Transarterial Chemoembolisation (TACE) with Drug-Eluting Beads

A minimally invasive treatment for liver cancer
What is chemoembolisation?

Chemoembolisation is a treatment that combines the deliberate blocking (embolisation) of the blood supply to the tumour with an embolic material (such as drug-eluting beads) and delivery of chemotherapy (cancer drugs) directly into the blood vessels which supply the tumour.

The treatment attacks the cancer in two ways. First, the embolisation cuts off the blood supply to the tumour, depriving it of the oxygen and nutrients it needs to grow. Second, it delivers a very high concentration of chemotherapy in a very targeted manner directly into the tumour, without exposing the entire body to the effects of the drug.

Why do I need chemoembolisation?

Chemoembolisation is a procedure used to treat tumours in the liver. Two kinds of cancer commonly affect the liver:

- Hepatocellular carcinoma (HCC), also known as a primary cancer, which is when the cancer started in the liver
- Metastatic cancer of the liver, also known as secondary cancer, is a tumour due to cancer which has spread to the liver from a different primary site, for example the colon

What are drug-eluting beads?

Transarterial chemoembolisation (TACE) has been used to treat liver cancer for over 25 years. Drug-eluting beads (DEBs) are a more recent innovation; they are pre-loaded with the drug and carry it to the tumour, where they release it in a controlled manner over a sustained period of time.

Who undertakes the chemoembolisation procedure?

Pre-procedure

Your consultant will discuss your case with a team of specialists in order to be able to recommend the best treatment option for you.

The procedure

TACE is a minimally invasive (non-surgical) procedure performed by a doctor called an interventional radiologist, who is a specialist trained to perform this kind of treatment.
How do I prepare for chemoembolisation?

Medication and chemotherapy treatment
If you are receiving chemotherapy, this may be stopped before the chemoembolisation procedure. Your doctor will discuss this with you. You must inform your doctor of any medication you are taking and discuss whether you should continue taking these medicines.

Eating and drinking
You will be asked not to eat and drink for a period of time before the procedure.

Medical preparation
Blood tests prior to your procedure will determine how well your liver and kidneys are functioning.

You may be given fluids through the intravenous line, pain relief, antibiotics to prevent infection and drugs to prevent nausea.

If you have any allergies, you must let your doctor know.

The procedure
TACE with drug-eluting beads (sometimes called DEB-TACE) is normally performed under local anaesthesia with conscious sedation, which means you will be awake and able to talk to the doctors and nurses looking after you during the procedure.

A small cut is made in the skin at the entrance of a large vessel in your groin (the femoral artery), in order to insert the catheter. The catheter is then directed to the liver using special imaging (X-ray) equipment. You may feel slight pressure but no serious discomfort.

Contrast media (X-ray dye) is injected through the catheter and a series of images will be taken in order to check that the catheter is correctly positioned. You may get a warm feeling when the contrast media passes through your body.

Once this is done, drug-eluting beads, which have been loaded with the chemotherapy drug, are injected through the catheter. Images will be taken during the procedure to ensure the drug-eluting beads are delivered correctly.

At the end of the procedure, the catheter will be removed and pressure will be applied to the groin to stop any bleeding. Sutures are not usually required.

A DEB-TACE procedure usually takes around 90 minutes, but each case is different and may take less or more time.
After the procedure

Monitoring
After the procedure, your vital signs (heart rate, breathing rate, blood pressure and temperature), urine output and liver function will be monitored. You can eat and drink if all the vital signs are stable.

When can I go back home?
You will be able to go home shortly after the procedure. Most patients are able to leave the hospital within a day or two.

Side effects
During the first two weeks following DEB-TACE, you may not be able to undertake your normal activities due to the side effects of chemoembolisation, referred to as post-embolisation syndrome (PES). The most common symptom of PES is abdominal pain. You may also feel tired, nauseous, have a mild fever and loss of appetite. In general, these are all signs of a normal recuperation. You may be given medicines to minimise these symptoms.

Follow up
During the first month following the procedure, you should check in regularly to let your physician know how your recovery is progressing. You will then be followed up in the out-patient clinic and with scans (eg CT or MRI).

