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Feasibility And Techniques Of Robotic Caudate Lobectomy: A Small-center Experience With The Da Vinci Xi And SP Systems

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Background : Minimally invasive hepatectomies, including laparoscopy and robotics, offer potential advantages over traditional open surgery, such as reduced postoperative pain, lower complication rates, and improved oncological outcomes. However, resections involving the caudate lobe remain technically demanding owing to its complex anatomy and proximity to major vasculature. This study aimed to evaluate the feasibility and safety of robotic caudate lobectomy in a small-volume center using both multi-port and single-port systems.

Methods : From January 2023 to May 2024, three patients underwent robotic caudate lobectomy at Dong-A University Hospital. Two procedures utilized the Da Vinci Xi multi-port system, whereas one employed the Da Vinci SP single-port system. The surgical techniques and outcomes were analyzed in detail

Results : The first patient, with a 6.8 cm hemangioma, underwent Spiegel lobectomy with the Xi system in 157 min and was discharged on day 3 without complications. The second patient, with a 2.5 cm hepatocellular carcinoma, underwent complete caudate lobectomy using the Xi system and was discharged on day 5. The last patient, with a 3 cm cystic lesion, underwent Spiegel lobectomy with the SP system and was discharged on day 6.

Conclusions : Our findings indicate that robotic caudate lobectomy is feasible and safe even in small-volume centers. Advanced robotic systems enable minimally invasive approaches to challenging liver resections, potentially achieving outcomes comparable with those in larger institutions. Further studies with larger patient cohorts are required to validate these findings.

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