

Learning Curve Of Robotic Living Donor Right Hepatectomy : A Cumulative Sum Analysis

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Background : Robotic living donor right hepatectomy is a challenging procedure and only a few experienced centers are available with this technique. However, the use of robotic donor hepatectomy has proved its feasibility and safety with consecutive studies. No current study is reported about the learning curve of robotic donor right hepatectomy. In this study, we evaluated the learning curve of robotic living donor right hepatectomy(RLDRH).

Methods : From 2016 to 2021, ninety-nine patients underwent RLDRH by a single surgeon. We divided robotic procedure time into 5 steps to confirm learning curve of each steps. The learning curve was evaluated using the cumulative sum (CUSUM) analysis based on operation time.

Results : The mean age of donor group was 30.74 years and the mean BMI was 22.74. Anatomical variation of portal vein was found in 12 (12.12%) donors and bile duct variation was found in 27 donors (27.28%). The mean operation was 460.91 ± 82.53 min without significant disability of graft. The CUSUM of total operation time explained a learning curve of 17th cases of RLDRH. The mean console time was 389.77 ± 77.89 min and a learning curve of 19th case was demonstrated. The mean parenchymal dissection time was 184 ± 50.94min and a learning curve was 14th case. The mean graft out time was 366.31 ± 87.67 and a learning curve was 19th case. However, Hilum dissection time (mean, 57.99 ± 13.55 min) and warm ischemic time (mean, 15.49 ± 5.58 min) showed no significant discriminative pattern. No significant risk factor was found in learning curve of operation time.

Conclusions : This study is the first trial which enables to evaluate the learning curves of RLDRH with detailed division of operation procedures. Parenchymal dissection time was the determining factor of learning curve for RLDRH. Fine approach and skilled movement are particularly requested in the hilum dissection step which didn't showed specific discrimination time in learning curve. This result proved robotic hepatectomy as a safe and feasible method. These learning curves could build the basis for successful development of minimally invasive LDLT program.

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