Depending on the response of the tumour to treatment and on your general clinical condition, more sessions of chemoembolisation may be arranged and/or other treatments may be offered. Repeating the chemoembolisation procedure is a normal part of managing your cancer.
Glossary of common terms you may hear during discussions regarding your treatment

Ablation
Destruction of tissues (e.g., cancer cells).

Ascites
A build-up of fluid in the abdomen.

Bile
A substance produced by the liver and stored in the gall bladder. Helps to digest fats in the intestine. Contains bilirubin.

Bile duct
A tube carrying bile. The common bile duct releases bile into the intestines to help digest fats.

Bilirubin
A yellow pigment that is a waste from dead red blood cells. Gives bruises their yellow colour and discolours skin and whites of the eyes when someone has jaundice.

Biological drugs
Drugs which boost the body’s immune system to target cancer cells while not affecting healthy cells.

Catheter
A long thin, flexible tube that can be inserted into a blood vessel; used to deliver treatment directly to specific parts of the body.

Chemoembolisation
Embolisation (blocking) of the blood supply (e.g., to a tumour) combined with chemotherapy. See also TACE.

Chemotherapy
Drugs that kill cancer cells or block their growth and/or multiplication; may also affect normal cells.

Contrast medium
A substance to help show up blood vessels and flow during radiography and CT- and MRI-scans.

CT-scan
Computerised tomography, in which a computer builds up many X-rays to make a detailed 3-dimensional picture of internal organs and tissues.

DEB-TACE
See TACE with drug-eluting beads (DEB).

Doxorubicin
A chemotherapy drug that works by damaging DNA. Used to treat many kinds of cancer.

Drug-eluting bead
See TACE with drug-eluting beads.

Embolic
Material or substance used to block or reduce blood flow through a vessel.

Embolisation
Blockage of blood supply (e.g., to a tumour).

Embolic
Relating to the liver (from hepar, the Greek word for liver).

Hepatic/hepato
Primary liver cancer.

Irinotecan
A chemotherapy drug used in the treatment of colorectal cancer.

Liver
Large, four-lobed organ situated right under the right side of the diaphragm with a number of functions important to maintaining good health.

Liver-directed/liver-targeted
Describes a locoregional therapy or treatment which is delivered to the liver.

Locoregional therapy
Treatment delivered at or close to the site of a disease (e.g., cancer).

Metastasis
(i) The process whereby cells from a tumour in one part of the body travel via the blood or lymph vessels to another location and form a new secondary/metastatic tumour.

MRI scan
Magnetic resonance imaging, which uses a magnetic field rather than X-rays to look more closely at internal organs and tissues.

Multidisciplinary team (MDT)
Group of healthcare professionals from a variety of specialties who work together to look after a particular patient.

Percutaneous
Through the skin.

PET scan
Positron emission tomography which produces detailed 3-dimensional images of the inside of the body.

Post-embolisation syndrome (PES)
Common side effect of embolisation; symptoms may include abdominal pain, nausea (sickness), tiredness and loss of appetite.

Primary liver cancer
Cancer that starts in the liver.

Primary tumour
The initial tumour that develops in the body.

Secondary liver cancer
Cancer that starts elsewhere in the body but spreads (metastasises) to the liver.

Secondary tumour
A tumour formed as a result of cells breaking away from the primary tumour (see metastasis).

Sorafenib
A biological drug that targets several types of cancer cell, including HCC.

Stage (of cancer)
Measure of how advanced the cancer is.

Staging
A system used by doctors to determine how advanced the cancer is.

Systemic therapy
Treatment that uses medicines delivered into the bloodstream and so can affect any cell in the body.

TACE
Transarterial chemoembolisation. Liver-targeted therapy using drug combined with embolisation

TACE with drug-eluting beads
A type of transarterial chemoembolisation in which doxorubicin is loaded into tiny beads which then release the drug as a sustained dose over a period of time. Sometimes referred to as DEB-TACE.

Transarterial
Describes a treatment that is delivered to a specific part of the body via an artery (blood vessel).

Tumour
A lump of growth; may or may not be cancer.

Ultrasound scan
The use of sound-wave echoes to build a picture of internal organs and tissues.

X-rays
A type of radiation used to examine the inside of the body.
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