

LIFEFEST 2026

Nashville



Interventional Radiology

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Interventional Radiology

Treatment Options for Locoregional Progression of GIST

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Treatment of GIST metastases

- Why IR for locoregional therapy?

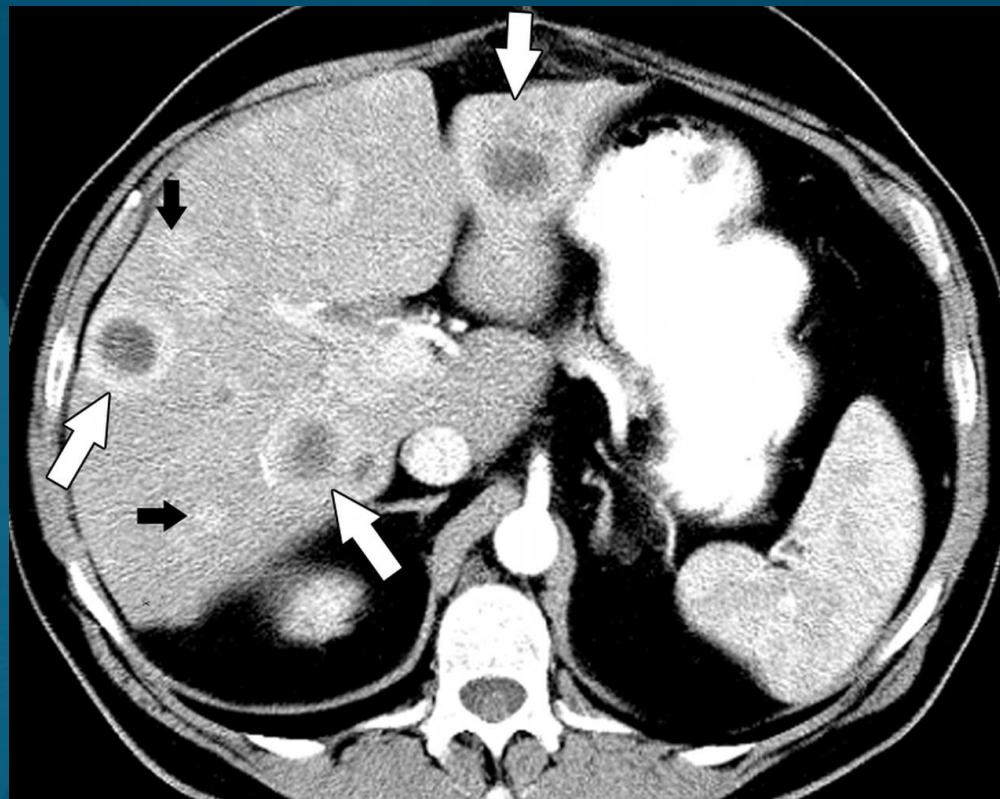


Treatment of GIST metastases

- Percutaneous Biopsy
- Percutaneous Thermal Ablation
- Transarterial therapies
 - Bland embolization
 - Chemoembolization (TACE)
 - Radioembolization (Y90)

Percutaneous Biopsy

- Image guided (US, CT or MRI)
- Coaxial Biopsy Needle (18 G)
- Moderate Sedation
- Local Anesthetic
- Post-biopsy observation
- Discharge same day

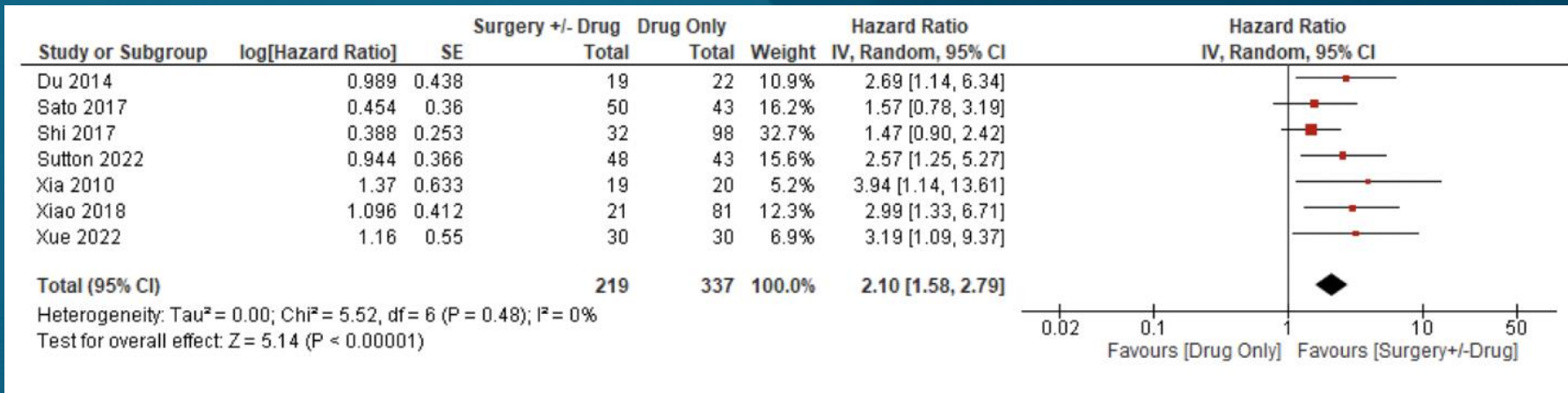


Hong et al. Radiographics. 2006

Surgical Resection: Meta-Analysis

- Eleven studies (988 patients).
- Overall survival was significantly improved in patients undergoing **liver resection ± drug therapy** in comparison to drug therapy alone.

