Optimizing Patient Selection for Locoregional Therapies in HCC- A Comparative Overview of TACE and TARE

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Purpose

- Hepatocellular carcinoma (HCC) is often diagnosed at intermediate or advanced stages, precluding surgical options for many patients.
- Locoregional therapies such as transarterial chemoembolization (TACE) and transarterial radioembolization (TARE) are central to disease management.
- This abstract provides a comparative overview of patient selection strategies for TACE and TARE, emphasizing integration of liver function, tumor burden, and performance status to optimize outcomes.

Methods

- A focused literature review was conducted using PubMed to identify studies evaluating patient selection criteria for TACE and TARE.
- Articles discussing selection frameworks such as the Barcelona Clinic Liver Cancer (BCLC) staging system, Child–Pugh score, Eastern Cooperative Oncology Group (ECOG) status, and radiographic criteria were prioritized.
- Key trials, including LEGACY, SARAH, DOSISPHERE-01, and TACTICS, were analyzed for patient selection insights.

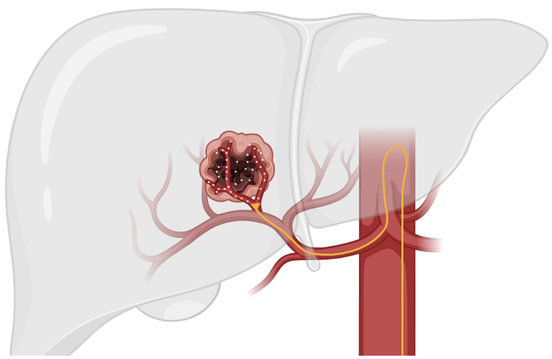

Figure 1: Adapted from *Fite et al*. Illustrating the general technique used in transarterial therapies like TACE and TARE

Selection Criteria	TACE	TARE
Liver Function	Child–Pugh A–B (avoid in decompensated cirrhosis)	Child–Pugh A or early B
Tumor Burden	Intermediate (multinodular, no vascular invasion)	Unresectable, liver-dominant; segmentectomy for <5 cm
Performance Status	ECOG 0	ECOG 0–2
Portal Vein Thrombosis	Relative contraindication	Segmental/branch PVT allowed with careful planning
Treatment Intent	Bridge/downstage for transplant, disease control	Curative (segmentectomy), hypertrophy (lobectomy)
Contraindications	Child–Pugh C, poor renal function, high tumor load	Child–Pugh C, extrahepatic spread, lung shunting
Personalized Dosimetry	Not routinely used	Routinely applied to optimize tumor dose
Combination Therapies	Sorafenib, lenvatinib, immunotherapy under study	Sorafenib, immunotherapy, radiation lobectomy combos

Table 1: Comparative Patient Selection Criteria for TACE and TARE

Results

- TACE remains the first-line therapy for intermediate-stage (BCLC B) HCC in patients with preserved liver function (Child–Pugh A/B) and ECOG 0, with studies demonstrating survival benefits and successful downstaging to transplantation criteria.[1]
- TARE is indicated for unresectable, liver-dominant HCC in patients with Child–Pugh A or early B, ECOG 0–2, and adequate vascular anatomy.[2,3]
- Radiation segmentectomy is most effective for early-stage, localized tumors (<5 cm), while lobectomy facilitates hypertrophy and tumor control in extensive unilobar disease.[4]
- Contraindications for both include decompensated cirrhosis (Child–Pugh C), extensive extrahepatic disease, and uncorrectable arteriovenous shunting.[5–8]
- Personalized dosimetry for TARE, as demonstrated in DOSISPHERE-01, has improved tumor control and mitigated complications.[7]
- Across modalities, ECOG performance status remains a critical predictor of tolerance and survival.

Conclusion

- Effective patient selection for TACE and TARE requires a multidisciplinary approach incorporating liver function, tumor burden, vascular anatomy, and performance status.
- TACE is best suited for multinodular disease in transplant-ineligible patients, whereas TARE, especially with personalized dosimetry, offers an alternative for unresectable or anatomically challenging tumors.
- Optimizing patient selection enhances efficacy, minimizes complications, and supports integration of these modalities into curative or bridging strategies.

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