# Implant Removal for Late Infection after Instrumented Posterior Spinal Fusion for Scoliosis: Reinstrumentation Reduces Loss of Correction

*Michael Muschik*, Dietrich Schlenzka**, Timo Yrjönen***

*Seehospital Sahlenburg of the Nordheim Foundation, Center for Spinal Surgery, Cuxhaven, Germany, **ORTON Orthopaedic Hospital, Invalid Foundation, Helsinki, Finland

**This is a retrospective follow-up study of patients developing late infection after instrumented posterior correction and fusion for scoliosis. The patients were treated either by implant removal alone or by implant removal, reinstrumentation and augmentation of fusion. The aim of the study was to determine whether loss of correction can be avoided by reinstrumentation and augmentation of fusion. Out of a total of 937 scoliosis patients treated by instrumented posterior fusion, 45 patients (5%) developed late infection after a mean of 2.9±1.7(0.5-8.0) yrs. The aetiology of scoliosis was idiopathic in 39 patients. Of the remaining six, one each had Arnold-Chiari malformation, Down syndrome, William-Beuren syndrome, hereditary polyneuropathy, lumbar spina bifida, and neurofibromatosis. In 35 patients infection was treated by hardware removal alone (HR), 10 patients had additional reinstrumentation and augmentation of the fusion (RI&F). Three patients of the RI&F-Group were reinstrumented after 1.5 years, and 7 patients underwent a single-stage instrumentation removal and reinstrumentation procedure. During the reoperation, a pseudarthrosis was found in 5 patients. Thirteen out of the 45 patients reported some kind of allergic predisposition. None of them had known chromium or nickel allergy. Postoperative fever for 7 days or more after the initial scoliosis operation was registered in 10 patients. Fourty-three had received perioperative prophylactic antibiotics. There was no difference in mean Cobb measurements between the two groups before initial scoliosis operation nor before the revision operation. The mean follow-up time after reoperation was 4 years. Wound healing was uneventful in all patients of both groups after the revision procedure. Radiographic measurements revealed a significant loss of correction after the revision operation. At the time of reoperation the mean thoracic (primary) curve Cobb angle correction of 40.4% as compared to values measured before initial scoliosis operation. At final follow-up the mean correction was reduced to 28.8%. The mean loss of correction of the thoracic curves was 6 drs. There was a significant difference in the radiographic outcome between the two revision techniques in favour of reinstrumentation and fusion augmentation. In the RI&F-Group, the final thoracic Cobb angle correction was 45.1% as compared to 20.8% in the HR-Group. In conclusion, one-stage hardware removal, reinstrumentation and augmentation of fusion is recommended for treatment of late infection after posterior scoliosis instrumentation and fusion. The procedure seems to be safe and capable of preventing loss of curve correction.**