Introduction: The clinical appearance of degenerative scoliosis varies from an instability pattern to neurogenic claudication. Maintain and stabilization of lumbar lordosis after well decompression is important. Instrumentation can provide an adequate stabilization. It has 13.4% to 40% pedicle perforation in pedicle screw placement. The aim of this study is to evaluate its clinical results in degenerative lumbar scoliosis patients treated surgically with and without computer assistance.

Material and method: Between January 2003 and December 2008, there were eighty-five patients with degenerative lumbar scoliosis. 67 females and 18 males patients were treated by posterior instrumentation and decompression. The average age at surgery was 59 years. The mean follow up was 35 months.

Results: The conventional Cohort was composed of 52 patients, with 426 screws from T11 to S1. The computer-assisted Cohort was composed of 33 patients, with 270 screws from L1 to S1. In the final follow-up, 83% of the patients were satisfied with pain relief and increased walking ability. The average curve correction was 40%, and lumbar lordosis increase from 35° to 47°. There were three patients with radiculopathy and one required revision for screw malposition in the conventional Cohort, whereas no patients in the computer assisted group were surgically retreated for postoperative neurological deficits. The operative time is not significantly different between the groups but the plain radiography is significantly more exposure in the conventional group (p< 0.05).

Discussion: Degenerative scoliosis is appearing more frequently because of increased life duration. Lumbar decompression, fusion, and instrumentation are appreciated for most of the patients. By reports, the pedicle screws placement has 13.4% to 40% pedicle perforation and most is insignificant clinically, but the malpositioned screws still had 7.7% caused radicular pain or weakness. The computer assistance can provide well accuracy of screw instrumentation and decrease the incidence of incorrectly positioned pedicle screws by many reports, it is consistent in this clinical findings.

Conclusions: No major complications were related with screw placement in the computer assistance Cohort. The technique has been shown to be safe in the surgical treatment of degenerative lumbar scoliosis associated with spinal stenosis and the significant occupational radiation exposure can be reduced.