

# Epidural and spinal anaesthesia and analgesia

## You're in good hands

Anaesthetists in Australia are highly trained medical specialists. After graduating from medical school and completing an internship, at least five more years are spent undergoing training in anaesthesia, pain management, resuscitation and the management of medical emergencies.

When you need to have an epidural or spinal anaesthetic, preparation will help to ensure that the experience is a positive one.

### *The aims of this pamphlet are to:*

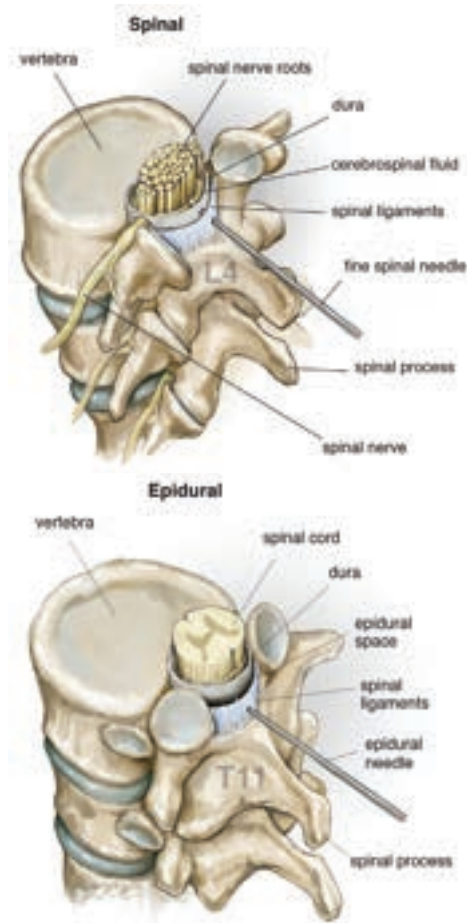
- ***Provide you with basic information about epidural and spinal anaesthetics.***
- ***Encourage you to ask questions of your anaesthetist.***
- ***Help you approach the planned procedure positively.***

## What are epidurals and spinals?

Epidurals and spinals may be used to produce temporary numbness to enable surgical procedures to be performed, and to provide pain relief after an operation or trauma, or for childbirth. Epidurals and spinals are commonly referred to as 'blocks' by anaesthetists, meaning that the sensation of pain is 'blocked' by the epidural or spinal.

Both epidurals and spinals involve the injection of local anaesthetic drugs and/or other medications into the spaces around the spinal cord. The techniques have similarities and differences.

- Spinal anaesthesia is almost always a single injection through a very fine needle into the fluid (cerebrospinal fluid) surrounding the spinal cord. A small dose of local anaesthetic, often combined with other medications, is injected to produce lower body numbness and (if desired) temporary paralysis, lasting 1-6 hours depending on the medications and the doses used
- Epidurals involve the insertion of a needle into the space outside the spinal cord and spinal fluid (the epidural space). Local anaesthetic, often combined with other medications, may be injected



via the needle, or through a small tube (epidural catheter) which may be inserted through the needle. The degree of numbness and temporary paralysis (if desired) depends on the medications injected. The epidural catheter also allows the use of a continuous flow of medications to produce continuous analgesia

- In some cases, spinal anaesthesia can be combined with an epidural by inserting a long fine needle through the epidural needle and into the spinal fluid before inserting the epidural catheter

## Why are epidurals and spinals used?

Epidurals and spinals may be used to advantage in some patients. Epidurals and spinals can:

- Allow patients to remain awake or sedated during procedures where general anaesthesia may be unwanted by the patient, or be associated with increased risk
- Can reduce the amount of anaesthetic medications required for general anaesthesia, to the advantage of patients after the procedure

- Reduce or avoid the necessity for strong analgesics during surgery
- Reduce blood loss associated with many procedures
- Reduce the risk of blood clots ('deep vein thrombosis') forming in the legs
- Extend pain relief after the operation, especially with epidurals where continuous low dose infusions can be delivered through the epidural catheter
- Reduce post-operative chest infections, by enabling less painful coughing
- Reduce the physiological stress of surgery, allowing for better patient recovery