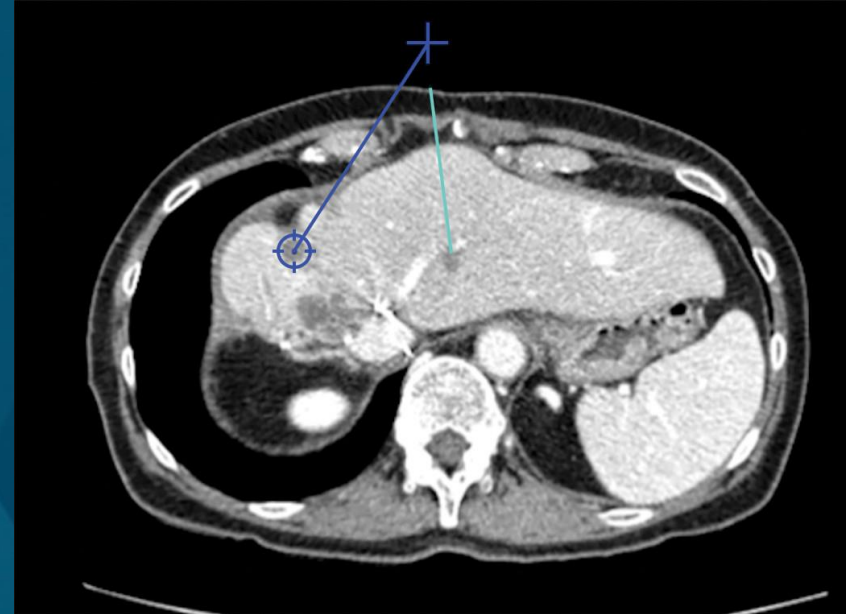
Take Home Point: liver resection for patients with metastatic GIST (regardless of peritoneal metastases) improved progression free and overall survival in conjunction with tyrosine kinase inhibitors as compared with medical therapy alone



Rahimi-Ardabili et al. 2023

Ablation

- Why ablate and not resect?
 1. medical comorbidities
 2. unfavorable tumor location
 3. underlying liver dysfunction
- Optimal targets:
 - tumors measuring ≤ 3 cm in diameter
- Margins:
 - minimal: 5 mm
 - optimal: 1 cm



Ablation Techniques

Ablation	Advantages	Disadvantages
RFA	• Cost-effective • Versatile to tumor type • Validated in most tumor types • Can use multiple probes	• Limited real-time feedback • Pacemaker interference • General anesthesia common • Risk of ground pad burns
Cryoablation	• Visible ablation margins • No pacemaker interference • Increased anti-tumor immunity	• Ablation consistency • Tissue thermal conduction limits efficacy • Long ablation times • Risk of coagulopathy, hemorrhage, DIC
MWA	• Higher ablation temperatures vs. RFA • Large ablation zones • Fast and short ablation pulses • Capable of perivascular targeting • Cost-effective	• Requires general anesthesia • Unable to monitor tissue impedance • More technically challenging • Proactive cooling to prevent wire overheating • Requires larger probes for energy delivery

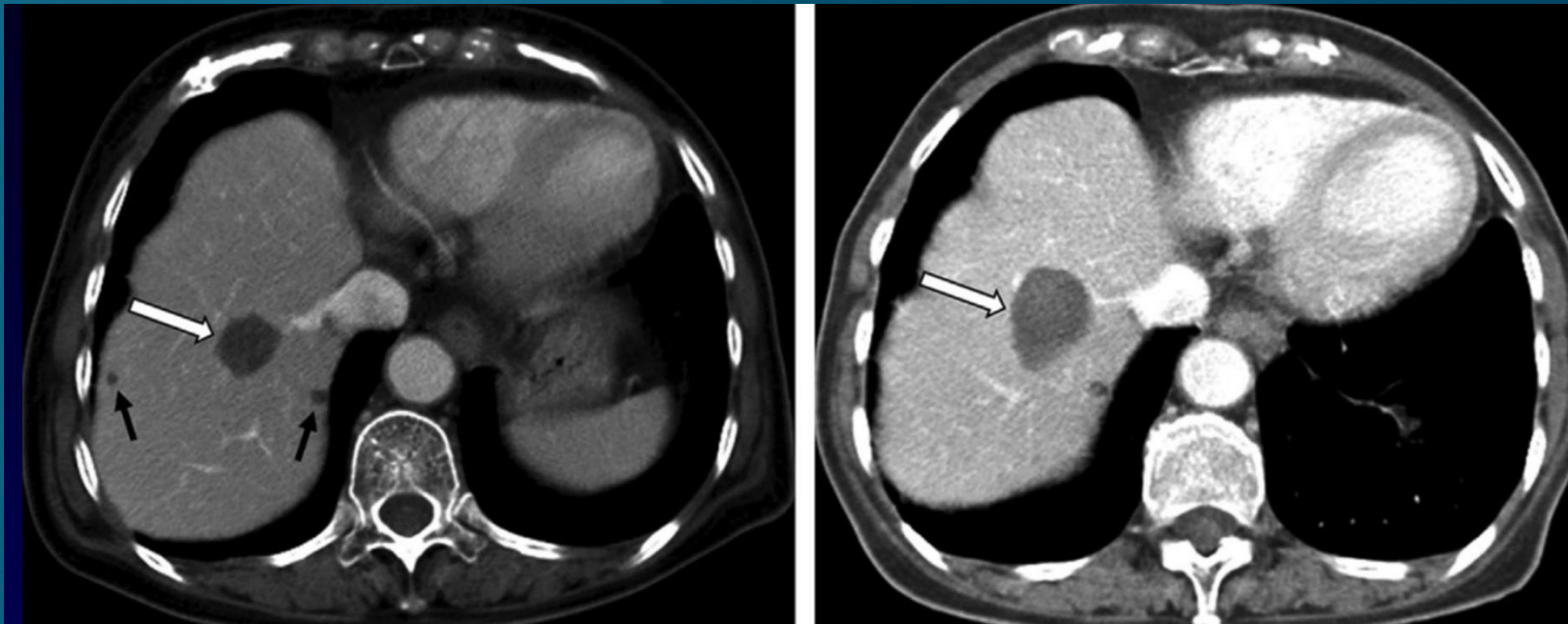
Radosevic et al. Sci Rep. 2022 Jan 10;12(1):316

