Department of Surgery
2026 Research Day
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Title:
Impact of the COVID-19 Pandemic and Vaccination on Bell's Palsy: A Retrospective Comprehensive Analysis Using TriNetX Data

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Background:
Bell's palsy (BP) is an acute idiopathic facial paralysis that has been reported after coronavirus disease 2019 (COVID-19). Evidence regarding the relationship between COVID-19 and BP and the effect of vaccination on BP is inconsistent. This study sought to evaluate the incidence and prevalence of BP before and after the COVID-19 pandemic and to assess whether COVID-19 vaccination influences BP occurrence.

Methods:
Data were obtained from the TriNetX global health research network, specifically the US Collaborative Network comprising 68 healthcare organizations and nearly 100 million patients. BP cases were identified using ICD-10 code G51.0, while COVID-19 vaccinations and infections were captured using CPT codes and TNX Curated 9088. Annual incidence and prevalence of BP were calculated from 2016 through 2024. Incidence and prevalence were compared between the prepandemic (2016–2020) and pandemic/postpandemic (2020–2024) periods using odds ratios. Additional analyses examined BP incidence among COVID-19–positive individuals and among vaccinated versus unvaccinated individuals. Propensity score matching using the greedy nearest neighbor method matched cohorts on age, sex, race, type 2 diabetes mellitus, and vascular comorbidities.

Results (or Preliminary Results):
BP incidence and prevalence trended upward from 2016 to 2024. The incidence proportion increased from 48 cases per 100,000 people in 2016–2017 to 69 per 100,000 by 2023–2024; the incidence rate rose from 0.00000155 to 0.00000333. Prevalence climbed from 228 to 434 cases per 100,000 people. The increases in incidence and prevalence were statistically significant. Comparing prepandemic to pandemic/postpandemic periods, incidence and prevalence were significantly higher ($p \approx 0.0074$ and $p = 0.0180$, respectively). Among COVID-19–positive individuals, the incidence proportion remained stable while prevalence rose, indicating a greater burden. After propensity score matching, vaccinated individuals exhibited a lower risk of BP compared to unvaccinated individuals (hazard ratio 0.723, 95% CI 0.618–0.84, $p < 0.001$).

Conclusions (or Preliminary Conclusions):
BP incidence and prevalence increased during the COVID-19 pandemic compared with the prepandemic era. BP remains more prevalent among COVID-positive patients despite a stable

incidence proportion. After adjusting for potential confounders, COVID-19 vaccination was associated with significantly lower BP risk. These findings suggest a protective association of vaccination, whereas lifestyle changes and other pandemic-related stressors may underlie the rising BP prevalence in the general population.