GREG MALHAM
BSc MBChB FRACS NEUROSURGEON

GREG MALHAM **NEUROSURGEON**
Suite 8.3, 89 Bridge Road,
Richmond, VICTORIA, 3004
(03) 9866 6650 | www.gregmalham.com.au

ANTERIOR EXPOSURE OF THE VERTEBRAL COLUMN

Written By **Dr Matthew Claydon, Vascular & Endovascular Surgeon**

The development of new technologies has increased the range and efficacy of treatments for chronic back pain. Your spine surgeon Mr Malham, would have discussed these with you in depth during your consultation.

These advanced procedures require a new approach to the vertebral column from the front rather than the back. To facilitate this, a team approach is required, with a surgeon very familiar to these approaches exposing the vertebral column prior to the spinal procedure. As a Vascular Surgeon, I am familiar with this approach and the vital structures encountered. One of the significant potential complications from the surgery is bleeding from these vessels, which I am trained to manage and repair.

The literature suggests a team approach is safer, yielding lower complication rates.

THE OPERATION:

Incision
The incision used depends on the vertebral level/s needed, any previous surgery you have had and the presence of any disease or abnormality in the pelvic vessels.

Generally, the incision is either an 'up and down' incision in the middle of the lower abdomen, or a 'side-to-side' incision on the right or occasionally left. The exact incision will be discussed with you. The incision is usually 7 - 10cm long.

Procedure
The incision is gently deepened through the fat down to the muscle and fibrous tissue which make up the abdominal wall. Sometimes the muscle is cut, and sometimes it is split & retracted.

Below this there is the sac that contains the intestine. Usually this is not opened, but the bowel and the sac are retracted towards the middle. This is done with padded retractors. During this process, the tube between the kidney and the bladder called the ureter is identified and protected. The muscle of the posterior abdominal wound is exposed, and upon them are the pelvic vessels - the iliac artery and vein.

For the L4/5 exposure, the artery is carefully exposed, sweeping the nerves upon it to the midline. Small arterial branches are carefully tied and then divided to allow the artery to be mobilised toward the middle. Attention is then turned to the vein. There are often large branches from the vein that need to be carefully dissected, tied and divided before the iliac vein can also be mobilised toward to the midline. The nerves, artery and vein are then gently retracted to the right exposing the midline of the vertebral column to allow the spinal procedure.

For L5/S1 exposure, the approach is between the iliac vessels, that are then retracted up and apart to expose the disc level.

During the procedure, a cell-saver machine is used to return to you much of the blood you have lost during the procedure. If the retractors impair the blood supply to the legs, a blood-thinning drug (Heparin) may be administered.

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RISKS OF THE OPERATION:

There are possible complications from the exposure despite all possible care and diligence. Some complications can be life threatening. Your spine surgeon will discuss the complications from the spinal procedure.

The complications may include:-

General Risks:
• Death;
• Heart Attack;
• Stroke;
• Allergic reactions to medications and antibiotics.

The Specific Risks include:
• Bleeding which is occasionally life threatening, possibly requiring a blood transfusion or an urgent return to theatre.
• Emboli to the legs requiring urgent further surgery to restore circulation. Rarely this can result in limb loss;
• Bowel Injury from retractors or dissection. If this were to occur then the injury would be repaired and the vertebral procedure abandoned;
• Blockage of the vessels supplying the intestine or kidney. This is very rare;
• Ileus - a temporary slowing of the intestinal function which can cause discomfort and bloating;
• Sexual Dysfunction (In males) with either infertility or impotence. This occurs at a rate of approximately 2 - 5% and may be temporary or permanent;
• Arterial Occlusion. The circulation the legs is usually monitored throughout the procedure and checked at the end. If an occlusion were detected, then immediate procedures may be required to correct this;
• Ureter damage;
• Sympathetic Nerve damage. This may cause one limb to be warmer in comparison to the other, with possible sweating or swelling. It can be temporary or permanent;
• Deep Venous Thrombosis - a clot in the deep veins of the leg 2.5%;
• Pulmonary Embolus - a clot traveling to the lung, which can occasionally be life threatening;
• Incisional Hernia Formation 0.5%1 ;
• Superficial Wound Infection.

REFERENCES
1. Garg et al Vascular complications of exposure for anterior lumbar Interbody fusion. JVS 2010 51 946-50.
2. Gumbs et al Open anterior approaches for lumber spine procedures. The American Journal of Surgery 194(2007) 98-102.

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BEFORE SURGERY:

Tell Mr Malham about any medical conditions or previous operations. If you have a medical condition such as diabetes, heart problems, high blood pressure or asthma, Mr Malham may arrange for a specialist physician to see you for a pre-operative assessment and medical care following the neurosurgery.
Inform Mr Malham of medication that you are taking and/or have allergies to medications. Patient must stop using the following, 10 days pre-operatively:
- Aspirin
- Plavix
- Isocover
- Asasantin

Patient must stop using blood thinning medication *(such as Warfarin)*, 3-5 days pre-operatively.

Pre-operative investigations may include an ultrasound or CT Scan to assess bone anatomy.