Is Joint Aspiration Needed Before Reimplantation?

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INTRODUCTION: The management of hip and knee periprosthetic joint infection (PJI) involves both surgical intervention and antibiotic treatment. In the first two years, this treatment is known to fail in about 30% of patients. Currently, there is no consensus on how to diagnose possible residual infection before reimplantation. Many surgeons rely on joint aspiration prior to performing the reimplantation surgery. The purpose of this study is to determine whether the use of routine joint aspiration is of any value before reimplantation.

METHODS: A retrospective cohort study using data from a large PJI referral center was designed. Cases of chronic and acute PJI treated with a two-stage exchange from 2000 to 2019 were included. PJIs were defined according to the 2018 ICM criteria. Success was defined according to the 2019 MSIS criteria. Statistical analysis consisted of descriptive statistics and logistic regression modeling. Patients were divided into three groups: (1) patients who had both serum and synovial markers before reimplantation, (2) patients who had serum markers but had a dry tap at the time of joint aspiration, (3) patients who did not undergo aspiration before reimplantation.

RESULTS: A total of 501 patients were included. 147 (29.3%) were part of group 1, 70 (13.9%) in group 2 and 284 (56.6%) in group 3. No difference in body mass index, Charlson comorbidity index, or sex were retrieved among the three groups. Success rates did not differ among the three groups (73% vs. 76.1 vs. 68%; $p=0.488$). The mean time to reimplantation was shorter for group 3 (131±115 vs. 129±98.5 vs. 94.2±145 days; $p<0.001$). When acute and chronic PJI were analyzed as subgroup analyses, similar results were retrieved.

DISCUSSION AND CONCLUSION: Based on the current data, it appears that joint aspiration prior to reimplantation continues to yield minimal fluid in a large number of patients (dry tap). In addition, obtaining joint fluid prior to reimplantation does not appear to impact the outcome of two-stage exchange arthroplasty. The current study, despite all its limitations, suggests that routine aspiration of joints with a spacer in place and prior to reimplantation may not be needed. The findings of this study should be examined in a prospective and randomized manner.