

5th World Congress on Clinical Surgery and Anesthesia

November 21, 2022 | Webinar

Received date: 03-08-2022 | Accepted date: 04-08-2022 | Published date: 05-12-2022



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Length of preoperative hospital stay is the dominating risk factor for surgical site infection in neurosurgery: A cohort data-driven analysis

Background: The number of days of Preoperative Hospital Stay (PHS) is a modifiable variable that has shown contradictory Surgical Site Infection (SSI) risk factor results in neurosurgery. We sought to pinpoint the day of PHS length related with a marked increase of risk of SSI.

Methods: From a tertiary teaching hospital, January 2015–December 2017, prospectively collected non-percutaneous neurosurgery procedures with standard antibiotic prophylaxis and 1-year follow-up were evaluated. SSI risk factors were assessed through multiple logistic regression models with different thresholds of PHS.

Results: A total of 1012 procedures were included in the study. Incidence of SSI was 4.4%. The median PHS was higher in those with SSI than in those without (1 day, Interquartile Range [IQR]: 7 vs. 0 days, IQR: 1, respectively, $P = 0.002$). By the amount of six days of PHS, this exposure risk past the threshold of significance for impact on wound infection (OR 2.8; CI 1.23–6.39, $P = 0.014$). Operative time past 4 h (OR 2.11; CI 1.12–3.98; $P = 0.021$), and in some models, previous surgery at same admission were also identified by multivariate analysis as increasing postoperative SSI risk.

Conclusion: The gradual increase of the SSI OR associated with longer PHS days was the highest risk factor of SSI in our cohort of patients. Studies directed to reduce this complication should consider the PHS.

Keywords: Antibiotic prophylaxis, Hospitalization, Neurosurgery, Preoperative period, Risk factor, surgical site infection.

Recent Publications

1. Cediel EG, Boerwinkle VL, Ramon JF, Arias D, De la Hoz-Valle JA, Mercado JD, Cohen D, Niño MC. Length of preoperative hospital stay is the dominating risk factor for surgical site infection in neurosurgery: A cohort data-driven analysis. *Surgical Neurology International*. 2022; 13(80): 1-8.
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3. Rubiano A, Churry J, Cediel EG. Trauma craneoencefálico grave. In Godoy DA, ed. *Green Book: Cuidado intensivo: De la teoría a la práctica*. Distribuna Editorial Médica; 2014: 110-122.

Biography

Emilio Garzon Cediel has his experience in basic science and clinical studies in the field of neuroscience, acknowledging the importance of “bench to bedside” and “bedside to bench” research. With years of experience as neurosurgeon in different socioeconomic environments, understand the needs of quality health care in underdeveloped countries like his nation Colombia

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