

Early outcomes of bone autografting in the bilateral atlantoaxial joints applied in posterior fusion surgery: A case series of 14 patients

Abstract

Objective: To evaluate the safety and effectiveness of bilateral atlantoaxial joints bone autografting in posterior cable-dragged reduction and cantilever-beam internal fixation.

Methods: The granular bone harvested from the iliac crest was packed into the bilateral atlantoaxial joints of 14 patients in posterior cable-dragged reduction and cantilever-beam internal fixation. X-ray imaging and cervical computed tomography (CT) were performed during follow-up. The time required for bone fusion was recorded. The clinical outcomes were evaluated using the JOA scores, NDI, and VAS scores.

Results: The operations were successfully performed in all patients without any intraoperative complications. The mean operation time was 169.64 ± 20.91 minutes, and the intraoperative blood loss was 130.71 ± 33.62 mL. All patients received satisfactory reductions and firm bony fusion at the final follow-up. The fusion rates were 64.29% in the atlantoaxial joints and 21.43% in post bone graft area at 3 months postoperatively, and a significant difference was observed ($P=0.022$). Importantly a complete bony fusion in the atlantoaxial joints was observed in all patients. Moreover, the JOA, NDI, and VAS scores had improved significantly at the last follow-up.

Conclusion: Bone autografting of the bilateral atlantoaxial joints is a safe and effective technique to increase bone fusion rates, shorten bone fusion time and reduce complication rates when the cable-dragged reduction and cantilever beam internal fixation approach is used. Therefore, it is a cost-effective surgical procedure for treating patients with atlantoaxial dislocation or instability.

Key words: Atlantoaxial joints; Atlantoaxial fusion; Bone graft; Cable; Cantilever beam