**Background**

Arterial MRI imaging is vital in hepatocellular carcinoma (HCC) diagnosis yet optimising arterial phases is challenging\(^1\). Varying arterial phase acquisition techniques are employed locally. We hypothesized real-time bolus-tracking would improve optimal enhancement compared with fixed-timed bolus techniques given circulatory variability.

**Aim:** To compare different local arterial phase techniques in order to improve and standardize the quality of locally produced arterial-phase liver imaging.

**Materials and methods**

Retrospective review performed of 36 hepatic MRI studies from 3 local hospitals (12 consecutive studies/site). Three arterial phase acquisition techniques evaluated included fixed-timed bolus with single arterial phase, fixed-timed bolus with 5 consecutive time resolved gradient echo arterial phases (TWIST-VIBE\(^\circledast\) – Siemens Healthineers, Erlangen, Germany) and a real-time bolus tracking method. Single reader review of arterial images undertaken for signal intensity (SI) of hepatic artery (HA) and portal vein (PV). Higher SI in HA relative to PV implied optimal timing. Higher SI in PV relative to HA implied a late arterial phase. No contrast in the PV implied the arterial phase was too early.

**Results**

Of the multi-sequence technique, 7 studies (58%) had optimal contrast signal intensity. 2 studies (17%) had early hepatic artery enhancement with no portal vein contrast (see table 1). The single phase, fixed-timed bolus technique produced 2 studies (17%) with optimal vascular signal intensity compared to 5 studies (42%) utilising real-time bolus tracking. Neither of the latter methods resulted in studies with early hepatic artery enhancement without portal vein enhancement.

**Discussion**

Within the limitations of the small sample, a fixed-time bolus method with a single arterial phase is unreliable. Data demonstrates in early arterial filling with no portal vein enhancement tumour enhancement may be subtle\(^2\). Multi-sequence techniques and real-time bolus tracking improve reliability. Local availability guides which is employed.

**References**