

Anaesthesia

The word 'anaesthesia' is derived from a Greek word, meaning absence or loss of sensation. Anaesthesia is one of the most significant developments of modern medicine because it allows once-unbearable medical procedures to be performed while the patient is relaxed and asleep.

Anaesthetists are medical doctors with further training in the specialised field of anaesthesia. They also have expertise in intensive care medicine and pain relief, and are responsible for pain control and anaesthesia for women in labour. However, most of the work of an anaesthetist is in preparing hospital patients for surgery, then caring for them during the operation.

There are 3 principle types of anaesthesia:

- general anaesthetic - putting people to sleep, and keeping them asleep for surgery or other medical procedures
- regional anaesthetic - numbing an area of the body
- local anaesthetic - numbing a small part of the body

Often a combination of the above techniques is used to ensure that the minimum doses of drugs are used to ensure successful anaesthesia and a quick recovery.

General anaesthesia

Thanks to development of new, safer anaesthetic drugs and sophisticated monitoring equipment, modern anaesthesia is now very safe. Several million general anaesthetics are successfully performed each year. A recent study showed that deaths due to an anaesthetic problem occurred in only 5 per million operations.

What happens during a general anaesthetic?

The anaesthetist is responsible for the general welfare of the person having surgery. He or she gives a variety of drugs that have different effects with the overall aim of ensuring you are soundly unconscious, will have no memory of the operation (amnesia) and suffers no pain (analgesia).

Anaesthesia usually begins when the anaesthetist injects a drug through a fine plastic tube (cannula) inserted into a vein in the back of the hand. Within a few seconds, this sends you quickly and smoothly to sleep. It's known as the 'induction' of anaesthesia. It is also possible to induce anaesthesia with anaesthetic gases, breathed through a mask.

To maintain this unconsciousness, the anaesthetist gives a mixture of oxygen and anaesthetic gases to breathe. This makes sure you are unconscious throughout the operation and will not remember anything about it. This element of anaesthesia is known as 'maintenance'.

It is sometimes necessary to have muscle-relaxing drugs. This is often to allow the surgeon to perform the operation by relaxing the body's natural muscle tone, which is present even when asleep. When a muscle relaxant is used, the anaesthetist also has to control breathing for the patient. To do this, a plastic tube is inserted into the windpipe (trachea) and a machine called a ventilator inflates and deflates the lungs in a highly accurate and controlled rhythm.

A general anaesthetic can interfere with the body's natural cough reflex, which normally helps prevent anything but air entering the breathing system. When this protection for the airway is affected, the contents of the stomach could seep back into the throat during an operation and be inhaled, causing damage to delicate lung tissues. This helps to explain why you are obliged to have 'nil by mouth' for about six hours before an operation.

The anaesthetist will also use strong painkilling drugs to control pain during and after surgery.

Monitoring the patient

The anaesthetist is able to monitor precisely your condition. For example, the rate and electrical activity of the heart, blood pressure and the amount of oxygen in the blood are measured continuously. It's also possible to measure the exact composition of the gases breathed in and out. This helps to ensure the correct acid/alkaline balance of the blood and the correct dose of anaesthetic gases.

Waking up

When the anaesthetic gases are stopped, you begin to 'emerge' or 'recover' quite quickly. A drug is given to reverse the effects of any muscle relaxant used and, for all but very major operations, such as open heart surgery, you will be breathing normally soon after the operation is over.

Side-effects

Most people have no problems following their operation and anaesthetic. Indeed, many operations are now planned as 'day cases', with no overnight stay in hospital.

Serious complications of an anaesthetic are very rare. However, some people experience minor temporary side-effects. These depend on a number of factors including the general health of the patient and the type and length of the operation.

A little drowsiness is common but this usually wears off quickly, particularly if the operation was short. Some patients can experience some discomfort after their operation, but this can be relieved by giving painkilling drugs as injection(s) or tablets.

As a result of modern anaesthetic drugs, nausea after an operation is less common than it was. Anti-sickness medicine may also be given if the operation itself, or the painkillers used, are known to be common causes of nausea.

Regional anaesthesia

A general anaesthetic is not always necessary or advisable. Depending on the type of operation, it's possible for the anaesthetist to use techniques to completely 'numb' specific parts of the body. This is known as 'regional anaesthesia' and is used increasingly frequently to avoid the possible side-effects of general anaesthesia. Regional anaesthesia can also be useful in people who are too frail to undergo a general anaesthetic.

An injection of a small amount of a local anaesthetic drug is given near to the nerves that supply a part of the body. The local anaesthetic temporarily prevents nerves from sending any messages to the brain - where pain is registered - so the part of the body is completely insensitive to pain.

A spinal anaesthetic is one of the most common types of regional anaesthesia. It involves an injection of local anaesthetic into the fluid that surrounds the nerves in lower part of the spine and is used for operations below the waist or in the pelvic region. The patient will be completely numb from the waist down for a couple of hours or so.

An 'epidural' anaesthetic is a related technique, where a narrow plastic cannula is left in position near to the nerves in the back. This means that the anaesthetist can give repeated doses of local anaesthetics (and painkillers), without further injections. This makes it useful for longer operations. By being able to increase the dose as required, a lower overall dose of medication can be given so that pain is controlled without complete loss of feeling. As the cannula can be left in place for up to several days, an epidural can be useful for postoperative pain relief and for labour pain.

Similar techniques are used to numb other parts of the body. For example, the arm can be numbed with an injection into the upper arm or armpit to allow a broken wrist to be treated.

Local anaesthetics

For operations on a small area of the body, it is possible to simply inject local anaesthetic at the site of the operation. This technique is often performed by the surgeon or GP in minor surgery units, and is usually only used for short, simple operations such as stitching a wound or removing a mole, or other skin lesion.

Further information

The Association of Anaesthetists

<http://www.aagbi.org/public.html>

American Society of Anesthesiologists

<http://www.asahq.org/patientEducation/>

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