

## **Posterior Decompression and / or Fusion of the Spine**

### **Introduction**

This is a major operation to decompress the spinal cord or nerve roots. Fusion may be done at the same time if there are pre-existing spinal instability, deformity or destabilization after decompression. Internal fixation device may be used to provide immediate spinal stability and enhance fusion. The operations are usually done under general anesthesia and a posterior midline longitudinal incision is often used. However, variation of techniques occurs with different kinds instrumentation systems.

### **Indications (The benefit of surgery versus conservative treatment has to be evaluated by Orthopaedic specialists)**

- Degenerative diseases with significant functional or neurological deficit e.g. spinal stenosis, degenerative spondylolisthesis
- Miscellaneous conditions causing spinal cord compression e.g. ossification of posterior longitudinal ligament or yellow ligament, spinal infection
- Spine fracture, dislocation or a combination of them
- Neoplastic diseases e.g. spinal metastasis causing spinal cord compression in patients with reasonable life expectancy
- Spinal deformity due to a wide range of pathologies
- Inflammatory diseases leading to severe spinal instability or spinal cord compression

### **The Procedures**

- The surgery is usually done through a posterior midline longitudinal incision.
- After mobilization of the paraspinal muscles, the posterior aspect of the vertebrae are exposed.
- Spinal cord or nerve decompression is achieved by either laminotomy, laminectomy or foraminotomy.
- If the surgeons intend to do spinal fusion, they need to lay down bone graft on the spine. Autogeneous bone graft or allograft may be used.
- Screws and rods are the commonest instrumentation system nowadays, but hooks, cables or wires may be used. Most internal fixation devices are made of titanium and they are MRI compatible.

### **Risk and Complication**

#### **1. Anesthesia**

- Most spinal surgery is done under general anesthesia. Anesthesiologists are in a better position to explain the risks and complications associated with anesthesia.

#### **2. General complications occur outside the operation field**

- Cardiovascular accident, stroke, derangement of liver function, death...etc.

### **3. Complications may occur at the surgical field**

- Postoperative wound infection
- Neurological deterioration. The most serious neurological complication is complete tetraplegia, paraplegia or cauda equine syndrome depending on the location of the operation. Patients may lose the ability to breathe if the complication occurs in the upper cervical spine. The motor, sensory, autonomic, urinary, bowel and sexual function may be affected.
- Excessive bleeding leading to shock or even death. Massive transfusion is also associated with complications.
- Dural tear with or without persistent leakage of cerebrospinal fluid
- Postoperative hematoma formation requiring drainage
- Delay wound healing
- Prominence of the internal fixation device
- Malposition of the internal fixation device
- Delayed spinal fusion or nonunion. This may lead to the loosening of the internal fixation device.
- Hypertrophic scar
- If autogenous bone grafting is necessary, donor site may have prolonged or persistent pain, infection or hematoma formation.
- Spinal decompression alone may lead to subsequent spinal instability.

#### **Before the Procedure**

- Optimization of pre-existing medical conditions, e.g. heart disease, hypertension, diabetes mellitus, anaemia, asthma, etc.
- Measurement of external supportive device for spine immobilization after surgery e.g. neck collar, thoracolumbosacral orthosis
- Blood tests and x-rays of the appropriate regions
- No food and drink at least 6 hours prior to the surgery
- Cleaning of the operative site. Shaving of hair may be needed.

#### **After the Procedure**

- Diet is normally not allowed immediately after surgery.
- Analgesics will be prescribed for pain control and facilitation of rehabilitation.
- Urinary catheter may be inserted for accurate assessment of body fluid balance.
- Early mobilization is encouraged as soon as possible.
- Cough and breathing exercise reduces respiratory complication.
- Intravenous fluid replacement or blood transfusion may be necessary .

#### **Possible Additional Procedure**

- Additional instrumentation and fusion may be necessary as judged by the surgeons intraoperatively.
- Additional surgical procedures may be necessary to tackle complications, e.g. debridement in case of deep wound infection, evacuation of hematoma, reposition of implants ...etc.

- It is not a routine to remove the internal fixation device. Please consult your doctors for the indication of implant removal.

### **Alternative Treatment**

- Most of the time, surgery is not the only form of treatment. You should consult your doctors the pros and cons of operative or conservative treatment.

### **Follow Up**

- On average, most posterior spinal wounds heal in two weeks for normal subjects. Long healing time occurs if patients have risk factors such as diabetes, deranged renal function or wound infection. There is no need to change the dressing of a clean wound every day. However, it has to be changed if the dressing is detached or soaked through by blood.
- If you have deterioration of neurological function or unexplained fever in association with increasing wound pain and/or discharge from the wound, consult your doctor immediately or attend the nearby Accident and Emergency Department.

### **Remarks**

This is general information only and the list of complications is not exhaustive. Other unforeseen complications may occasionally occur. The actual risks may be different for different patients. During the operation, unpredictable condition may arise, and additional procedures may be performed if necessary. For further information, please contact your doctor.