### When are epidurals and spinals used?

Epidurals and spinals may be used for many procedures of which the following is a limited selection:

- Caesarean section
- Lower limb surgery such as hip or knee replacement
- Hernia repair
- Varicose vein surgery
- Vascular surgery of the lower limbs.
- Vaginal repairs and hysterectomy
- Prostate removal
- Transurethral resection of bladder tumours
- Diagnosis and treatment of chronic back pain
- Pain relief in childbirth
- Major intrathoracic, intra-abdominal surgery, or lower limb surgery (combined with general anaesthesia)
- Epidurals can be inserted anywhere along the spine from the neck to the lower

**To reduce your risks associated with your anaesthetic and surgery it is vital that you disclose all health problems and all medications to the anaesthetist and perioperative nursing staff that assist in your admission.**

spine, and can produce numbness and temporary paralysis (if desired) for the chest, abdomen, pelvic region and lower limbs

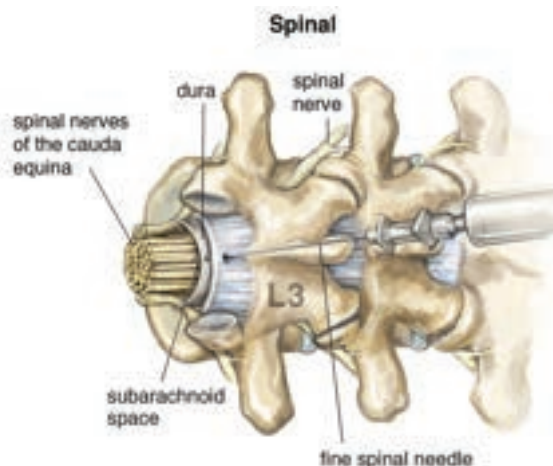
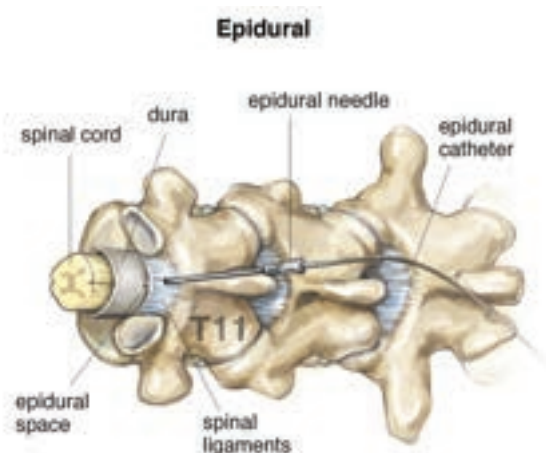
- Epidurals can also provide for continued pain relief in the post-operative period, for pain relief during labour, for diagnostic reasons in patients with complex pain problems, and for pain relief for chest or abdominal trauma
- Spinals can produce numbness and temporary paralysis (if desired) in the lower abdomen, pelvic regions or lower limbs. Spinals can also provide for good postoperative analgesia by the addition of other medications to the local anaesthetic injected into the spinal fluid

### Pre-anaesthetic consultation

Prior to inserting a spinal or epidural, your anaesthetist will need to ask you some questions regarding your general health and some more specific questions relating to the insertion of a spinal or epidural.

To reduce your risks associated with your anaesthetic and surgery it is vital that you disclose all health problems and all medication to the anaesthetist and perioperative nursing staff that assist in your admission.

Once the anaesthetist has an adequate understanding of your health, he or she will discuss with you the options for anaesthesia and explain the procedures which will be involved, along with the



risks associated with them. As part of this discussion you will be able to discuss the level of sedation you would prefer for the procedure.

Although spinals and epidurals may be a very appropriate choice for your operation and post-operative pain relief, their use is not compulsory. Likewise, a spinal or an epidural is not always technically possible, and on occasion the risk of complications outweighs the benefits. There are usually alternative methods, and together you and your anaesthetist will decide the best techniques for you and your operation.

