CENTRAL NERVE BLOCKS

NERVE BLOCKS FOR SURGERY IN THE THORACIC, ABDOMINAL AND LOWER LIMB AREA

This leaflet is intended for patients who are considering having spinal and/or epidural analgesia or anaesthesia (alone or in combination with a general anaesthetic – when you are put to sleep) for surgery in the thoracic, abdominal, or lower limb area. It will be of particular interest to patients who want opioid-free analgesia and patients undergoing extensive surgery.

This leaflet was written by anaesthesiologists with the input of patients who have had spinal or epidural analgesia or anaesthesia.

HOW DO CENTRAL NERVE BLOCKS WORK AND WHY DO WE USE THEM?

Spinal and epidural blocks involve temporarily interrupting sensation from the legs or abdomen by injecting a local anaesthetic medication in a specific area in the back. If the medication is injected in the spinal canal it produces a spinal block and if it's injected near the spinal canal it produces an epidural block. Spinal and epidural blocks are frequently preferred to general anaesthesia for childbirth and prostate surgery, but they are often used for many different types of surgeries (abdominal, gynaecological, orthopaedic, thoracic, urological, vascular, etc.). Central nerve blocks can be combined with general anaesthesia as well.

HOW IS A SPINAL BLOCK PERFORMED?

Prior to performing a spinal block, your nurse or anaesthesiologist will place monitors to watch your vital signs. A spinal block is given in the back. You will either be sitting up with your arms and head resting on a small table or have a nurse hold you or you might be lying on your side with your knees and chin pulled as close to your chest as possible. A small amount of relaxing medication may be administered in your intravenous line at this time – don't be afraid to ask for it if you feel tense. Before the block is performed, your skin will be cleansed with an antiseptic solution and a sterile drape will be placed on your back. Your anaesthesiologist will use a numbing medication to numb the area on your back where the block will be performed – this may cause a slight burning and pressure sensation.

When you're positioned correctly and the skin and the deeper tissues of your back feel numb, your anaesthesiologist will insert a thin needle between your vertebrae into the spinal sac. This might cause a pressure sensation. Occasionally, the needle will touch a nerve, causing a brief tingling sensation down your leg. Once the needle is positioned properly in the spinal sac, local anaesthetic medication will be administered in the spinal fluid. This medication blocks out the pain signals and therefore produces spinal anaesthesia. A spinal block usually involves a one-time injection, therefore the duration of the block will depend on the type and amount of local anaesthetic administered. Exceptionally and under certain clinical circumstances, a catheter (a small plastic tube) may be placed to establish anaesthesia in a progressively way and for a longer period.

After the block had been performed, you will generally feel numbness, warmth and may notice that your legs are becoming weak. Eventually, you might not be able to move your legs. This is normal and will last until the block wears off, which is usually in about 2 to 6 hours. Your anaesthesiologist will check how effective the block is and the surgery will start when your abdomen and legs are completely numb and you are feeling relaxed and comfortable. You can choose to stay awake during surgery or you can receive sedation (medicine to help you relax and fall asleep).

HOW IS AN EPIDURAL BLOCK PERFORMED?

EPIDURAL ANALGESIA AND ANAESTHESIA

Epidural analgesia is produced by injecting a local anaesthetic medicine in the epidural space that is located close to the spinal cord. It can be performed as a single injection or (more commonly) we can insert a small plastic tube (called an epidural catheter) in the epidural space to apply the anaesthetic medicine over a longer period of time. The difference between epidural analgesia and anaesthesia is the dose of the local anaesthetic medicine used and consequently the amount of sensation loss. Epidural analgesia offers pain relief while preserving muscular function and epidural anaesthesia causes complete loss of sensation – similar to a spinal block described above.

By administering the local anaesthetic into the epidural space we block out pain signals travelling along the nerve roots towards the brain. The injection for epidural analgesia or anaesthesia can be performed either in the thoracic or lumbar part of your spine, while the injection for spinal anaesthesia is always performed in the lumbar part of your spine (although in very exceptional circumstances, it can also be performed at thoracic level). Other than that, the process of performing epidural analgesia or anaesthesia is similar to the process of performing spinal anaesthesia (described above). After the block, your legs will start to feel warm and tingly with epidural analgesia, but you will be able to move your legs and feel some degree of pressure and moving sensation. With epidural and spinal anaesthesia, your legs will become warm and tingly before finally feeling heavy, numb and unable to move.

Epidural analgesia is used to numb the pain in the thorax, abdomen and legs during surgical procedures or during childbirth. Your epidural catheter can stay in place for several days and the dose of the local anaesthetic medicine can be adjusted to offer you pain relief while allowing you to move around and participate in physical therapy and respiratory physiotherapy.

Your anaesthesiologist will explain the options available and suggest which one might be preferred for you.

WHICH ARE THE BENEFITS OF SPINAL AND EPIDURAL ANAESTHESIA AND ANALGESIA?