Campbell et al. Cancers (Basel). 2024 Jul 17;16(14):2560

Thermal Ablation

- 29 patients with tumor progression on medical therapy or drug resistance underwent RFA
- median overall survival period was 90.2 months

Take Home Point: RF ablation appears to be a safe and effective treatment for hepatic metastases of GIST when medical therapy fails

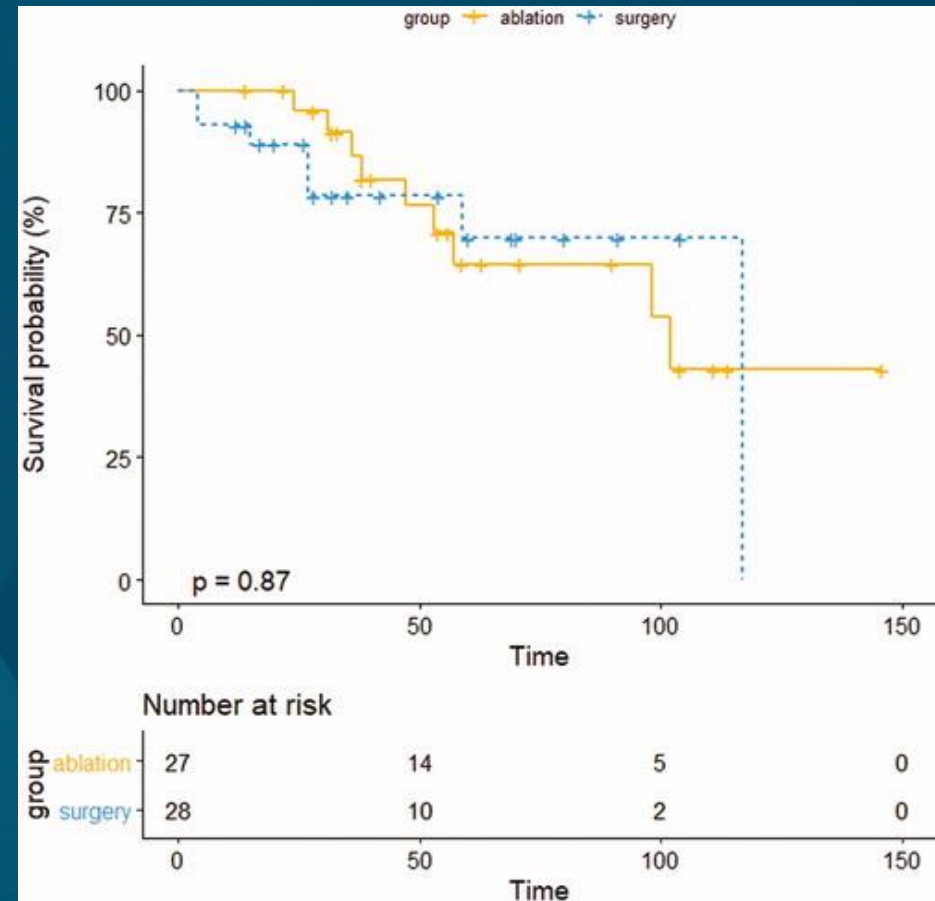


Jung et al. JVIR. 2015.

Thermal Ablation

- 55 patients (27 in the ablation group and 28 in the surgery group) with liver metastases were included
- median OS was 102.0 months in the ablation group and 117.0 months in the surgery group ($p = .875$); 1, 3 and 5 year OS and PFS similar across both groups
- fewer postoperative complications (18.5% vs. 78.6%, $p = .001$) and shorter lengths of hospital stay (8.0 vs. 16.5 days, $p = .001$) in the ablation group

Take Home Point: Compared with resection, thermal ablation offered comparable OS for liver metastases of GISTs (with fewer complications and shorter hospital stay)

