**Supplementary File S2 – Patient Flow, Imaging Pipeline, and Radiomics Details**

## 1. Patient Inclusion Flow (STROBE Diagram)

A total cohort of hepatocellular carcinoma (HCC) patients undergoing TACE was screened.
Cases were excluded if pre- or post-TACE CT perfusion was unavailable or if severe lipiodol-related artifacts impaired tumor visualization or segmentation.
The final study population consisted of 32 patients.

| | |
|---|---|
| HCC patients screened | 68 |
| Excluded: missing pre/post CT perfusion | 22 |
| Excluded: severe lipiodol artifacts | 3 |
| Excluded: lost to follow-up / incomplete data | 11 |
| Final included patients | 32 |

## 2. CT Acquisition & Preprocessing

All CT scans were performed using multiphase liver imaging protocols.
Preprocessing followed Image Biomarker Standardization Initiative (IBSI) recommendations:

- Isotropic resampling: 1 × 1 × 1 mm
- Z-score intensity normalization
- Fixed bin-width intensity discretization (bin width = 25 HU)
- Harmonized reconstruction kernel
- Perfusion maps generated using standardized vendor software

## 3. Tumor Segmentation

Whole-tumor 3D segmentation was performed on arterial-phase CT and perfusion maps.

• Manual segmentation by two radiologists in consensus
• Whole-lesion volume including necrotic and lipiodol regions
• Severe lipiodol artifacts were excluded
• Segmentation aimed to capture full post-TACE tumor phenotype

**4. Radiomics Features Extracted (Template)**

A total of 98 radiomic features were extracted from the segmented volume.
Below is a structured template of feature groups.

| Feature Class | Examples |
|---|---|
| First-order statistics | Mean, Variance, Skewness, Kurtosis |
| GLCM | Contrast, Correlation, Homogeneity |
| GLRLM | Short-Run High Gray Level Emphasis (SRHGLE), Long-Run Emphasis |
| GLSZM | Large-Area High Gray Level Emphasis (LAHGLE), Zone Variance |
| Shape | Volume, Surface-Area-to-Volume ratio |
| NGTDM / GLDM | Coarseness, Dependence Variance |

**5. Scan Interval Effect Analysis**

The median interval between pre- and post-TACE CT was 30 days.
No significant correlation was observed between scan interval and radiomic or perfusion feature changes
(Spearman $|\rho| < 0.2$, $p > 0.1$).