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Clinical Significance Of R1 Resection In Curative-intent Treatment For Perihilar Cholangiocarcinoma

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Background : Radical resection is clearly the only curative intent treatment for patients with perihilar cholangiocarcinoma. Achieving clear radial, longitudinal, and liver transection margins in the complex and technically demanding surgery for perihilar cholangiocarcinoma remains a significant challenge. This study aims to investigate the clinical significance and prognostic impact of R1 resection in patients undergoing curative-intent surgery for perihilar cholangiocarcinoma.

Methods : This study considered 145 patients who underwent surgical resection for perihilar cholangiocarcinoma between 2010 and 2023. After excluding patients with macroscopic residual tumors (R2 resection) and those who did not undergo bile duct resection, a total of 134 patients were included in the final analysis. The study cohort was divided into two groups based on the microscopic margin status reported in the final pathological report: 84 patients in the R0 group and 50 in the R1 group. Prospectively collected clinicopathologic characteristics, perioperative outcomes, and long-term survival were evaluated.

Results : Right-side hepatectomy was less frequently performed in the R1 group than in the R0 group (15 [30.0%] vs. 46 [54.8%], P=0.020). The median tumor size of the R1 groups was significantly larger than the R0 group (3.0 [0.7–8.0] vs. 4.0 [1.0–8.5] cm, P<0.001). The incidence of poor differentiation and lymphovascular invasion was comparable between the R1 and R0 groups (P=883 and P=0.728, respectively). Adjuvant radiotherapy after surgical resection was more frequently performed in the R1 group than in the R0 group (16 [37.2%] vs. 12 [18.5%], P=0.030). However, the overall survival (OS) and recurrence-free survival (RFS) rates were not significantly different between the groups (P=0.101 and P=0.490, respectively). In addition, Cox proportional hazards regression analysis revealed that R1 resection was not the independent risk factor for OS and RFS (hazard ratio 0.700 [0.453–1.080], P=0.107 and 0.841 [0.511–1.385], P=0.496).

Conclusions : The presence of microscopic residual tumors following curative-intent surgical resection for perihilar cholangiocarcinoma, which could occur despite meticulous patient selection and careful planning by experienced surgeons, did not significantly impact long-term survival. Consequently, even when R1 resection is anticipated, aggressive surgical treatment could still be a valuable option to achieve favorable long-term outcomes.

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