

## QUESTION 24: Should routine dental clearance be obtained prior to total joint arthroplasty (hip/knee/shoulder/ankle)?

---

RECOMMENDATION: No. While dental pathology has been reported in a subset of patients undergoing joint arthroplasty, there are no prospective controlled studies supporting the role of pre-surgical dental clearance in reducing the rates of subsequent periprosthetic joint infections (PJIs).

LEVEL OF EVIDENCE: Consensus

DELEGATE VOTE: Agree: 76%, Disagree: 17%, Abstain:7% (Super Majority, Strong Consensus)

---

### RATIONALE

Evidence that demonstrates a relationship between dental disease and the risk for subsequent surgical site infections (SSIs) and PJIs is limited. It is known that the presence of bacteria in the bloodstream is common after any dental treatment [1–4], and this has also been associated with oral activities of daily life, such as chewing, teeth brushing or flossing [1,2]. Even so, the bacterial inoculum necessary to cause a clinically important bacterial infection in humans is unknown [2].

A few case reports in the literature have attempted to link PJI with a dental source [5–16]. Such case reports document PJI associated with a recent dental procedure and with an organism that is reasonably associated with oral flora. A logical extension of this association of PJI with an oral source has led to the practice of addressing dental concerns prior to arthroplasty surgery with the expectation that this could perhaps decrease the postoperative occurrence of dental-associated PJIs. While perhaps logical, there is little published literature to support this practice. Two studies have documented dental pathology in 12 to 23% of patients planning to undergo hip or knee arthroplasty [17,18]. Other reports show a prevalence of between 30 and 50% of dental pathology in elderly patients in the United States [2,17], with 23% of adults having untreated caries, with the incidence increasing in certain groups such as the institutionalized elderly, smokers, drinkers of carbonated beverages, patients with chronic conditions such as diabetes or rheumatic diseases and in those at a lower socioeconomic level [17].

It has been suggested that the need for dental clearance could perhaps be limited to this smaller percentage of patients who could potentially be identified by a preoperative questionnaire [18]. The American Academy of Orthopaedic Surgeons (AAOS) and the American Dental Association (ADA) have published numerous guidelines in the past [19–21] regarding antibiotic prophylaxis prior to dental procedures for prosthetic joint implant patients, but little has been said about preoperative dental clearance prior to joint arthroplasty. Only one study has compared the incidence of PJIs in a population of patients who underwent dental clearance prior to arthroplasty with a population of arthroplasty patients who had no such clearance [22]. This latter group of patients was not a prospective matched control cohort, but rather was composed of hip fracture patients treated with non-elective arthroplasty. This study was not only limited by the lack of a true control group, but also by the relatively small number of patients. Nevertheless, the conclusion of this study was that dental clearance prior to arthroplasty did not provide a significant decrease in PJIs.

In the absence of concrete data, we believe that routine dental clearance prior to joint arthroplasty is not mandated. We recognize that patients with active oral disease or infection may be at higher risk for subsequent SSI/PJIs, and every effort should be made to identify these patients. Elective arthroplasty should be postponed in patients who have active infections in the oral cavity until it has been cleared.

