

QUESTION 2: Does poor dental hygiene increase the risk of subsequent surgical site infection/periprosthetic joint infection (SSI/PJI)? If yes, is there a role for obtaining dental clearance in patients with poor dental hygiene to reduce the risk of SSI/PJI?

RECOMMENDATION: There is a small yet real risk of hematogenous spread of oral pathogens to patients undergoing arthroplasty. Patients with poor oral hygiene undergoing arthroplasty are at increased risk of subsequent SSI/PJI. Therefore, patients with oral disease and poor dentition should be identified and optimized prior to elective arthroplasty.

LEVEL OF EVIDENCE: Limited

DELEGATE VOTE: Agree: 92%, Disagree: 5%, Abstain: 3% (Super Majority, Strong Consensus)

RATIONALE

Transient bacteremia occurs following everyday activities such as tooth-brushing and flossing, as well as following dental procedures [1–4]. Associated with this transient bacteremia is the theoretical risk of hematologic spread, seeding of the prosthesis, and subsequent development of a PJI. Multiple small-scale studies have shown an association between bacteria isolated in PJI and oral flora [5–11].

With this in mind, in the past many joint arthroplasty surgeons have advocated for routine dental screening prior to total joint arthroplasty (TJA). In spite of this theoretical risk, controversy exists regarding the relationship of dental pathology and dental procedures and the development of PJIs. There have been several large-scale studies that have not identified an association between dental procedures and the development of PJI. One example is a prospective case-control study that showed that there was no increased risk of PJI in patients who underwent dental procedures following TJA [12]. Furthermore, antibiotic prophylaxis did not decrease the risk of PJIs [12]. In an additional case-control study by Skaar et al., using the Medicare Current Beneficiary Survey data, the group demonstrated that there were no associations between dental procedures and the subsequent development of PJIs. This was true for patients who underwent both high and low-risk procedures [13]. In a large retrospective review of a national health registry, Kao et al. identified 57,066 patients who underwent TJA and had dental procedures postoperatively. They matched these patients with those who had not undergone dental procedures. The authors found no significant difference in the rate of PJIs between the two groups [14]. In 2014, Lampley et al. compared the incidence of PJI between elective TJA patients who underwent dental screening prior to surgery to hip fracture patients treated with total hip arthroplasty (THA) or hemiarthroplasty who did not undergo dental screening. The authors found no significant difference in development PJI between the two groups [15].

In spite of the above evidence, a rare risk for hematogenous spread of PJI persists in a small subset of patients [7,11]. In a study by Bartzokas et al., the authors identified four cases of PJI where an oral pathogen was associated with poor dental hygiene [6]. This is supported by the fact that the incidence of bacteremia following dental procedures is higher in those patients who have dental pathology and poor dental hygiene [16,17]. Given this relatively small risk, several studies have sought to identify the prevalence of dental pathology in the TJA population. In a 2011 study by Barrington and Barrington, 23% of patients undergoing TJA were found to have dental pathology [18]. However, in a 2014 study, Takarski et al. identified 12% of patients having dental pathology at screening visits prior to TJA. Furthermore, the authors used multivariate analysis to identify six risk factors for failing dental clearance. Those risk factors were narcotic use, tobacco use, not having visited a dentist within 12 months, history of pulled teeth, older age and flossing less than once daily [19].

Given the lack of evidence linking dental pathology and procedures to hematogenous spread and subsequent development of PJI, it may be reasonable to require dental screening only for high-risk patients with specific risk factors for dental pathology. While recent studies have shed light on the risk factors associated with discovering dental pathology, further studies are needed to identify which patients should undergo dental screening following TJA.

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