### Awareness with epidurals or spinals

Epidurals and Spinals are usually inserted with the patient awake or lightly sedated, so that the anaesthetist would be aware of inadvertently contacting nerves. How awake you are during the operation is determined by a discussion between you and your anaesthetist in the pre-anaesthetic consultation, your general health and the operation being performed.

Normally you can choose:

- To be fully awake
- To have some light sedation so that you are relaxed and drowsy but still conscious
- To have very deep sedation or general anaesthesia

### Insertion of epidurals and spinals

- An intravenous cannula will be inserted into your arm and intravenous fluids will be commenced.

- The epidural or spinal is usually inserted when you are awake or lightly sedated
- You may be asked to lie on your side or to sit up, depending on the preference of the anaesthetist and individual patient factors
- Local anaesthetic is injected into a small area of skin on the back
- A special needle is inserted through the numb patch on the back created by the local anaesthetic
- If you are having a spinal, the local anaesthetic will be injected through the spinal needle
- If you are having an epidural, some local anaesthetic may be injected through the needle but then a fine plastic tube (epidural catheter) will be inserted and the needle removed
- The epidural catheter allows further medications to be injected into the epidural space without the need for further needles.

### After the epidural and spinal has been performed

**Epidurals** take up to 30 minutes to have their maximal effect. The degree of numbness, temporary paralysis and the extent of the epidural 'block' is determined by the volume and concentration of local anaesthetic used. The extent of the epidural block is assessed by testing with something cold (like ice) and surgery will not commence until the anaesthetist is happy that the correct degree of anaesthesia has been reached. During surgery, there will be a screen or drape in front of you so there is no need to worry that you will see the operation.

The anaesthesia with an epidural can produce complete numbness which allows surgical procedures to be performed, or it can be adjusted to produce excellent analgesia without complete loss of sensation, with muscle strength maintained. This makes epidural blocks ideal for analgesia in childbirth and for post-operative analgesia.

**Spinals** have a rapid onset and can produce surgical anaesthesia within 5-10 minutes. Spinals produce a very dense block making it very suitable to be used alone or with minimal sedation. As the spinal takes effect, many patients have a sensation of warmth in their legs or buttocks. This gives way to complete numbness and difficulty moving legs due to temporary paralysis of the nerves supplying the muscles.



Again, the extent of the spinal block is assessed by testing with something cold (like ice) and surgery will not commence until the anaesthetist is happy that the correct degree of anaesthesia has been reached. During surgery, there will be a screen or drape in front of you so there is again no need to worry that you will see the operation.

## Post-operative care

In the early post-operative period you may still have numbness and weakness from the spinal or epidural as the local anaesthetic used may take some hours to wear off.

Your nurse will make sure the numb areas are protected from pressure and injury until the sensation returns.

As normal sensation returns, you will experience some tingling in the skin. You may also become aware of some discomfort from the operation at this time and you should ask for more pain relief before the pain becomes more severe.

It is important that you ask for help before getting out of bed following a spinal or epidural as you may still have considerable persisting but temporary weakness in the legs for some hours.

## Epidurals and spinals: the risks and complications

**Australia is one of the safest places in the world to have an anaesthetic.**

Nevertheless, some patients are at an increased risk of complications because of health problems such as heart or respiratory disease, diabetes or obesity, age and/or because of the type of surgery which they are undergoing.

Serious complications are rare but it is important that you understand them. If you have concerns about any of the possible side effects or complications of epidurals and spinals, please discuss them with your anaesthetist.

### Side effects:

- Due to 'block' of the nerves controlling blood pressure. It is not uncommon for blood pressure to fall with spinals or epidurals. Your anaesthetist will monitor your blood pressure closely, with a fall in blood pressure usually easily treated with intravenous fluids or medications.