### REFERENCES

- [1] Berbari EF, Osmon DR, Carr A, Hanssen AD, Baddour LM, Greene D, et al. Dental procedures as risk factors for prosthetic hip or knee infection: a hospital-based prospective case-control study. *Clin Infect Dis*. 2010;50:8–16. doi:10.1086/648676.
- [2] Young H, Hirsh J, Hammerberg EM, Price CS. Dental disease and periprosthetic joint infection. *J Bone Joint Surg Am*. 2014;96:162–168. doi:10.2106/JBJS.L.01379.
- [3] Curry S, Phillips H. Joint arthroplasty, dental treatment, and antibiotics: a review. *J Arthroplasty*. 2002;17:111–113.
- [4] Coulter WA, Coffey A, Saunders ID, Emmerson AM. Bacteremia in children following dental extraction. *J Dent Res*. 1990;69:1691–1695. doi:10.1177/00220345900690101201.
- [5] Bartz H, Nonnenmacher Cb, Bollmann C, Kuhl M, Zimmermann S, Heeg K, et al. *Micromonas* (Peptostreptococcus) *micros*: unusual case of prosthetic joint infection associated with dental procedures. *Int J Med Microbiol*. 2005;294:465–470.
- [6] Steingruber I, Bach CM, Czermak B, Nogler M, Wimmer C. Infection of a total hip arthroplasty with *Prevotella loeschii*. *Clin Orthop Relat Res*. 2004:222–224.
- [7] Jellicoe PA, Cohen A, Campbell P. *Haemophilus parainfluenzae* complicating total hip arthroplasty: a rapid failure. *J Arthroplasty*. 2002;17:114–116.
- [8] Pravda J, Habermann E. *Hemophilus parainfluenzae* complicating total knee arthroplasty. A case report. *Clin Orthop Relat Res*. 1989:169–171.
- [9] Strazzeri JC, Anzel S. Infected total hip arthroplasty due to *Actinomyces israelii* after dental extraction. A case report. *Clin Orthop Relat Res*. 1986:128–131.
- [10] Kaar TK, Bogoch ER, Devlin HR. Acute metastatic infection of a revision total hip arthroplasty with oral bacteria after noninvasive dental treatment. *J Arthroplasty*. 2000;15:675–678. doi:10.1054/arth.2000.4331.

- [11] LaPorte DM, Waldman BJ, Mont MA, Hungerford DS. Infections associated with dental procedures in total hip arthroplasty. *J Bone Joint Surg Br.* 1999;81:56–59.
- [12] Waldman BJ, Mont MA, Hungerford DS. Total knee arthroplasty infections associated with dental procedures. *Clin Orthop Relat Res.* 1997;164–172.
- [13] Lindqvist C, Slätis P. Dental bacteremia—a neglected cause of arthroplasty infections? Three hip cases. *Acta Orthop Scand.* 1985;56:506–508.
- [14] Rees RT. Infections associated with dental procedures in total hip arthroplasty. *J Bone Joint Surg Br.* 2000;82:307.
- [15] Rubin R, Salvati EA, Lewis R. Infected total hip replacement after dental procedures. *Oral Surg Oral Med Oral Pathol.* 1976;41:18–23.
- [16] Bartzokas CA, Johnson R, Jane M, Martin MV, Pearce PK, Saw Y. Relation between mouth and haematogenous infection in total joint replacements. *BMJ.* 1994;309:506–508.
- [17] Barrington JW, Barrington TA. What is the true incidence of dental pathology in the total joint arthroplasty population? *J Arthroplasty.* 2011;26:88–91. doi:10.1016/j.arth.2011.03.036.
- [18] Tokarski AT, Patel RG, Parvizi J, Deirmengian GK. Dental clearance prior to elective arthroplasty may not be needed for everyone. *J Arthroplasty.* 2014;29:1729–1732. doi:10.1016/j.arth.2014.04.018.
- [19] American Dental Association, American Academy of Orthopedic Surgeons. Antibiotic prophylaxis for dental patients with total joint replacements. *J Am Dent Assoc.* 2003;134:895–899.
- [20] Watters W, Rethman MP, Hanson NB, Abt E, Anderson PA, Carroll KC, et al. Prevention of orthopaedic implant infection in patients undergoing dental procedures. *J Am Acad Orthop Surg.* 2013;21:180–189. doi:10.5435/JAAOS–21–03–180.
- [21] American Academy of Orthopaedic Surgeons and American Dental Association. Appropriate use criteria for the management of patients with orthopaedic implants undergoing dental procedures. <http://www.aaos.org/poiudpauc>. 2016. Accessed Aug. 7, 2018.
- [22] Lampley A, Huang RC, Arnold WV, Parvizi J. Total joint arthroplasty: should patients have preoperative dental clearance? *J Arthroplasty.* 2014;29:1087–1090. doi:10.1016/j.arth.2013.11.019.