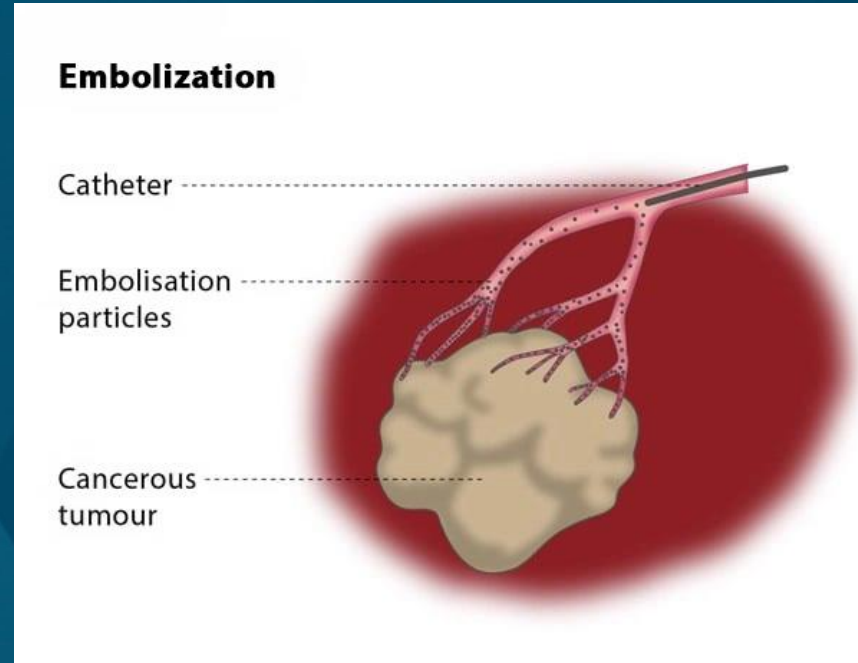


Yang et al. Journal of Hyperthermia. 2020.

Hepatic Artery Embolization

Goal

- Devitalize tumor via ischemic damage
- Small particles for terminal vessel blockade
- Endpoint of procedure: Stasis of flow in feeding blood vessels



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Hepatic Artery Embolization

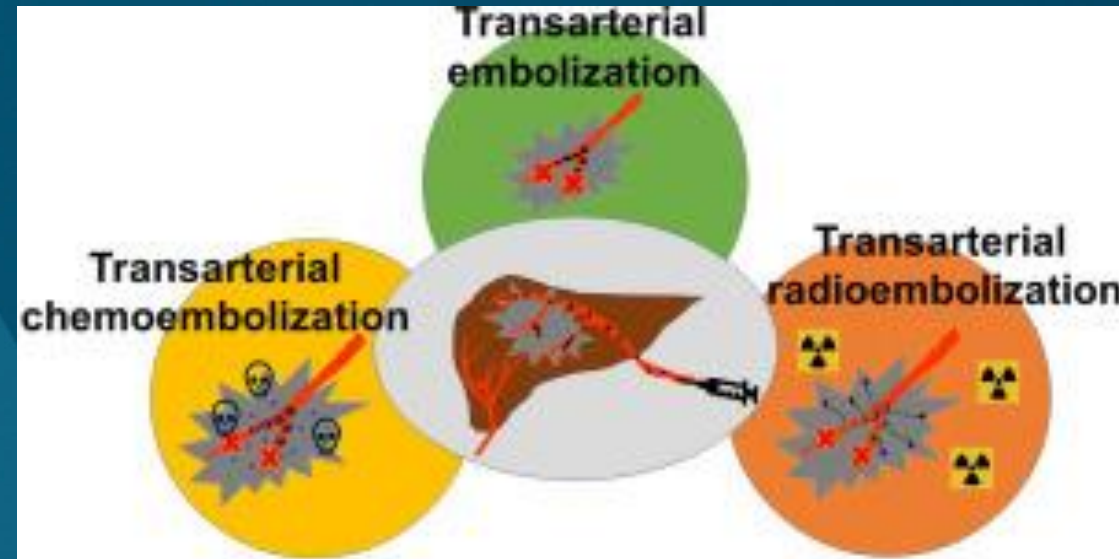
Side Effects:

Post-embolization syndrome:

- abdominal pain
- fever
- lethargy
- nausea
- right shoulder or chest pain

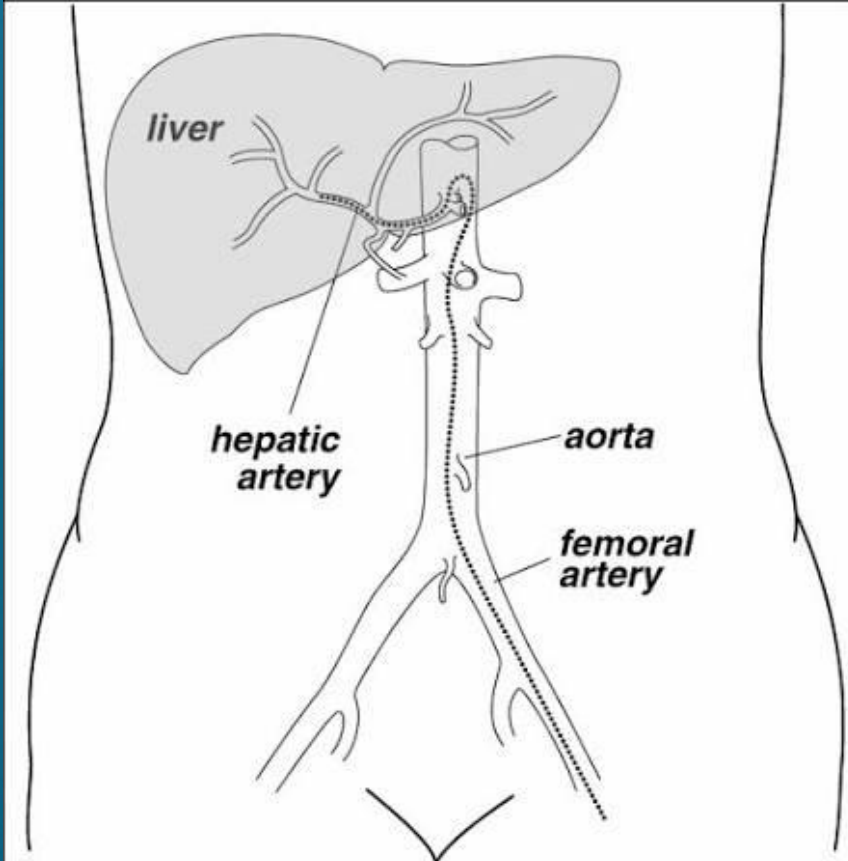
Post-Procedure:

