 1.21-2.36; p=0.002).

**Figure legend**

Supplement Figure. Recurrence of traumatic brain injury (TBI) after index TBI admission, cause-specific (A) and competing risk (B) analyses, in patients with adult-onset epilepsy and in non-epileptic controls. Dashed lines represent 95% confidence intervals.
Supplement Figure. Recurrence of traumatic brain injury (TBI) after index TBI admission, cause-specific (A) and competing risk (B) analyses, in patients with adult-onset epilepsy and in non-epileptic controls. Dashed lines represent 95% confidence intervals.