

## **Abstract**

**Purpose:** To compare surgical outcomes between the inverted internal limiting membrane (ILM) flap technique and ILM peeling for macular hole retinal detachment (MHRD) in eyes with high myopia

**Design:** Multicenter cohort study

**Participants:** We retrospectively reviewed medical records of consecutive patients treated between June 2008 and September 2018 at seven hospitals and included 100 eyes with MHRD associated with high myopia in our study. All eyes underwent vitrectomy with the inverted ILM flap technique (57 eyes) or ILM peeling (43 eyes) and were followed-up for >6 months

**Methods:** We estimated odds ratios (ORs) and their 95% confidence intervals (CIs) for macular hole (MH) closure using multivariable logistic regression analysis.

We also examined factors associated with the postoperative best-corrected visual acuity (BCVA) at the final visit using multiple linear regression analysis.

**Main Outcome Measures:** MH closure and postoperative BCVA at the final visit

**Results:** The MH closure rate was significantly higher in the inverted ILM flap group (80.7%) than in the ILM peeling group (37.2%;  $P < 0.001$ ). Moreover,

postoperative BCVA at the final visit was significantly better in the former group ( $0.88 \pm 0.48$  vs.  $0.99 \pm 0.48$ ;  $P = 0.03$ ). The retinal attachment rate (ILM flap: 91.2%, ILM peeling: 79.5%;  $P = 0.229$ ) and recovery rates for the external limiting membrane and ellipsoid zone line (ILM flap: 10.9%, ILM peeling: 0%;  $P = 0.12$ ) showed no significant intergroup differences. After adjustment for age, axis, tamponade substance, and dye for ILM staining, the inverted ILM flap technique was strongly and positively associated with MH closure (OR, 7.14; 95% CI, 2.72–18.7;  $P = 0.001$ ). Moreover, the inverted ILM flap technique and preoperative BCVA were significantly and positively associated with the postoperative BCVA at the final visit.

**Conclusions:** Our findings suggest that the MH closure rate and postoperative visual outcome for eyes with high myopia-associated MHRD are better with the inverted ILM flap technique than with ILM peeling. Thus, vitrectomy with the inverted ILM flap technique should be considered as the initial surgery for MHRD associated with high myopia.