https://www.scirp.org/journal/ns Natural Science, 2025, Vol. 17, (No. 8), pp: 139-140

Erratum to "Clinical Study of Accelerated Rehabilitation Concept Combined with Tianji Robot-Assisted Surgery in Lumbar Degenerative Diseases" [Natural Science 16 (2024) 220-231]

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Keywords: Concept of Accelerated Rehabilitation, Tianji Robot, Conventional C-Arm, Lumbar Degenerative Disease

Received: June 28, 2025 **Accepted:** July 27, 2025 **Published:** July 30, 2025

ABSTRACT

The original online version of this article (Yang, W., Mai, Y., Huang, Y., Zeng, X., Zhou, Q., Lu, W., Huang, C. and Su, G. (2024) Clinical Study of Accelerated Rehabilitation Concept Combined with Tianji Robot-Assisted Surgery in Lumbar Degenerative Diseases. Natural Science, 16, 220-231. https://doi.org/10.4236/ns.2024.1610016) contained several inaccuracies. To maintain the highest standards of scientific reporting, the authors have made necessary revisions to improve the precision and clarity of the manuscript. This correction addresses the following modifications.

2.2.2. Surgical Methods of the Robot Group

According to the guidelines for the placement of thoracolumbar pedicle screws assisted by orthopedic surgical robots [8], patient was placed in a prone position and fixed on a robot specific carbon steel operating table; General anesthesia, disinfection, drape placement, and exposure of paraspinal muscles and soft tissues were performed in the same manner as regular spinal surgery; The tracer was fixed on the spinous process of 1 - 2 vertebral bodies at the surgical segment near the head side. The end device of the robotic arm of the

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Tianji orthopedic robot has 5 calibration devices displaying black shadow points, which should be placed as close as possible to the surgical site. Firstly, the C-arm was used during the operation to scan the three-dimensional image of the lumbar spine in the surgical area, which was then automatically recognized by the calibration device, and finally the registration between the robot arm and the human body was performed. The spinal surgeon first operates the main control panel of the Dimensity Orthopedic Robot to plan the screw placement trajectory, then operates the buttons on the control panel to control the robotic arm to run to the preset nail placement point, drill holes under real-time navigation monitoring, and place the guide needle along the pre-planned path. C-arm fluoroscopy confirmed that the guide pin was in a good position. Posterior minimally invasive spinal canal decompression and interbody fusion cage implantation were performed, and screws were placed after satisfactory spinal canal decompression. Finally, use C-wall fluoroscopy to confirm the accuracy of the screws, and if you are not satisfied with the accuracy of the screws that have already been placed, you can adjust and reposition them again until the accuracy requirements are met [9].

2.2.3. Conventional C-Arm Assisted Surgical Methods

The patient was placed in a prone position and fixed on an O-shaped chest and abdomen pad. After general anesthesia, C-shaped arm fluoroscopy was performed to determine the surgical incision site, and finally, the surgical towel was laid according to ordinary surgical disinfection. The spine surgeon should make an incision about 8 - 10 cm of skin at the midline of the patient's back. The skin of the patient was first cut, and then the superficial fascia, fat and deep fascia were respectively cut by electrocoagulation with plasma electrotome; After coagulation and hemostasis with electrotome, the paravertebral muscles on both sides of the spinal process were separated by large curved forceps or periosteal stripper; Finally, the isthmus and vertebral plate on the surgical field side were exposed. The screw insertion point was located at the intersection of the horizontal line of the root of the transverse process of the upper vertebra and the longitudinal line of the lateral edge of the facet joint. A pedicle opener was used to create the correct path, a probe was used to confirm the integrity of the pedicle wall, then a guide pin was inserted for positioning, and C-arm fluoroscopy (anteroposterior and lateral views) was used to confirm the accuracy of the guide pin positioning. After satisfactory decompression, a 5.0 mm tap was used to expand the screw channel, followed by the use of a guide needle to detect the integrity of the pedicle wall, and then the screw was inserted to stabilize it in the vertebral body. Finally, use C-wall fluoroscopy to confirm the accuracy of the screws, and if you are not satisfied with the accuracy of the screws that have already been placed, you can adjust and reposition them again until the accuracy requirements are met. The imaging procedures for the two surgical methods are shown in the attached **Figure 1**.