

# Epidemiology of Brachial Plexus Injuries in a Multi-trauma Population: A 10-year Retrospective Analysis

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## Introduction:

The rate of occurrence of brachial plexus injuries (BPI) in the US population is largely unknown. Estimates based on data from Canada cite an incidence rate of traumatic BPI at 1.2% for all patients admitted to a regional trauma facility. We speculate that currently available data are not representative of actual rates of BPI and associated injury patterns.

## Methods:

Harborview Medical Center (Seattle, WA) Trauma Registry was queried using the ICD-9/10 code for injury to brachial plexus. Traumatic cases of BPI from year 2005-2016 were identified. Patient demographics, survival data, hospital and ICU length of stay as well as injury severity score (ISS) were recorded. Demographic data analysis and correlation of ISS with demographic variables were calculated.

## Results:

- 60,101 polytrauma subjects identified.
- 159 subjects presented with BPI.
- **Incidence of BPI in polytrauma population is 0.26%.**

### Demographics:

82% were male  
mean subject age was  $34.6 \pm 15.2$  years.  
Younger age groups predominated.  
77% identified as "White" while 13% identified as "Hispanic" and 5% "Black".

### Insurance:

Medicare/Medicaid 30%  
private/commercial insurance 29%  
self-pay constituted 20% of subjects

### Mechanism:

Motorcycle collision (31%), motor vehicle collision (MVC, 23%), and firearm injuries (13%).  
Blunt trauma (82%).

### Injury severity:

62% had ISS ranging from 1-26  
32% had scores ranging from 27-47 and 6% had scores ranging from 48-75.

62% required ICU admission with an average ICU length of stay of 4.9 days.  
Overall average hospital length of stay was 13.6 days.

BPI related to MVC had the highest ISS ( $30 \pm 15.0$ ) while those who had a fall had the lowest scores ( $17.3 \pm 12.4$ ) ( $p=0.03$ ).

Those with blunt trauma had higher ISS than those with penetrating trauma ( $29.0 \pm 13.3$  vs  $22.8 \pm 13.1$ , respectively) ( $p=0.03$ ).

### Conclusion:

Our study represents the first large scale retrospective BPI review in the US illustrating that these injuries are less common and collectively more severe based on ISS. These data suggest more robust data collection and analysis of these injuries are needed.