- same day discharge vs. admission
- transient elevation of LFTs

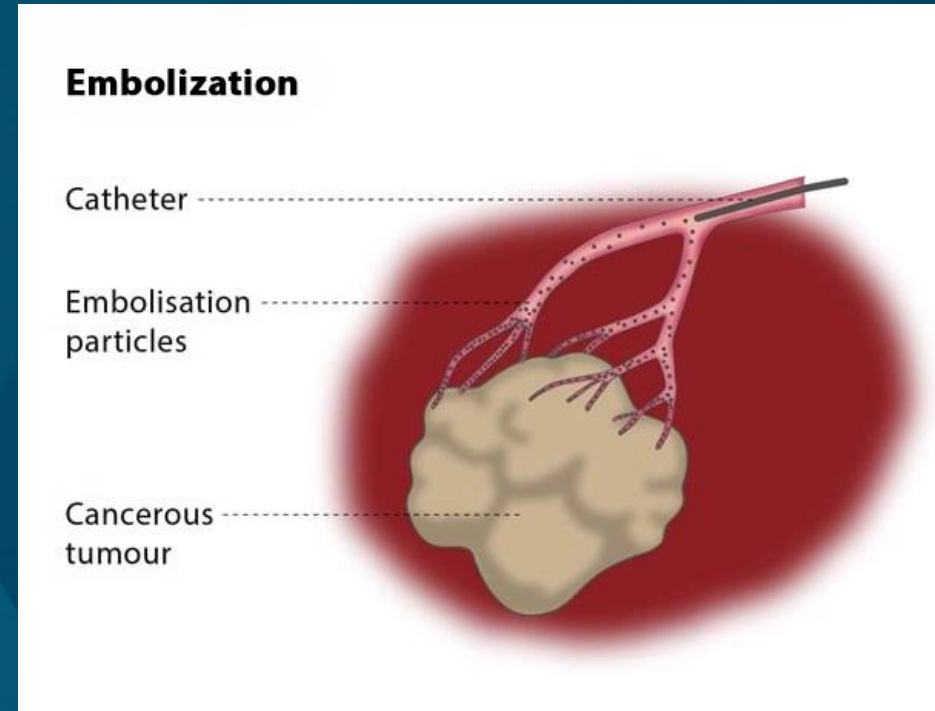


Pérez-López et al. Pharmaceuticals. 2020.