- Due to the temporary loss of sensation to the bladder, you may require the insertion of a urinary catheter to allow you to adequately pass urine.
- Shivering may occur, and you will be kept warm.
- Itching can be a side effect of medications which are added to your spinal or epidural to improve pain relief.
- Nausea and vomiting are often associated with a rapid fall in blood pressure, and are usually easily treated with intravenous fluids or medications.
- Local bruising or tenderness can occur where the epidural or spinal needle was inserted
- You may notice continued sensation or feeling during the operation. It is not uncommon for some sensation to touch or movement to persist, even though there is no pain. This sensation often diminishes with time, or other medications may be given.
- The extent of the epidural or spinal block when assessed by the anaesthetist may be felt to be insufficient for surgery to proceed. This is more common with epidurals than spinals and is due to the uneven spread of local anaesthetic. It may require extra doses of local anaesthetic to be given and in rare circumstances the block may need to be repeated or an alternative technique such as a general anaesthetic may be administered. Be reassured that surgery will not commence until the anaesthetist is happy that the correct degree of anaesthesia has been reached.
- Sometimes there may be anatomical factors which make inserting a spinal or epidural impossible. In this case, an alternative technique such as general anaesthesia may be administered.

### Complications

'Spinal headache' can occur due to leakage of cerebrospinal fluid after a spinal injection or due to accidental puncture of the dura (spinal cord lining) with an epidural needle. The incidence is very rare with new and improved spinal needles, but not uncommon with epidurals where accidental dural puncture can result in a severe 'dural puncture' headache.

***It is important that you ask for help before getting out of bed following a spinal or epidural as you may still have considerable persisting but temporary weakness in the legs for some hours.***

The headache is worse with standing and relieved if you lie down. The headache will usually resolve with simple rest but if this fails further treatment may be required.

### **Serious complications**

Very rare serious complications can occur with an epidural or spinal. Serious complications are rare and occur between 1 in 5,000 for temporary minor nerve damage to 1 in 50,000 for paraplegia. In comparison you are more likely to die from an accident on the roads than to suffer permanent damage from a spinal or epidural anaesthetic.

- Temporary nerve damage can occur to nerves in the spinal cord, usually resolving fully within a few months.
- Local anaesthetic toxicity can occur if local anaesthetic is inadvertently injected into an epidural vein or a very large dose is used, causing dizziness, tingling around the mouth, convulsions and cardiac arrhythmias.
- Total spinal anaesthesia occurs when the epidural or spinal spreads too high. This can occur if large volumes of local anaesthetic normally injected into the epidural space are accidentally injected into the subdural or the spinal space. A significant drop in blood pressure and difficulty in breathing are possible. Total spinal anaesthesia, if it occurs, will be treated by your anaesthetist.
- Bleeding in the epidural or spinal space is an extremely rare but very serious complication. It may require operation on the spine, and may lead to permanent nerve damage or even paraplegia.
- Infection in the epidural or spinal space is also an extremely rare but very serious complication. It may require intravenous antibiotics plus possible operation on the spine, and may lead to permanent nerve damage or even paraplegia.
- **Postoperative complications**

Some complications from epidural or spinal anaesthesia may not show up for some time after the surgery. It is important you notify your anaesthetist if you have:

- Severe headache which is not relieved with simple analgesics.
- New severe unexplained pain at the injection site, buttock or legs, especially if associated with fever or chills.
- New numbness, decreased or altered sensation in your legs, abdomen or buttocks.
- Weakness developing in your lower limb muscles.
- Difficulty passing your urine, or bladder or bowel incontinence.

***Major complications with epidural and spinals are uncommon when they are administered by a specialist anaesthetist.***

### **Further information**

If you require further information please contact your anaesthetist. If you don't know your anaesthetist's name, contact your surgeon.

More information about anaesthesia and anaesthetists can be found in the patients' section on the ASA website: [www.asa.org.au](http://www.asa.org.au)

Disclaimer: The Australian Society of Anaesthetists Limited is not liable for the accuracy or completeness of the information in this document. The information in this document cannot replace professional advice.

The Australian Society of Anaesthetists Limited owns the copyright to this material. This material may only be reproduced for commercial purposes with the written permission of the Australian Society of Anaesthetists Limited.

Website use: The ASA has developed the following pamphlet based on current evidence and may be subject to change as more information becomes available. This document is intended for anaesthetists in Australia and current as of 30/9/2019. We prefer members to link to our website rather than print or republish our materials on your own website to have access to the most up-to-date version (updated 30/9/2019). For the latest version, please visit <https://asa.org.au/member-resources/>

