THE OHIO STATE UNIVERSITY / COLLEGE OF MEDICINE / DIVISION OF INTERVENTIONAL RADIOLOGY

Comparing Embolic Materials in TACE and TARE: Morphology, Vascular Distribution, and Clinical Outcomes

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INTRODUCTION

Embolization is a cornerstone therapy for liver malignancies, using **TACE** (chemoembolization) and **TARE** (radioembolization).

Outcomes depend heavily on **embolic material morphology and composition**.

Understanding embolic distribution helps optimize therapy, balancing efficacy and safety.

AIM

Analyze how embolic material properties affect:

- Distribution
- Efficacy
- Safety in TACE and TARE

Compare traditional, novel, and bioresorbable embolics to guide **clinical selection**.

METHODS

Literature review comparing embolic agents:

- **TARE**: Resin & glass Y-90 microspheres

- **TACE**: PVA microspheres, gelatin sponge (GS), drug-eluting beads (DEBs)
- Novel: Imageable and bioresorbable embolics

Outcomes assessed:

- Tumor absorbed dose (TAD)
- Liver enzyme elevation
- Recurrence rates
- Safety profile

RESULTS

TARE (Y-90 microspheres):

- Resin & glass Y-90 → improved **dosimetric precision**.

- TARGET trial: TAD >300 Gy → OS 36.7 mo vs. TAD <200 Gy → OS 16.1 mo.

TACE:

- PVA microspheres → effective occlusion but ↑ liver enzymes than GS particles.

- GS particles → safer for repeat sessions, lower enzyme rise.

- Gelatin-based embolics → useful in poor liver function.

- DEBs → sustained chemo delivery and release but **higher cost**.

RESULTS

Emerging embolics:

MRI-detectable PVA and Bioresorable microspheres:

- Improves monitoring.
- Reduce long-term complications.

CONCLUSIONS

Embolic **morphology & composition** directly impact outcomes.

Y-90 microspheres: superior for precision in TARE.

TACE agent selection should consider:

- Liver function
- Tumor vascularity

FUTURE DIRECTIONS

Integration of imageable & bioresorbable microspheres

Personalized embolic selection → maximize efficacy & minimize toxicity.

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