

Cement Loaded with High-Dose Gentamicin and Clindamycin Does Not Reduce the Risk of Subsequent Infection after Aseptic Total Hip or Knee Revision Arthroplasty: A Preliminary Study

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INTRODUCTION:

Aseptic total hip (rTHA) and knee (rTKA) revision arthroplasty is associated with an increased risk of developing periprosthetic joint infections (PJI) compared to primary arthroplasty. Strategies to prevent this complication include prophylactic antibiotics, meticulous skin preparation, and surgical site irrigation. When cemented implants are used, antibiotic-loaded bone cement (ALBC) may help to prevent infection. It has been previously demonstrated that dual ALBC may decrease the risk of subsequent infection after rTHA or rTKA for periprosthetic infection. The aim of this study was to quantify the prophylactic effect of high-dose gentamicin and clindamycin antibiotic-loaded bone cement (ALBC) during revision total hip (rTHA) or knee (rTKA) arthroplasty for aseptic reasons. The hypothesis was that the raw surgical site infection (SSI) rate is lower when this particular cement is used in comparison to cement loaded with standard-dose gentamicin during rTHA or rTKA for aseptic reasons.

METHODS:

This retrospective, single-center, observational study was conducted in compliance with the recommendations of the Helsinki declaration. It was approved by the institutional Ethics Committee, and all patients gave their written consent. A total of 290 consecutive patients undergoing aseptic rTHA or rTKA were included. Two consecutive cohorts were defined based on the type of ALBC used. The surgical procedure was standardized, and prophylactic antibiotic were administered according to international recommendations. The first cohort (control group) involved 145 patients where ALBC with gentamicin only was used. The second cohort (study group) involved 145 patients where ALBC with high-dose gentamicin and clindamycin was used. All patients were followed for a minimum of 24 months. A surgical site infection (SSI) was defined according to the Musculoskeletal Infection Society definition. The occurrence of an SSI was recorded. The rate of repeat surgery for SSI was monitored. The susceptibility of the bacteria found in the SSI to gentamicin and clindamycin was noted. Any complication or side effect during the postoperative survey was documented, and its relationship to the bone cement was analyzed. The primary endpoint was the raw SSI rate after 24 months.

RESULTS:

The raw SSI rate was 8/145 (6%) in the control group and 13/145 (9%) in the study group (odds ratio 0.62, $p=.26$). There was a significant impact of the presence of any risk factor on the SSI rate (15/100 vs. 6/169, odds ratio = 4.25, $p=.002$). There was no significant impact of any individual risk factor on the SSI rate. The rate of repeat surgery for SSI was not different in both groups. The bacteria found in the SSI were mainly resistant to gentamicin and clindamycin. No complication or side effect related to ALBC was observed in either group.

DISCUSSION AND CONCLUSION:

These results do not support the routine use of gentamicin and clindamycin ALBC for the fixation of revision implants after rTHA and rTKA for aseptic reasons.