



## NEW IN THE LINE-UP OF INTERVENTIONAL ONCOLOGY SERVICES: ADVANCED TARGETED CANCER THERAPIES

Volume 16, Issue IR01, October 2016



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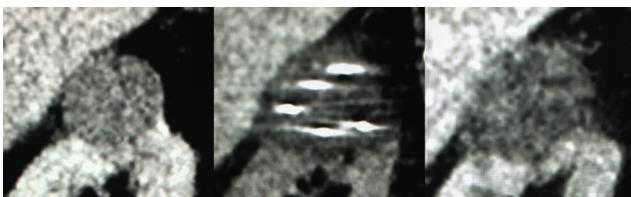
### Introduction

Grand Traverse Radiologists have had the privilege of providing Interventional Oncology services to Munson Healthcare for years. In addition to diagnostic biopsies, vascular access for chemotherapy, and palliative drainage catheters, we now also offer our patients a full range of advanced targeted cancer therapies. These include ablation procedures such as microwave, radiofrequency, and cryoablation. Specifically for liver tumors, we also offer embolic procedures including radioembolization and chemoembolization.

### Microwave/Radiofrequency/Cryoablation

Ablation is a minimally invasive procedure whereby one or more needles are percutaneously placed directly into a tumor with CT and/or ultrasound guidance. Microwave and radiofrequency ablation is primarily utilized for patients with isolated primary or metastatic tumors of the liver. These needles cause tumor cell death by heating the tissue to temperatures approaching the boiling point of water. Temperatures greater than 131 degrees Fahrenheit are generally required for cell death. Lesions measuring less than 5 cm are best treated by this modality.

Cryoablation is similar to microwave and RF ablation in that it is performed by inserting needles percutaneously with CT and/or ultrasound guidance. Rather than using heat, cryoablation freezes tumors to achieve cell death.



Coronal CT images demonstrating a 3 cm renal cell carcinoma at the upper pole of the right kidney preablation (enhancing tumor), during cryoablation (with 5 probes and iceball formation), and after ablation (nonenhancing tumor).

Temperatures near the needle drop to as low as -40 degrees Fahrenheit.

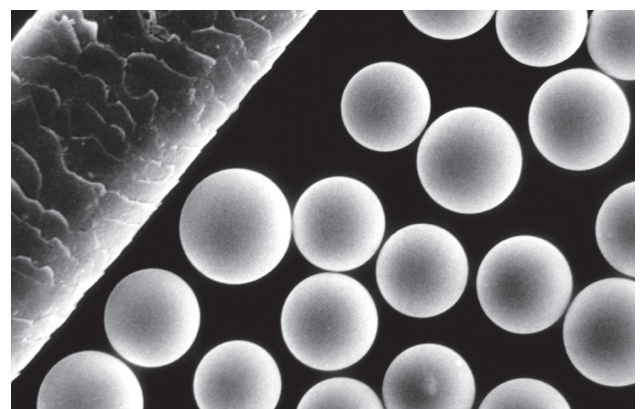
Multiple cycles of freezing and thawing are performed. Freezing the intracellular water causes the cell to expand and membranes to rupture.

Cryoablation is ideal for treating renal tumors as it causes less damage to the renal collecting system. Lesions less than 4 cm are best treated with cryoablation.

The recovery period from these ablation procedures is short. The vast majority of patients are discharged the same or next day. Post procedure pain is generally minimal and easily controlled with oral pain medication.

### Radioembolization/chemoembolization

Radio and chemoembolization are used to treat primary and metastatic disease of the liver. The most commonly treated primary liver tumor is hepatocellular carcinoma, while colorectal and neuroendocrine tumors account for most metastatic lesions. These therapies are usually reserved for patients with unresectable, but liver dominant disease.

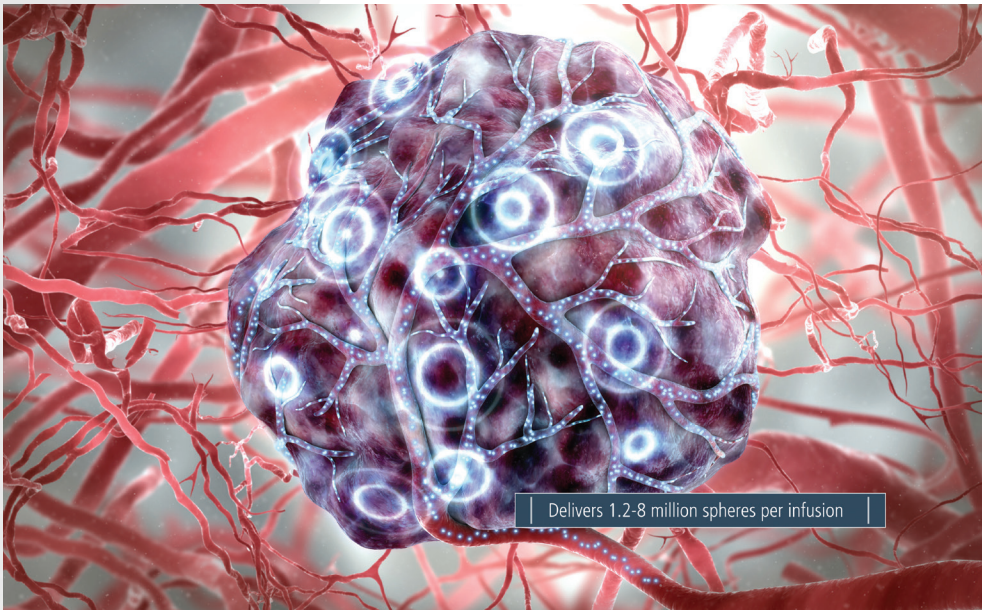


Y-90 spheres compared to a strand of hair.  
Image courtesy of BTG International Inc. Used with permission.

Similar to a cardiac catheterization, a small catheter is advanced into an artery in the groin and used to select the hepatic artery.

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Animation showing a liver tumor with multiple Y-90 spheres embedded within the tumor vasculature, delivering radiation directly to the tumor. Image courtesy of BTG International Inc. Used with permission.

After detailed mapping of the hepatic branches, beads either loaded with a chemotherapy agent or radioactive material are delivered specifically into the branches supplying the tumor. The beads are appropriately sized so they become wedged in the capillary bed of the tumor and cause cell death over the next several days.

### Conclusion

Grand Traverse Radiologists have always been proud to provide high quality Interventional Oncology services to our patients. We are excited to expand our services to include the most advanced modalities in this field and look forward to serving our patients and the community for years to come.

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