

Shunt infection risk factors

pediatric [risk factors](#) for [surgical site infection](#) (SSI) is currently not well defined. Because an SSI prevention bundle is increasingly introduced, the purpose of a study of Shibamura-Fujiogi et al. was to evaluate risk factors associated with SSIs following CSF diversion surgeries following an SSI bundle at a single quaternary care pediatric hospital.

They performed a retrospective cohort study of patients undergoing CSF diversion procedures from 2017 to 2019. SSIs were identified prospectively through continuous surveillance. We performed unadjusted logistic regression analyses and univariate analyses to determine an association between SSIs and patient demographics, comorbidities and perioperative factors to identify independent risk factors for SSI.

They identified a total of 558 CSF diversion procedures with an overall SSI rate of 3.4%. The SSI rates for shunt, external ventricular drain (EVD) placement, and endoscopic third ventriculostomy (ETV) were 4.3, 6.9 and 0%, respectively. Among 323 shunt operations, receipt of clindamycin as perioperative prophylaxis and presence of cardiac disease were significantly associated with SSI (O.R. 4.99, 95% C.I. 1.27-19.70, $p = 0.02$ for the former, and O.R. 7.19, 95% C.I. 1.35-38.35, $p = 0.02$ for the latter). No risk factors for SSI were identified among 72 EVD procedures.

They identified receipt of [clindamycin](#) as perioperative prophylaxis and the presence of cardiac disease as risk factors for SSI in shunt procedures. [Cefazolin](#) is recommended as a standard antibiotic for perioperative prophylaxis. Knowing that unsubstantiated beta-lactam allergy label is a significant medical problem, efforts should be made to clarify beta-lactam allergy status to maximize the number of patients who can receive cefazolin for prophylaxis before shunt placement. Further research is needed to elucidate the mechanism by which cardiac disease may increase SSI risk after shunt procedures ¹⁾.

Dental procedures are known to cause transient bacteremia that could potentially spread hematogenously to these implanted devices.

Moazzam et al., performed a retrospective study to assess whether dental procedures and poor oral health were associated with a higher likelihood of developing CSF-diverting shunt infections.

Neurosurgical and pediatric dental records from January 2007 to December 2012 were reviewed for shunt surgeries and dental encounters. Indications for shunt surgery and infection rates were recorded. Dental records were reviewed for several markers of overall dental health, such as a DMFT (decayed, missing, and filled teeth) score and a gingival health/oral hygiene score. The association between these scores and the incidence of shunt infections were studied. Moreover, the relationship between the incidence of shunt infections and the timing and invasiveness of preceding dental encounters were analyzed. Results A total of 100 pediatric patients were included in our study, for a total of 204 shunt surgeries. Twenty-one shunt infections were noted during the 6-year study period. Five of these shunts infections occurred within 3 months of a dental procedure. The odds ratio (OR) of developing a shunt infection within 3 months of a dental procedure was 0.98 (95% confidence interval [CI] 0.27-3.01), and was not statistically significant. The OR of developing a shunt infection after a high-risk dental procedure compared with a low-risk dental procedure was 1.32 (95% CI 0.02-16.29), and was not statistically significant. There was no significant association between measures of dental health, such as DMFT and gingival health score, and the likelihood of developing a shunt infection.

The ORs for these 2 scores were 0.51 (95% CI 0.04-4.96) and 1.58 (95% CI 0.03-20.06), respectively. The study was limited by sample size.

Dental health status and the number and type of dental procedures performed do not appear to confer a higher risk of developing a CSF-diverting shunt infection in this pediatric population ²⁾.

Percutaneous [tapping](#)

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Shibamura-Fujiogi M, Ormsby J, Breibart M, Warf B, Priebe GP, Soriano SG, Sandora TJ, Yuki K. Risk factors for pediatric surgical site infection following neurosurgical procedures for hydrocephalus: a retrospective single-center cohort study. BMC Anesthesiol. 2021 Apr 21;21(1):124. doi: 10.1186/s12871-021-01342-5. PMID: 33882858.

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Moazzam AA, Nehrer E, Da Silva SL, Polido JC, Arakelyan A, Habibian M, Krieger MD. The association between dental health and procedures and developing shunt infections in pediatric patients. J Neurosurg Pediatr. 2014 Sep 12;1-6. [Epub ahead of print] PubMed PMID: 25216290.

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