Bland Embolization

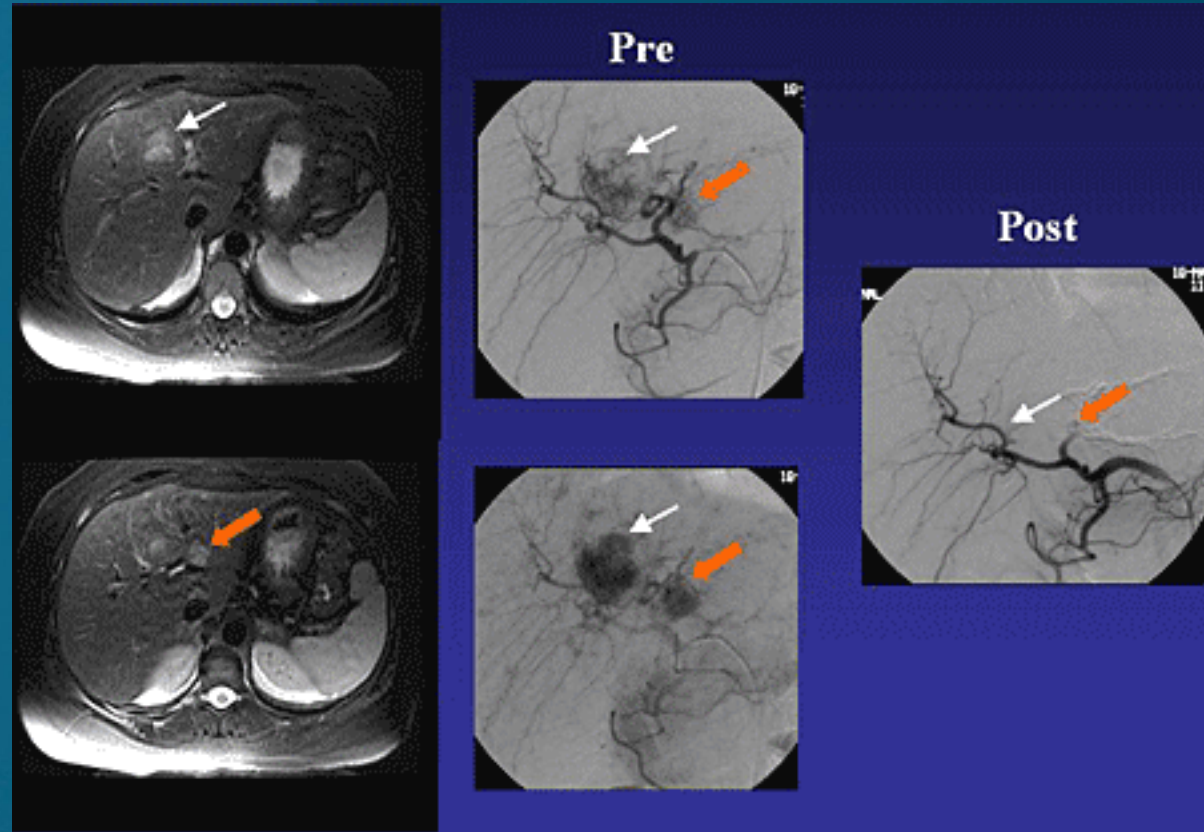


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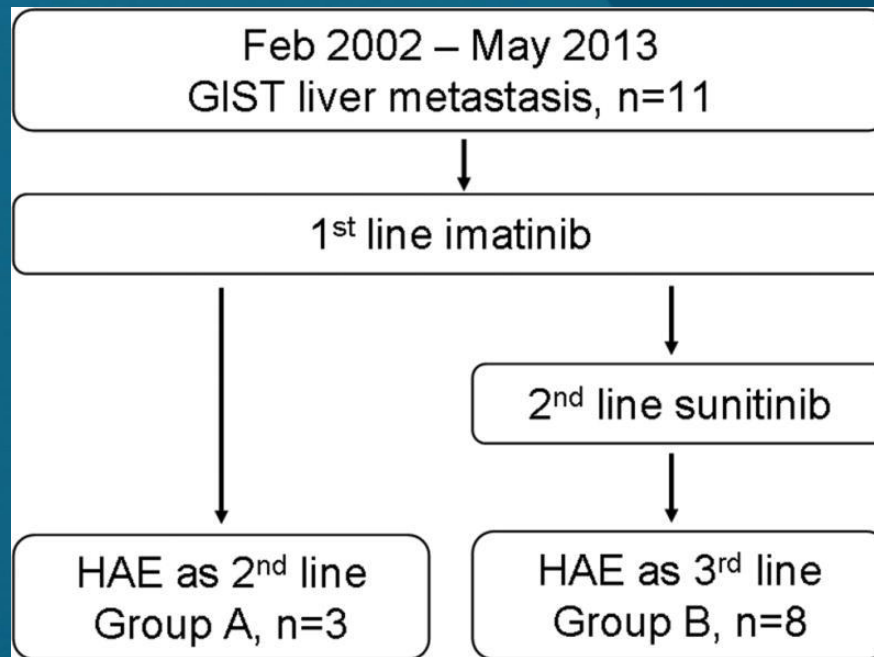
Bland Embolization



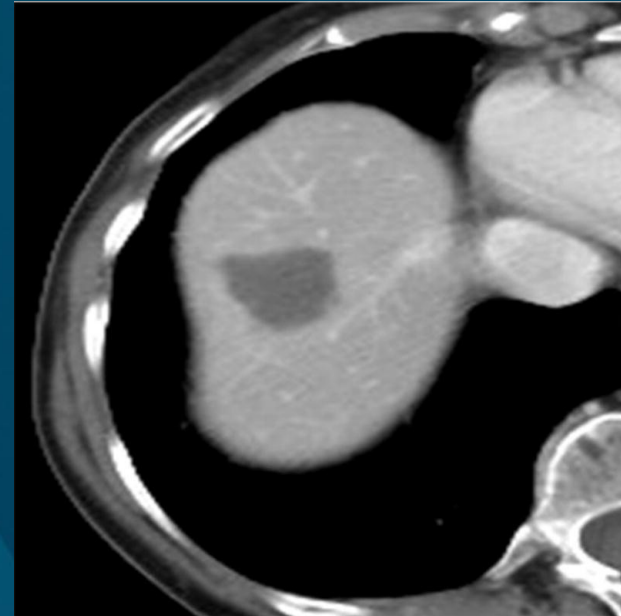
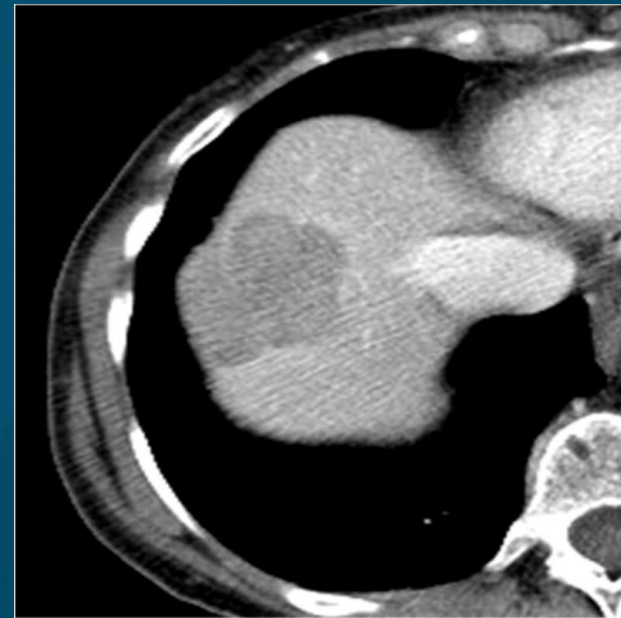
Dematteo, R. GISTSupport.org.

