Same Session Validation of a Custom-Built 22G With the Commercial 25G System for EUS-Guided Portal Pressure Gradient Measurement

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Abstract

Background and aims: Endoscopic ultrasound-guided portal pressure gradient (EUS-PPG) measurement is a promising alternative to hepatic venous pressure gradient (HVPG) assessment, especially in settings where HVPG is unavailable or limited. The commercial 25-gauge (25G) system showed good correlation with the hepatic venous pressure gradient (HVPG). However, the 25G has drawbacks due to its small caliber and the proprietary pressure transducer. The aim of this study was to validate a custom-built 22G conventional intravascular pressure transducer system (22G EUS-PPG).

Methods: In this prospective cohort study, 26 patients underwent EUS-PPG measurement using both systems during the same session. The primary outcome was the correlation of PPG values. Secondary outcomes included the correlation and variability of portal vein pressure (PVP) and hepatic vein pressure (HVP) measured by both systems.

Results: PPG values showed excellent correlation of both systems ($r = 0.901$, $p < 0.001$). 25G EUS-PPG correctly identified clinically significant portal hypertension (CSPH, defined as PPG ≥ 10mmHg) in 25 of 26 (96.2%) cases. Portal vein and hepatic vein pressures also correlated significantly ($r = 0.776$ and $r = 0.673$, respectively) between both systems. Variability within both systems was very low to low.

Conclusion: EUS-PPG measurements obtained using the commercial 25G and custom-built 22G EUS-PPG systems were validated. The custom-built 22G system excels due to pressure-tracing based quality control, availability and cost-efficiency.

Keywords: EUS-PPG; endoscopic ultrasound; portal hypertension.