- Better pain relief during and after surgical procedures and childbirth than intravenous painkillers
- Less need for strong pain killers and therefore less side effects such as nausea, constipation and drowsiness
- Avoiding a general anaesthesia, including its risks and possible side effects, less feeling of confusion after surgery

- Easier return to drinking and eating after surgery
- Easier breathing resulting from better pain control
- Easier participation in physical therapy

IS IT POSSIBLE THAT THE SPINAL OR EPIDURAL BLOCK DOESN'T WORK?

It is possible that the block doesn't work as intended or doesn't work at all. Sometimes we can try and repeat the block or catheter placement and other times it's necessary to convert to general anaesthesia. In any case, the surgery won't start until you're comfortable and not feeling pain. If you're having an epidural catheter as pain relief, other types of pain relief will be offered to you (such as intravenous painkillers).

OTHER TYPES OF NERVE BLOCK FOR SURGERY IN THE THORACIC AND ABDOMINAL AREA

Besides central blocks, pain relief in the thoracic, abdominal and lower limb area can be managed using other techniques called fascial plane blocks and peripheral nerve blocks. These techniques are performed under ultrasound guidance and involve inserting a needle in certain areas between the muscle layers where small nerves are located. After the needle tip is placed in the desired location, a local anaesthetic medication that numbs the nearby area is injected. A catheter may be left and used in a continuous way, extending the duration of the block as long as needed.

BEFORE THE SURGERY

Prior to having elective (planned) surgery you might be appointed to a preoperative assessment by an anaesthesiologist.

Make sure to:

- Bring a list of prescription medicines that you're taking. It is especially important to let your anaesthesiologist know about any blood thinners that you might be taking.
- Bring all your past medical history records and test results, including your recent blood pressure measurements.
- Let your anaesthesiologist know about any problems you or your family members might have had during anaesthesia or surgery.

Even if you do not receive an invitation to a preoperative assessment, your anaesthesiologist will talk to you before your surgery and answer your questions.

Questions you may like to ask your anaesthesiologist are the following:

1. Who will be performing my spinal or epidural block?

2. What will I feel during surgery or how much pain am I expected to feel?

3. Do I have any particular risks by having a spinal or epidural block?

4. Do I have any particular risks by having general anaesthesia?

5. What is the best option for me?

6. What happens if the spinal or epidural block does not work and I can feel pain? How often does this happen?

7. When will my legs feel normal again?

You can find more information on the ESRA website. The leaflets may also be available from the anaesthetic department or pre-assessment clinic in your hospital.

ON THE DAY OF THE OPERATION

The hospital will give you clear instructions about eating and drinking before surgery. It is very important that you follow the instructions even if you're not having general anaesthesia and are staying awake during your surgery. As described above, it is possible that your block doesn't work and you might have to have general anaesthesia.

DURING THE OPERATION

Surgical drapes will be positioned so that you won't be able to see the surgery. You may be able to use headphones and listen to your own music during surgery. An operating theatre is a busy place – there will typically be between five and eight people in the room. A member of your anaesthetic team will be next to you at all times throughout the surgery.

If you are having sedation with spinal or epidural anaesthesia, you will feel relaxed and drowsy, you might fall asleep and have no memory of the surgery whatsoever. You may also be given oxygen through a light plastic facemask or nasal catheter.

AFTER THE OPERATION

After surgery, you will be taken to the recovery room and monitored closely until your block wears off.

As long as your spinal or epidural anaesthesia is working, your lower body will feel heavy and you will not be able to move until your muscles start working again, which can happen gradually over several hours.

While your epidural analgesia is working (when you're receiving medication through your epidural catheter), your lower body might feel heavy, but you will be able to move. You will not be released from the hospital until your spinal or epidural analgesia or anaesthesia wears off completely and you're able to move around.

SIDE EFFECTS, POSSIBLE COMPLICATIONS AND RISKS

In modern anesthesia, serious problems are uncommon, but risk cannot be removed completely. Modern drugs, equipment and training have made anesthesia a much safer procedure in recent years.

People vary in how they interpret words and numbers. This scale is provided to help.

Anesthesiologists take a lot of care to avoid all the risks given in this section. Your anesthesiologist will be able to give you more information about any of these risks and the precautions taken to avoid them. You can also find out more information from the patient information pages on the ESRA website.

All types of anaesthesia can have side effects and complications can occur. Most common side effects with epidural and spinal block include back pain, low blood pressure, loss of bladder control, itchy skin and nausea. Usually, all of these side effects are temporary and resolve within hours and can be treated effectively. Rarely, a severe headache (postdural puncture headache) can develop within 5 days of having a spinal or epidural block. While unpleasant, this type of headache is not dangerous and typically resolves itself within several days, but can also be treated with painkillers.

More serious side effects are very rare. They include allergic reactions to local anaesthetic medicine, bleeding around the spine and in the head causing nerve compression, infection, seizures and nerve damage.

Anaesthesiologists go through years of training and take great care to avoid the risks described above. Your anaesthesiologist will be able to give you more information about the risks and precautions taken to avoid them. You can also find out more on the ESRA website.