

Frame to Frameless: Stereotactic Operation Progress in Robot Time

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Abstract : Objective Robot was used for replacement of the frame in recent years. The paper is to investigate the safety and effectiveness of frameless stereotactic surgery in the treatment of children with cerebral palsy. Methods Clinical data of 425 children with spastic cerebral palsy were retrospectively analyzed. The patients were treated with robot-assistant frameless stereotactic surgery of nuclear mass destruction. The motor function was evaluated by gross motor function measure-88 (GMFM-88) before the operation, 1 week and 3 months after the operation respectively. The statistical analysis was performed. Results The postoperative CT showed that the destruction area covered the predetermined target in all the patients. Minimal bleeding of puncture channel occurred in 2 patient, and mild fever in 3 cases. Otherwise, there was no severe surgical complication occurred. The GMFM-88 scores were 49.1 ± 22.5 before the operation, 52.8 ± 24.2 and 64.2 ± 21.4 at the time of 1 week and 3 months after the operation, respectively. There was statistical difference between before and after the operation ($P < 0.01$). After 3 months, the total effective rate was 98.1%, and the average improvement rate of motor function was 24.3% . Conclusion Replaced the traditional frame, the robot-assistant frameless stereotactic surgery is safe and reliable for children with spastic cerebral palsy, which has positive significance in improving patients' motor function.

Keywords : cerebral palsy, robotics, stereotactic techniques, frameless operation

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