Bland Embolization

- response rate by mRECIST criteria 45.5%
- median OS and PFS after embolization
 - 14.9 months and 3.9 months in group A
 - 23.8 months and 3.4 months in group B



Takaki et al. J Gastroint Cancer. 2014

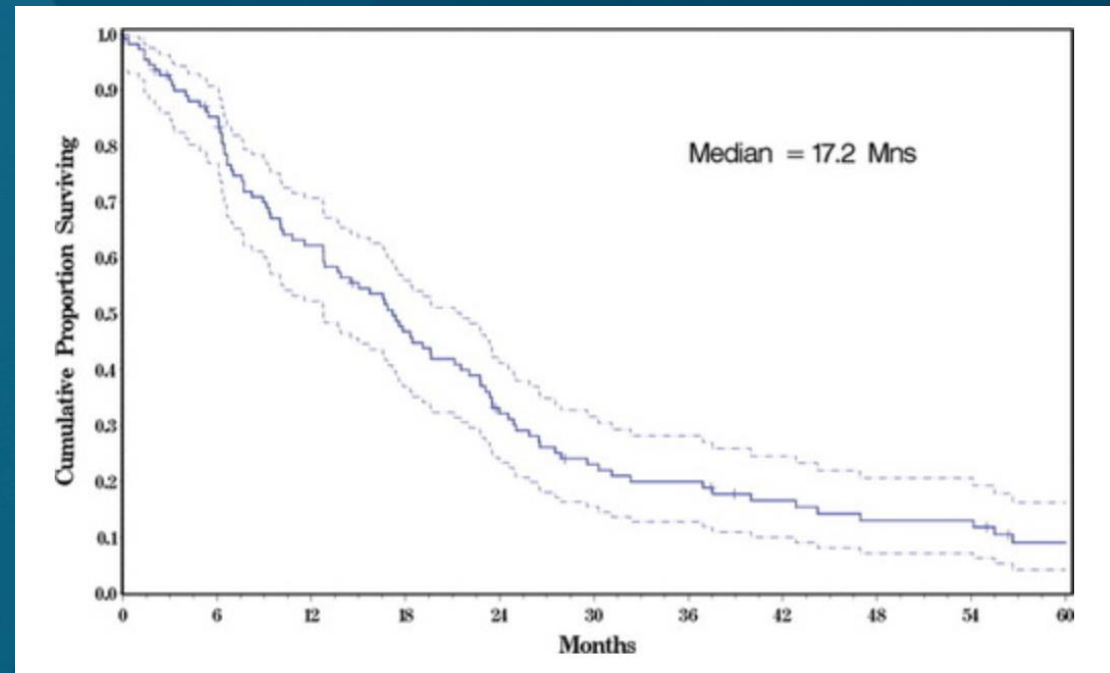


TACE

Hepatic artery chemoembolization produced a durable tumor response or disease stabilization in the majority of patients with GISTs metastatic to liver.

Prognostic Factors OS and PFS:

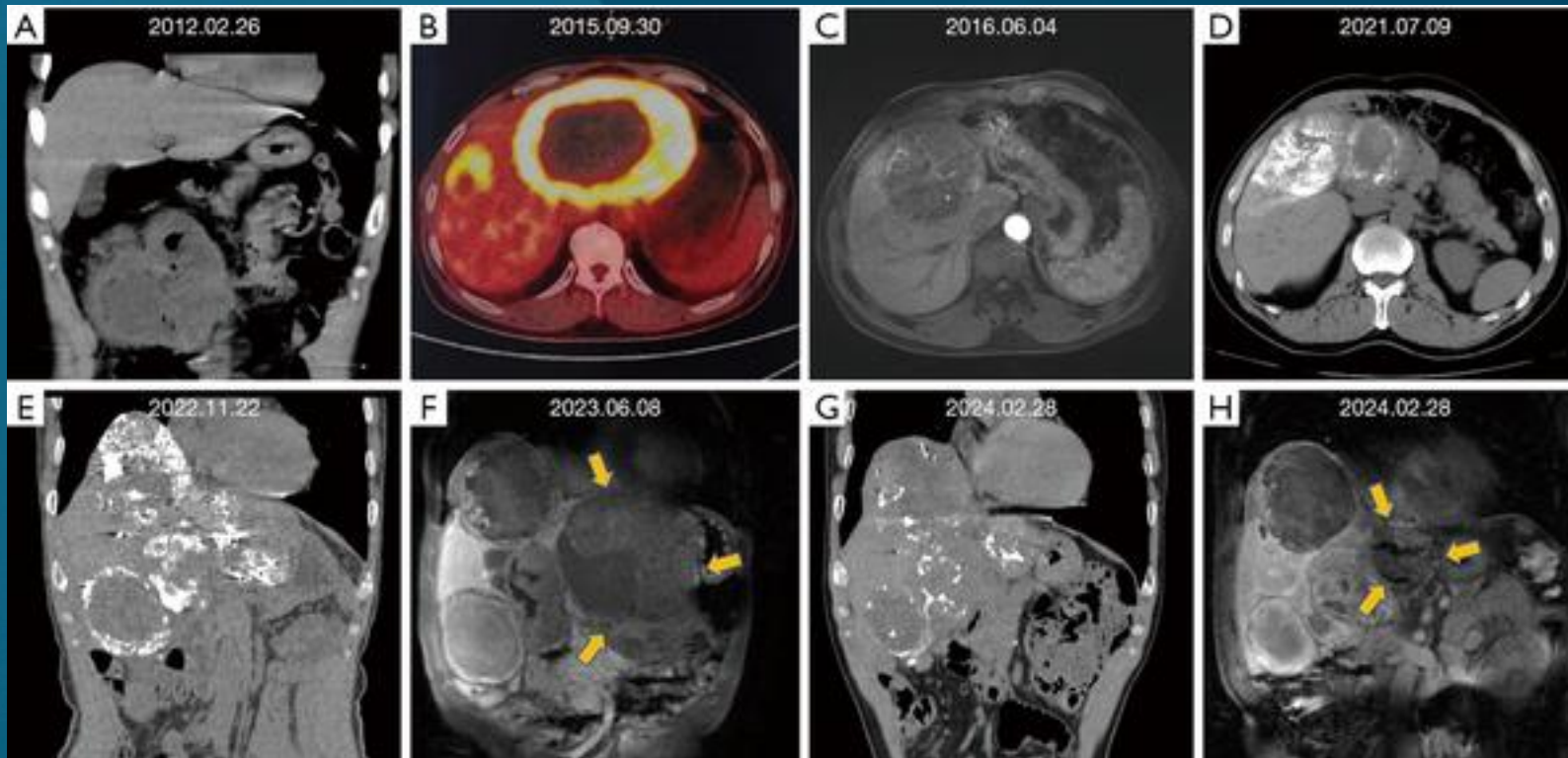
- Extent of liver disease
- Extrahepatic disease
- Number of treatments
- Use of concurrent Imatinib



Kobayashi et al. Cancer. 2006.

