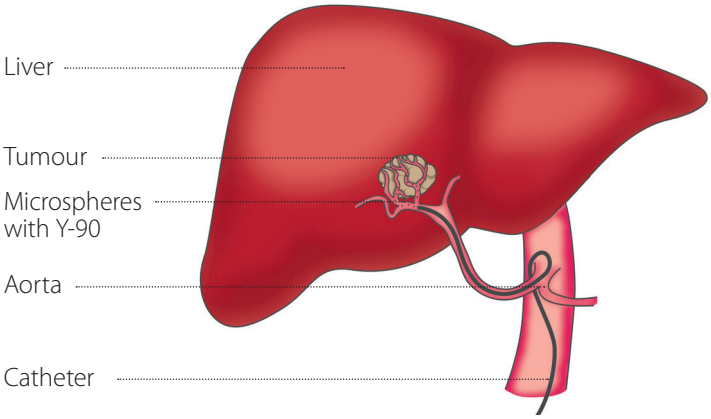
Radioembolization (TARE) and Chemoembolization (TACE)

Transarterial (through the artery) radio-embolization and chemoembolization are types of anti-cancer treatments. These procedures are also called "TARE" and "TACE". During a radioembolization procedure, an interventional radiologist injects small balls (microspheres) loaded with the radioactive isotope Yttrium (known as Y-90) or Holmium 166 into the blood vessels supplying a tumour. Because the radiation is focused only on the tumour, higher and more effective amounts of radiation can be used compared to other treatments. Similarly, during a chemoembolization procedure, an interventional radiologist injects cell-killing drugs directly into the blood vessels supplying the tumour.

What are the benefits of radio- and chemoebolization?
These treatments have several benefits for you. Your hospital stay will be shorter. Compared to surgery, you will be out of bed and mobile again more quickly. There is often less pain after the procedure when compared with surgery, and complications are also less common. Radio- and chemoembolization mostly do not affect healthy tissue or organs, and there is only little loss of liver function, if any, which will often get better. While it is still sometimes better to treat larger tumours with surgery, radio- and chemoembolization can be used in large tumours when they are in difficult locations, or when surgery or radiation treatments are not possible.

How do I prepare for the procedure?
Before the procedure, some blood tests are needed to check how your liver is working (liver function tests) and to make sure that your blood is clotting normally. You should inform your doctor about all medications that you are taking and any allergies you may have. Your doctor may temporarily stop some medications such as blood thinners before the procedure. It is also important that you do not have any infections at the time of the procedure. Within a few weeks of the procedure, a contrast-enhanced CT or MRI scan (different types of imaging) will be performed to re-check the exact extent and location of the cancer. You have to stop eating and drinking 6-8 hours before the procedure.



The procedure:
Chemoembolization is performed by interventional radiologists. Radioembolization is performed by interventional radiologists and nuclear medicine physicians. Depending on the expected difficulty and time needed for the procedure, local or mild sedation is used. Medications against nausea and pain are often given. Your vital functions will be checked regularly during the procedure. You may be given antibiotics to prevent infection. If you are receiving radioembolization, a test run will be performed two weeks before the final procedure so that the doctors can make

sure that the microspheres will not travel to places other than the tumour. If you are scheduled for chemoembolization, a test run is not necessary.

For the final treatment, you will most likely lie on your back on the angiography table. You will be given a local anaesthetic. After this, the interventional radiologist will insert a catheter (a thin tube) and a guidewire into an artery, most commonly in your groin. You will then have some images taken of your upper abdominal arteries to show the exact location of the vessels feeding the tumour. The interventional radiologist will then deliver a high dose of radiation or chemotherapy to the cancer cells directly into the arteries supplying the tumour. For radioembolization, an extra scan will be performed afterwards to make sure the microspheres have gone to the correct spot. The dose of radiation being released by the microspheres will decrease over the following two weeks.

What are the risks?
Radioembolization and chemoembolization are relatively safe procedures. The most common complication is post-embolization syndrome, which occurs in around 50% of patients. Symptoms include fatigue, low-grade fever, nausea, vomiting, and abdominal discomfort; however, these do not last long and are usually easily treated.

Less common complications include temporary liver dysfunction, a build-up of fluid, high levels of alkaline phosphatase, cholinesterase, and infection. Radioembolization may cause stomach ulcers, inflammation of the pancreas, raised blood pressure, gallbladder inflammation, or pneumonia. As with all procedures performed through an artery, there is a risk of bleeding or damage to a blood vessel.

In some cases, patients might have an allergic reaction to the iodinated contrast agents used during imaging to see the blood vessels. These contrast agents can also sometimes have a harmful effect on the kidneys, which may be temporary.

What should I expect after the procedure? What is the follow-up plan?
Most patients have some discomfort at the puncture site that may get worse during physical activity. This discomfort will go away on its own after a short amount of time. After you leave the hospital, you can resume your regular diet and activity. It is recommended that you drink about two litres of water a day during the first few days after the treatment.

You should call your doctor if:
- You feel strong abdominal pain
- You develop a fever of 38°C or higher
- You develop a draining wound at the puncture site
- You develop shortness of breath

In the weeks after the procedure, a blood test will be done to see if your liver function has changed. You will return for another imaging scan 4-12 weeks after the procedure. Thereafter, regular imaging should be scheduled to monitor the treatment changes and to make sure the tumour doesn't come back.

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