



## Dental Management of Patients with Prosthetic Joints: A Review

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**ABSTRACT** Most prosthetic joint infections originate from wound contamination or haematogenous seeding from distant sites of infection. Bacteraemia may follow dental treatment but there is little evidence of it related to prosthetic joint infection. Nevertheless, controversy continues with regards to the effect of dental treatment in patients with prosthetic joints. Dentists are always at dilemma as whether to prescribe prophylactic antibiotics prior to dental procedures. This article reviews current English literature on this dilemma. It is suggested that dentists and orthopaedic surgeons in Malaysia adopt the latest recommendation by the American Dental Association and the American Academy of Orthopaedic Surgeons (ADA/AAOS).

**KEY WORDS:** Dental treatment, Prosthetic joint, Bacteraemia.

### INTRODUCTION

Replacement of diseased joints with prosthesis started about 5 decades ago. It has since become a major achievement in orthopaedic surgery. Initially post-operative infection rates of 15 to 25% were reported.<sup>1,5</sup> With intra-operative antibiotic prophylaxis, modern operation theatre designs and aseptic surgical techniques, prosthetic joint infection rate has dropped to 0.5 to 5%.<sup>6</sup> The consequences of prosthetic joint infection are devastating, entailing prolonged hospitalisation and antibiotics, multiple surgeries, significant morbidity and mortality.<sup>7</sup> Early prosthetic joint infections happen within 2 months of operation, mostly from direct inoculation or airborne contamination. Late infection usually occur after 2 months of operation and is usually the result of haematogenous seeding or contagious spread. Bacteraemia from surgical and dental treatments has been implicated in late haematogenous spread.<sup>8,9</sup> Understandable concern about the disastrous consequences of prosthetic joint infection has led to advocacy of prophylactic use of antibiotic before a dental procedure. However, it is important to recognise that routine use of prophylactic antibiotic has little supporting evidence, and is not without its own adverse effect.

### DENTAL TREATMENT BACTERAEMIAS

The role of dental treatment bacteraemia as the source of prosthetic joint infection has been disputed.

The incidence of late infection in arthroplasties has been quoted as from less than 0.1%<sup>10</sup> to 0.6%,<sup>11</sup> with microorganisms from a dental source involved in from 0.04%<sup>9</sup> to 0.07%.<sup>11</sup> It has been suggested that even these very small proportions may derive from bacteriological methods that may be flawed<sup>12</sup> and the actual incidence of joint infection secondary to dental treatment is perhaps even lower.<sup>13</sup>

It has earlier been suggested that bacteraemias can cause haematogenous seeding of total joint implants, both in the early postoperative period and for many years following implantation.<sup>14</sup> It has also been suggested that the most critical period is up to two years after joint replacement.<sup>15</sup> However, it has been shown too that bacteraemias may occur in the course of normal daily life<sup>16,17,18,19</sup> and concurrently with dental and medical procedures.<sup>18</sup> Guntheroth suggested that more oral bacteraemias are spontaneously induced by daily events than are dental treatment-induced.<sup>18</sup>

Moreover, the predominant pathogens in prosthetic joint infection are *Staphylococcus aureus* and *Staphylococcus epidermidis*, accounting for 54%.<sup>11</sup> These microorganisms are more commonly found on the epidermis. In contrast, the commonest human oral flora like *Streptococci viridans* and *Peptostreptococcus* are only implicated in 0.07% of prosthetic joint infection.<sup>20</sup>

Ching *et al.*, found 4 cases of infected joints due to streptococci viridans but they were related to acute oral infection, and not dental treatment-induced bacteraemia.<sup>21</sup> Out of twenty-one reported prosthetic joint infections after a dental procedure or infection, Thyne & Ferguson found