Epidemiology

Data on frequency of PJI (incidence, prevalence according to different registers) (1)

The routine use of perioperative antimicrobial prophylaxis and operating room environment with laminar airflow systems has substantially decreased the frequency of PJI (3, 4). After primary joint replacement, the infection rate during the first two postoperative years is usually <1% in hip and shoulder prostheses, <2% in knee prostheses, and <9% in elbow prostheses (2). However, the reported infection rates are probably largely underestimated, since many cases of presumed aseptic failure are caused by an unrecognized infection, particularly low-grade infections caused by low-virulent skin bacteria. After revision surgery for any reason, the infection rates are usually considerably higher (up to 40%). Importantly, prosthetic joints remain susceptible to haematogenous seeding during their entire lifetime. Therefore, the frequency of infection should be reported as incidence rate (per prosthesis-year) rather than as risk (without specified denominator). In addition, the incidence of PJI will most likely continuous to rise due to increasing numbers of implanted prostheses in the aging population, longer prosthesis indwelling time exposed to a higher cumulative risk for infection during the implant lifetime, and better detection methods for microbial biofilms or unusual bacteria involved in PJI.

<table>
<thead>
<tr>
<th></th>
<th>two years after primary joint replacement</th>
<th>two years after revision surgery</th>
<th>Entire lifetime of prosthetic joint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip, shoulder</td>
<td>&lt; 1%</td>
<td></td>
<td>Haematogenous seeding reported as incidence rate (per prosthesis-year) 0,2%</td>
</tr>
<tr>
<td>Knee</td>
<td>&lt; 2%</td>
<td>up to 40 %</td>
<td></td>
</tr>
<tr>
<td>Elbow</td>
<td>&lt; 9%</td>
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Increasing risk of revision due to deep infection after hip arthroplasty (2)

A study on 97,344 primary total hip replacements in the Norwegian Arthroplasty Register from 1987 to 2007
Reasons for revision after known primary total hip replacement by the AOA NJRR for 2009 (3)

![Pie chart showing reasons for revision]

31.5% 17% 23% 15.4% 3.7% 1,4% 1,1% 6.9%

- Looseing/lysis
- Dislocation of prosthesis
- Fracture
- Infection
- Pain
- Metal sensitivity
- Implant breakage
- Other

**Literature**