

E-001

Indocyanine Green Fluorescence Patterns In Liver Tumor Surgical Specimens And Their Prognostic Value For Recurrence-Free Survival: Consideration With Resection Margin

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Background : Fluorescent imaging using indocyanine green (ICG) has recently been applied to hepatobiliary surgeries for tumor visualization, liver midplane demarcation, real-time cholangiography, and post-graft implantation evaluation. Previous studies have identified an association between fluorescent patterns and liver cancer characteristics. This study aims to classify liver tumor surgical specimens based on ICG fluorescent patterns and evaluate their prognostic value for recurrence with a large sample size and long-term follow-up.

Methods : We retrospectively reviewed prospectively collected medical records of 94 patients with liver tumors who underwent hepatectomy between September 2021 and November 2023 at Seoul National University Hospital.

Results : There were 7 cases of total uptake, 56 cases of partial uptake, and 31 cases of rim enhancement. The median follow-up was 449.5 days. The rim enhancement type showed the poorest recurrence-free survival among the three groups (P=0.010). Among the 9 cases of intrahepatic cholangiocarcinoma, 3 showed partial uptake and the rest exhibited the rim enhancement pattern. Of the 10 cases of metastatic liver cancer, all but one partial uptake case displayed the rim enhancement pattern. Among 75 cases of hepatocellular carcinoma, there were 7 total uptake, 52 partial uptake, and 16 rim enhancement patterns.

Conclusions : ICG fluorescent patterns in surgical specimens are clearly associated with tumor aggressiveness and recurrence-free survival. Identifying these patterns together with resection margin intraoperatively may assist in making further surgical decisions.

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