

DEPARTMENT OF DIAGNOSTIC RADIOLOGY AND NUCLEAR MEDICINE

Patient Information Sheet

Radioembolization

Indications for the Procedure: Radioembolization is indicated for patients with unresectable liver dominant primary or metastatic cancer that have failed or are not candidates for other standard of therapies (e.g. systemic chemotherapy)

Description of the Procedure: Radioembolization is a procedure in which small radioactive particles are injected into an artery to treat liver tumors. The procedure is performed in *two stages (procedures)* on two separate days typically one to two weeks apart. During the *first stage (procedure)*, the liver artery is injected with small particles to see how many of these particles go to the lung (lung shunt). If the shunt is greater than 20%, the patient is not a candidate to have the second procedure. If one is a candidate (lung shunt less than 20%), the patient will have the *second stage (procedure)* where the liver artery is injected with radioactive microspheres to treat the liver tumor.

The patient is brought to the interventional radiology holding room, and a needle is placed into a vein and connected to IV tubing and fluid. Medications are given into the vein to prepare the patient for the procedure, including anti-inflammatory drugs and antibiotics. A urinary catheter (a Foley catheter) is inserted in the patient's bladder. The patient is then brought to an interventional radiology procedure room. Medications are given to keep the patient comfortable. An area is selected in which a small tube (a catheter) will be inserted into an artery in an arm or a leg, for example, the groin area. The selected area is carefully cleaned with antiseptic solution and covered with sterile drapes. Medicine to numb the skin (called a local anesthetic) is injected with a tiny needle. This causes a stinging or pinching sensation which lasts a very short time. Once the area is completely numb, the skin is punctured, and a needle is placed into the artery or vein. A small wire is advanced through the needle into the blood vessel. The needle is removed, and a catheter (a small tube) is advanced over the wire, while watching with X-ray fluoroscopy to make certain the catheter goes to the correct arteries.

For the *first procedure* (see first paragraph above), the artery is then injected with small particles to determine if there is a large lung shunt. In order to do this, the patient is transferred to Nuclear Medicine on a stretcher. The patient is then taken to the holding area where the groin sheath is removed, and pressure is applied to the puncture site for 15-20 minutes to control bleeding and observed for about 1 hour, after which the patient is sent to a hospital room for continued monitoring.

For the *second procedure* (see first paragraph above), the artery is then injected with small radioactive particles to treat the liver tumor. The patient is then taken to the holding area where the groin sheath is removed, and pressure is applied to the puncture site for 15-20 minutes to control bleeding and observed for about 1 hour, after which the patient is sent to a hospital room for observation after the procedure. Since these particles emit small amount of radioactivity that travel short distances (2-12 mm) within the body (liver), the patient will be monitored on a floor

where nurses are specially trained to manage such patients. Special instructions will be given to the patient upon discharge..

Risks of the Procedure: The most common complication of an embolization is pain, for which patients receive pain medication. There may also be nausea, vomiting, fever and an elevated white blood count after the procedure. These symptoms (including pain) are most intense 2-3 hours after the procedure and are usually well controlled by medications given by interventional radiology doctors. Sometimes pain is not well controlled by usual medications, in which case doctors who specialize in treating pain are consulted and give more powerful pain medications. There is a small risk of infection (less than 1%). The most severe but less likely risk is nontarget embolization (injection of microspheres into blood vessels that supply adjacent organs such as stomach or small bowel). This risk is prevented by having the *first stage* of the procedure (mapping) where coils are used to block redundant blood vessels into the adjacent organs.

Alternatives to the Procedure: The conditions that can be treated with endovascular embolization sometimes can be treated with surgery or medical therapy. However, endovascular embolization is recommended when it is thought to be safer or more effective than other treatments. Depending on a patient's condition, surgery or medical therapy may not be possible.

Probable Consequences of Refusing the Procedure: The consequences of refusing this procedure depend on the condition of the tumor. Without treatment, the tumor may continue to progress and get worse, making the patient's general condition worse as well.

Persons performing the procedure: The key portions of the procedure will be performed by an attending physician who is a member of the medical staff of Rush University Medical Center, or a resident or fellow who will be observed and supervised by a member of the medical staff. Residents are licensed physicians in an approved residency program. Fellows are licensed physicians who have completed a residency in radiology and are in an approved post-residency training program. The parts of the procedures residents or fellows will perform will be based on their level of training and competence.