

# Drain Management Following Difficult Laparoscopic Cholecystectomy For Acute Cholecystitis: A Propensity Matched Comparative Study

Seung Jae LEE<sup>1</sup>, Ju Ik MOON<sup>\*1</sup>, In Seok CHOI<sup>1</sup>, Sang Ah WOO<sup>1</sup>

<sup>1</sup>Surgery, Konyang University Hospital, Konyang University College Of Medicine, REPUBLIC OF KOREA

**Background :** Drain management following difficult laparoscopic cholecystectomy (LC) for acute cholecystitis (AC) is still controversial.

**Methods :** This single-center, retrospective study reviewed 1876 patients with AC who underwent LC between January 2010 and December 2020. The difficult LC was defined as open conversion, subtotal cholecystectomy, adjacent organ injury during surgery, operation time  $\geq 90$  min, or estimated blood loss  $\geq 100$  mL. Propensity scores were used to match patients with or without drain.

**Results :** A total of 223 patients (mean age, 66.1 years; 80 [35.9%] women) underwent difficult LC, 132 (59.2%) received intraoperative abdominal drainage. In a propensity score matched cohort (61 patients in each group), early removal ( $\leq$  postoperative day 3) of drain was performed in 41 (67.2%). The overall rates of surgical site infection (SSI) and bile leakage were 9.8% and 2.5%, respectively. No drain placement demonstrated significant better surgical outcomes when compared to early and late removal for overall (11.5 vs 19.0 vs 63.2%,  $p < 0.001$ ) and serious complication (6.0 vs 8.3 vs 26.3%,  $p = 0.042$ ), length of hospital stay (3.97 vs 3.98 vs 11.95 days,  $p < 0.001$ ), and SSI (4.9 vs 7.1 vs 31.6%,  $p = 0.002$ ). On multivariate analysis, late removal (OR = 5.064, 95% CI = 1.349–19.008,  $p = 0.016$ ) was a significant risk factor for organ/space SSI when compared to no drain placement.

**Conclusions :** This study demonstrates that drain placement is not routinely recommended even after difficult LC for AC. Drain placement with late removal is associated with worse surgical outcomes, particularly the high risk of organ/space SSI.

Corresponding Author : Ju Ik MOON (monjuik@kyuh.ac.kr)