TACE + TKI

- case report which describes the application of 6 TACE sessions in the 12-year treatment of multiple liver mets from small intestinal stromal tumors that were resistant to multiple TKIs



Gu et al. GJO. 2024

Y90 Radioembolization

- Study: (Y90) radiation segmentectomy (RS) in the treatment of oligometastatic secondary hepatic malignancies
- Disease control was achieved in (93.3%) of patients
- median TTP of the treated tumor was 72.9 months
- median OS was 60.9 months

Take Home Point: Y90 RS was safe and effective in achieving a high disease control rate in the treatment of oligometastatic secondary hepatic malignancies.

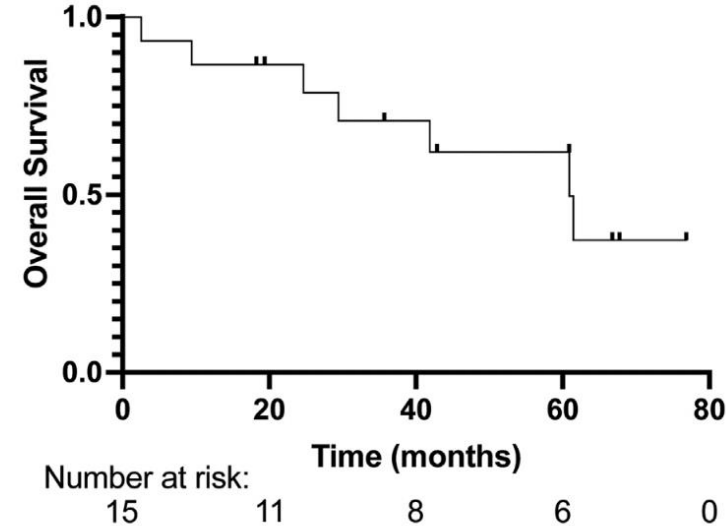


Figure 3. Overall survival in months as estimated by the Kaplan-Meier method in patients with oligometastatic secondary hepatic malignancies after radiation segmentectomy.

Chiu et al. JVIR. 2023.

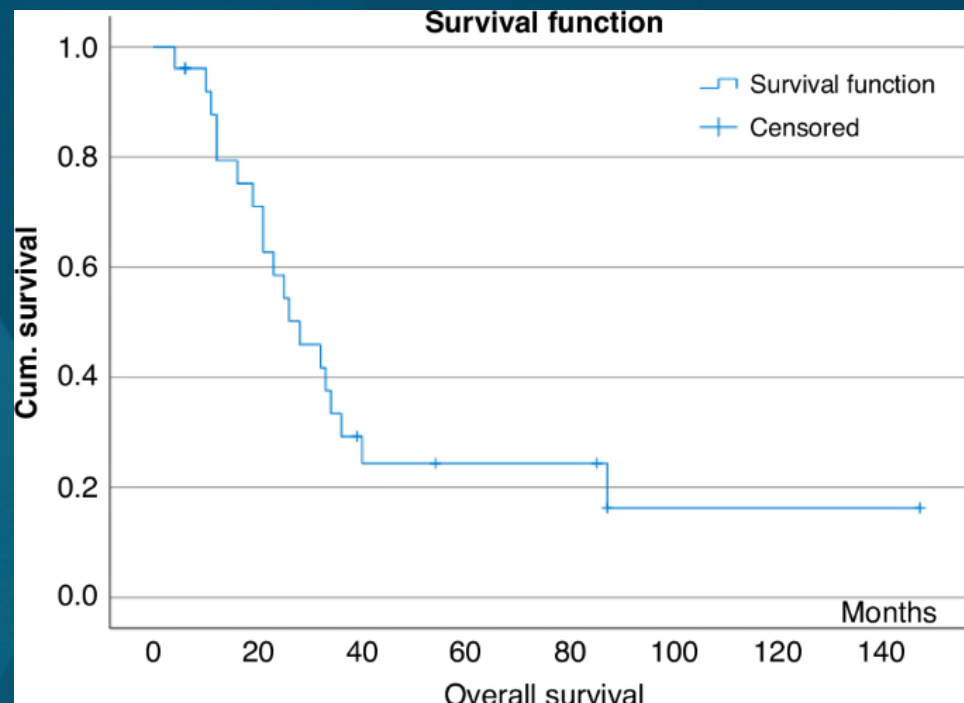
Y90 Radioembolization

26 patients with liver metastases of GIST were treated by Y90

- OS after Y90 was 28 months
- Best H-PFS was observed in patients with 'q-wt' at 25 months

Conclusions

Y90 is a potent treatment for patients with liver metastases of GIST resistant to TKI therapy. In patients with 'q-wt' GIST, SIRT should be considered early in treatment



Hohenberger et al. Br J Cancer. 2025.

Take Home Points

- Ablation and embolization are viable treatment options for the treatment of GIST metastatic to the liver
- Image guided locoregional therapy can be considered in the 2nd line and early in treatment in well selected patient population



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