

## Introduction

1. Hepatocellular carcinoma (HCC) is one of the most common malignancies in Hong Kong. Only a portion of patients can benefit from curative surgical treatment.
2. Transarterial Chemo-Embolization (TACE) is an alternative or adjunct measure to unresectable hepatocellular carcinoma. Depending on the stage of tumour, TACE may be curative or palliative.
3. This procedure is performed by radiologists with special training in interventional radiology in the Department of Radiology under image guidance.

## The Operation / Procedure

1. Before the procedure, you will be given fluid through the intravenous line, antibiotics to prevent infection and drug to relieve vomiting.
2. The procedure is performed under local anaesthesia using aseptic techniques.
3. Your vital signs (blood pressure, pulse and oxygenation status) will be monitored throughout the entire procedure.
4. The femoral artery at the groin is punctured by the radiologist and an arterial sheath inserted via a small nick in the skin. It provide an access to the arterial system. An alternative access is from the upper arm.
5. The radiologist then inserts a thin plastic tube (called a catheter) into a blood vessel through the arterial sheath. An X-ray dye (called a contrast medium) will be injected into the blood vessel through the catheter to make the blood vessels visible on X-ray.
6. Angiography is performed for demonstration of vascular structures before embolization, and is also used for confirming the patency of portal vein. Depending on the findings, some patients may be deemed unsuitable for TACE and the doctor may stop the procedure at this juncture, e.g. in patients with severe communication between the hepatic artery and portal vein.
7. The arteries supplying the tumor are selectively catheterized. In order to spare normal liver tissue, super-selective catheterization with a smaller catheter through the original catheter may sometimes be required. The chemotherapeutic mixture and the embolic material are then injected through the catheter. The gastroduodenal artery may occasionally be blocked with metallic coils to facilitate the injection of chemotherapeutic mixture.
8. Traditionally, the chemotherapeutic agent(s) is mixed with lipiodol (an oily contrast medium) to enhance treatment effect. Small gelfoam particles may be injected to reinforce the effect of treatment.
9. The procedure usually requires 1 to 2 hours.
10. After the procedure, your vital signs, urine output and liver function will be monitored. Diet can be resumed if the vital signs are stable.
11. You may feel nausea or vomit, have abdominal pain and low grade fever in the first few days. You will be given antibiotics if there is clinical sign of infection. Drugs will be given for vomiting and pain.
12. You will be discharged if there is no signs of infection and your liver function is stable. You will then be followed up in the out-patient clinics and with imaging studies (CT or MRI).
13. Depending on the response of the tumor to treatment and on your general clinical condition, more sessions of TACE may be arranged.

## Before the Operation / Procedure

1. A written consent is required.
2. Inform medical staff before the examination if patient is or may be pregnant as the examination involves high dose of X-ray that is harmful to a foetus. Pregnancy test may be necessary in case of any doubt if the examination is to be proceed.
3. Inform doctor of history of allergy to food and drugs, and in particular any previous reaction to contrast medium, asthma, urticarial, eczema and allergy rhinitis etc. Oral or intravenous steroid premedication may be needed before injection of contrast medium.
4. Keep fasting for 4 hours prior to the examination.
5. For diabetic patients on Metformin medication, patient should inform medical staff before examination.
6. Check clotting profile for any bleeding tendency, to be corrected if abnormality detected.
7. Antibiotic cover prior to examination when necessary.
8. Set up venous access.

## Risk and Complication

1. Post-embolization syndrome: 80-90%. It includes fever, nausea, vomiting, right upper abdominal pain, sluggish bowel motion, and elevated serum liver function tests. This syndrome is self-limited and usually lasts for few days.
2. Transient liver function derangement is common. Risk of reversible liver failure is 20% per session. Risk of irreversible liver failure is 3% per session. After repeated sessions of TACE, the chance of liver function derangement leading to termination of further TACE is 10-16%. Liver failure can present as jaundice, ascites, impaired conscious state (hepatic encephalopathy).
3. Puncture site bleeding or hematoma (big clot): 1.6-7%.
4. Septicemia (a severe form of infection): 1.5%.
5. Renal function impairment: 1-2.5%.
6. Tumour rupture leading to bleeding into abdominal cavity: 1.2-1.5%.
7. Liver abscess: 0.2%.
8. Formation of multiple intrahepatic arterial aneurysms (abnormal outpouch): Rare.
9. Splenic abscess, acute pancreatitis: Rare.
10. Gall-bladder infarction/ ischaemia due to occlusion of the artery to the gall bladder: Rare.
11. Non-target embolization to the gut leading to bowel infarction: Rare.
12. Drop in platelet count and haemoglobin level: Rare.
13. Other complications relating to groin arterial puncture and catheter manipulation, such as arterial injury, occlusion of arteries in the lower limb: Uncommon.
14. Pulmonary oil embolism: leading to lower blood oxygenation and shortness of breath. This may occur 2-10 days after TACE. It is rare and depends on the amount of lipiodol given.
15. Flow of lipiodol to other organs like brain and spinal cord, causing stroke and paraplegia: very rare.
16. Procedure related death is rare.
17. Allergic reaction to intravenous contrast medium.
  - **Mild reactions:** For example, itching, mild skin rash, nausea, vomiting, feeling of warmth, arm pain, sneezing, coughing, etc. These reactions are only temporary and require no treatment.
  - **Moderate reactions:** These are more serious and prolonged. Examples are severe skin rash, fever, chills, palpitation, high or low blood pressure, etc. These reactions usually need medical treatment.
  - **Severe reactions:** These usually require immediate medical treatment and can even cause harm. For example, shortness of breath, irregular heartbeat, chest pain, convulsions, kidney failure, unconsciousness, etc.
  - **Death:** On rare occasion, contrast medium like many other drugs can cause death. The chance of this fatal occurrence resulting from the injection of non-ionic contrast medium is about 1 in 250,000.
  - **Delayed reactions:** Some patients may experience delayed reaction within 24 hours. The symptoms include 'flu' like illness, arm pain, itching, rash, painful or swollen salivary glands, etc.

Should a complication occur, another life-saving procedure or treatment may be required immediately.

## Disclaimer

This leaflet only provides general information pertaining to this operation / procedure. While common risks and complications are described, the list is not exhaustive, and the degree of risk could also vary between patients. Please contact your doctor for detailed information and specific enquiry.

## Reference

The Hong Kong Society of Interventional Radiology Limited, Patient Information Leaflet: Transarterial Chemo-Embolization (TACE) (2010)