

Yttrium-90 Radioembolization for Unresectable Intrahepatic Cholangiocarcinoma: Survival Outcomes

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Introduction

Intrahepatic cholangiocarcinoma

- **Second most common primary liver cancer** after **hepatocellular carcinoma (HCC)** (Figure 1.)

Current Treatment Paradigms for Intrahepatic cholangiocarcinoma

- **Surgical resection via hepatectomy**
 - However, the **eligibility for resection remains largely limited.**
- **Systemic therapy with gemcitabine-based chemotherapy are cornerstones of treatment**
 - However, the **prognosis remains poor** due to **high rates of recurrence.**

Our study goal: To provide a comprehensive review of the application and potential advantages of utilizing transarterial radioembolization (TARE) with yttrium-90 (Y90) microspheres in the treatment of unresectable intrahepatic cholangiocarcinoma

Transarterial radioembolization (TARE) with yttrium-90 (Y-90) microspheres

- Induction of an atrophy-hypertrophy complex
 - Enhances the future liver remnant for potential surgical resection
- Bridge to resection
- Bridge to transplant

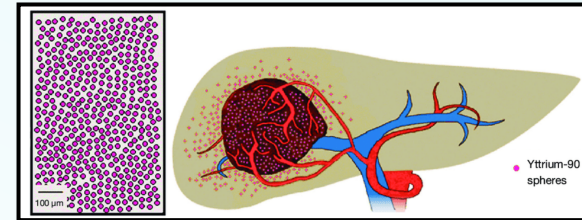


Figure 1. Transarterial radioembolization with Y-90 for intrahepatic cholangiocarcinoma*

*Adapted from Savic et al., Intra-arterial embolotherapy for intrahepatic cholangiocarcinoma: update and future prospects²⁸

Methodology

Systematic Literature Review:

- **Research Database:** PubMed
- **Clinical Query**
 - Searched terms:
 - “Y-90” OR “Y90” OR “TARE”
 - “intrahepatic cholangiocarcinoma” OR “ICC”
- **Inclusion Criteria:**
 - Patients with **unresectable cholangiocarcinoma**
 - Patients may be **treatment-naïve** or **treatment-refractory**
 - Study cohort with an **n ≥ 10 patients**
 - Study assessment of **overall survival outcome**
- **Goal:** To assess the **survival outcomes** for **intrahepatic cholangiocarcinoma** in relation to the following parameters:
 1. **TARE-90 as first-line treatment**
 2. **TARE-90 as combination treatment with chemotherapeutic agents** including **gemcitabine, cisplatin, and capecitabine**
 3. **TARE-90 as salvage/consolidation therapy**

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Complete list of references will be provided upon request.

Results

- ❖ Per the inclusion criteria, 27 eligible studies were identified that reported TARE-Y90 use for unresectable intrahepatic cholangiocarcinoma.
 - ❖ Studies A-L: TARE90 as First-Line Treatment
 - ❖ Studies M-R: TARE-90 Combination Therapy
 - ❖ Studies S-ZA: TARE-90 Salvage Therapy
 - ❖ Studies D, F, H, I, K: broken down by treatment cohorts, thus listed twice (Figure 2)
- ❖ Total of 2773 patients included in the pooled analysis
- ❖ Several studies reported high rates of TACE-90 as bridge to resection [M, O, D, I, K]
- ❖ Factors associated with improved median OS:
 - ❖ Imaging response at 6 months [H]
 - ❖ Solitary tumors [D]
 - ❖ Tumor diameter <4cm [ZA]
 - ❖ Tumor burden <25% [G, ZA]
 - ❖ Higher baseline albumin [D]
 - ❖ Higher baseline cholinesterase [G]
- ❖ However, existing literature presents conflicting evidence about the following:
 - ❖ Prior resection
 - ❖ Improved mOS: [ZA]
 - ❖ Decreased mOS: [U]
 - ❖ Prior chemotherapy
 - ❖ Improved mOS: [H]
 - ❖ Decreased mOS: [F, V, W]

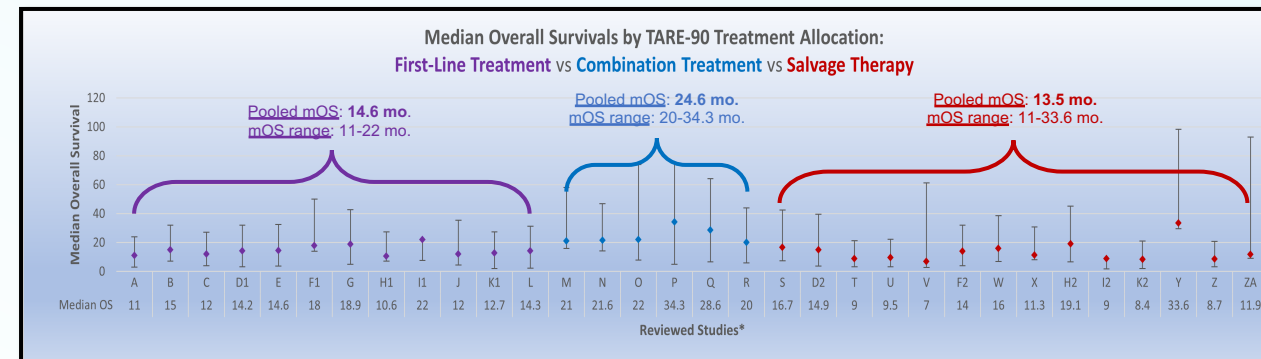


Figure 2. Median Overall Survival Outcomes with TARE-90 treatment for Intrahepatic Cholangiocarcinoma, stratified by Treatment Allocation

Purple values correspond with first-line treatment.
Blue values correspond with combination TARE-90-Chemotherapy treatment.
Red values correspond to TARE-90 use as salvage therapy.

Conclusions

- TARE-90 shows promise for achieving favorable long-term survival outcomes in the treatment of intrahepatic cholangiocarcinoma.
- TARE-90 has been shown to show high efficacy in downstaging tumors and bridging to transplant.
- TARE-Y90 tumor downstaging demonstrates comparable long-term outcomes to primary resection with a median OS of up to 3 years.
- TARE-Y90 provides targeted intra-tumor radiation, offering comparable outcomes to transarterial chemoembolization (TACE) with minimal toxicity and fewer adverse events.
- Further research is needed to determine the optimal timing of Y90 administration with systemic therapy and to identify ideal candidates for downstaging prior to resection..