

Based on the comments from the reviewer, we have made changes of the manuscript, which are detailed below. Please note that reviewer comments are indicated in italics. Our replies are in bold black font. Texts that are referred to in our replies are indicated by grey highlighting.

Reviewer's code: 02903704

COMMENTS TO AUTHORS

In this in vitro study, Dr. Minaga and colleagues evaluated resistance force against migration (RFM) and its correlations with radial force (RF) and the flared structure of six commonly-used covered SEMSs. This study highlights the problem of CSEMS migration faced by clinicians and provides useful information for stent selection in future clinical practice. One concern need to be addressed: As the authors mentioned, the anti-migration properties include higher radial force (RF), low axial force and flared ends etc. In this study, the authors only assessed the RF of the 6 CSEMSs, not including the axial force. Why? Please provide explanation or discussion.

A1. Thank you for your important comments. Nakai Y. and colleagues previously evaluated the risk factors for C-SEMS migration, including RF, AF and mechanical properties of C-SEMS in patients with distal malignant biliary obstruction. Their study showed that not AF but RF was associated with C-SEMS migration. They concluded that C-SEMS with low RF was the significant risk factor for early stent migration and high AF was not associated with C-SEMS migration. Therefore, of the various anti-migration properties, RF may be particularly important in preventing SEMS migration and we incorporated only the RF of the 6 C-SEMSs for the candidate of risk factor for stent migration. In addition, AF occurs only in a tortuous bile duct. As the stent was not bent in our phantom model, relationship between AF and RFM could not be assessed.

We have added the following sentences in the discussion part.

Their study revealed that RF but not axial force was associated with C-SEMS migration in patients with distal malignant biliary obstruction due to pancreatic cancer^[23].

We have also added the following sentences in the limitation.

Second, we could not assess the mechanical properties of C-SEMS other than RFM, RF and flare structure in our analysis. Other properties such as axial force may associate with anti-migration potential. However, axial force occurs only in a tortuous bile duct. As the stent was not bent in our phantom model, relationship

between axial force and RFM could not be assessed.