HK-2a – Does prior hip arthroscopy increase the risk of a subsequent surgical site infection/prosthetic joint infection (SSI/PJI) in patients undergoing elective hip arthroplasty?

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Response/Recommendation:
There is no evidence suggesting a clinically meaningful increase in the risk of postoperative infection following total hip arthroplasty (THA) in patients who have a history of ipsilateral hip arthroscopy (HA).

Level of Evidence: Limited

Delegate Vote:

Rationale:

Hip arthroscopy (HA) is a relatively uncommon orthopaedic procedure, but has been growing steadily over the past few decades [1]. First described in 1931, indications for hip arthroscopy have evolved over time [2]. The most common indications include repair of traumatic labral tears, femoro-acetabular impingement (FAI), chondral flap lesions, and removal of loose or foreign bodies [3]. Conversion rates to total hip arthroplasty (THA) following HA have been found to be variable, extending from 9.5 to 50% [4-6]. However, the effect of prior HA on infection rates following THA remains controversial.

Several studies have utilized the PearlDiver database to investigate this question; the majority of these investigations suggest there is no increased risk of infection following THA in patients who have a history of HA. In a propensity score-matched study comparing 1,940 patients who underwent THA with prior HA to a control group, no significant difference was found in prosthetic infection rates within one year of surgery. Infection rates remained nonsignificant when the authors conducted an analysis of patients undergoing THA within one year of HA compared to no prior HA [7]. Another PearlDiver study, including 110 patients who received THA with prior HA for FAI between 2005 and 2014, reported no difference in surgical site infections within three years of surgery [8]. In a study involving 3,156 patients, Ross et al. found that those who had HA before THA showed a significantly lower rate of prosthetic joint infection one year postoperatively (0.6 versus 1.3%; odds ratio [OR] 0.50; $P = 0.01$) [9]. However, one manuscript demonstrated that osteoarthritis patients who underwent HA before THA were at an increased risk of periprosthetic joint infection (OR 1.87; $P = 0.01$). Notably, 82% of patients in this cohort were over 65 years old, representing a distinct subset compared to the younger population typically undergoing HA for FAI [10].

A study utilizing the Swedish Hip Arthroplasty registry compared 135 patients who underwent THA following HA for FAI to 540 matched controls. They found one deep infection in the HA group and eight in the control, which is a nominally larger percentage in the control group, but was not significant (0.7 versus 1.4%; $P = 0.25$) [11].

There have also been multiple single-institution studies on this topic. A large academic medical center conducted a retrospective analysis including 95 patients who had conversions to THA following HA compared to 95 matched controls. The authors found a higher rate of wound

complications in the conversion group, although there was no increased risk of deep infection. Furthermore, when comparing time to conversion of zero to six months, six to 12 months, 12 to 18 months, and >18 months, no significant differences were found in the complications and infection rate [12]. Another academic center conducted a study with 39 patients who underwent THA after a previous hip arthroscopy for FAI. They found similar results, with no statistically significant difference in the postoperative superficial or deep periprosthetic infection [13]. In another single-institution propensity match-controlled study with 35 patients who had prior arthroscopy, infection rates were nominally higher in the arthroscopy group than in controls, though this difference was not statistically significant [14]. Additionally, Jain et al. reported no differences in the incidence of infection between a group of 18 patients who required conversion to THA after HA and a control group [15]. These studies did not find a significant difference in infection rates; however, it is important to note that they are almost certainly underpowered to identify significant differences in prosthetic joint infection.

A 2019 systematic review, including 305 hips that underwent THA following a prior HA compared to 502 matched control hips, reported infections in five patients (2.82%) in the prior HA group and one patient (0.35%) in the control group. There was a trend toward a higher risk of infection in the prior arthroscopy group, but the paucity of data limits this finding [16]. Another systematic review with 235 patients who have a history of hip arthroscopy and 374 matched controls showed no statistically significant differences in the incidence of postoperative superficial or deep periprosthetic joint infection [17]. However, Liu et al. conducted a systematic review and meta-analysis of the effect of prior arthroscopy on outcomes following arthroplasty, combining both hip and knee data together [18]. They demonstrated a significantly increased risk of infection in the prior arthroscopy group compared with controls (OR 1.83; P <0.001).

Conclusion:

Most studies have shown no significant increase in the postoperative superficial or deep infection risk following THA after previous HA compared with controls. The small sample size was a major limitation of many studies; however, those including a greater number of patients also do not generally indicate an increased infection risk in THA after HA. There may be a difference in infection risk based on underlying hip pathology, with one study demonstrating increased risk in OA patients and multiple studies demonstrating no increased risk in FAI. However, there is insufficient data to determine whether this is related to the underlying pathology or to the confounding age of onset (FAI patients tended to be younger than OA patients).

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