

Department of Neuro & Spine Surgery

SPECIAL FACILITIES

Headache
•Migraine, Tension, Cervical & others

Head Injury

Spine Trauma
•Fracture dislocation of Spine
•Ant Cervical plating and fusion

Epilepsy Stroke CVA

Microscopic Brain Tumor Surgery

Neurology
•Alzheimer •Parkinsonism
•Dementia •Meningitis •Atrophy of the brain •Movement disorders
•Stroke

Pediatric Neurosurgery
•Shunt Procedure for hydrocephalus •Encephalocele
•Congenital Anomalies
Meningocele •Meningomyelocele

Minimally Invasive Neurosurgery
• Endonasal Pituitary Tumor Surgery
• Endoscopic Disectomy

STABILIZATION AND FUSION OF THE LUMBAR SPINE



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By combining the most advanced laboratory diagnostics, imaging systems and healthcare information technology, Max Super Speciality Hospital, Bathinda enables clinicians to diagnose disease earlier and more accurately, making a decisive contribution to improving the quality of healthcare.

Stabilization and fusion of the lumbar spine may be performed by using various anterior and posterior surgical techniques and a wide range of devices, including screws, spinal wires, artificial ligaments, vertebral cages, and artificial disks. Spinal instrumentation was first described in 1911 as a method for treatment of Potts disease. Since then, wide range of devices have become available and lumbar spine instrumentation is now used in various clinical settings, including degenerative disk disease, spondylolisthesis, tumors, infection and trauma. The choice of device depends on the clinical problem, the anatomic location and the surgeon's preference. The instrumentation used in fusion surgery is not designed to replace the bony elements of the spine, but to stabilize them during fusion and it is generally accepted that instrumentation without intact osseous fusion will fail.

Lumbar Spinal Fusion and Instrumentation: Rigid internal fixation (spinal instrumentation) is necessary to promote bone fusion, which occurs within 4–5 months after spinal fusion surgery and to prevent pseudarthrosis. Lumbar spinal fusion involves the insertion of bone graft material with or without one or more interbody spacers and other devices to provide additional support and stability. Spinal fusion surgery is commonly performed in patients who require decompression for nerve root pain and whose symptoms are largely diskogenic.

INSTRUMENTATION USED IN FUSION

Interbody Spacers:- Interbody spacers are made of titanium or a radiolucent material such as polyetheretherketone (PEEK). They may be solid constructions (ramps) or openwork structures filled with bone graft material (cages) and may be used singly or paired (positioned side by side).

Plates or Rods with Pedicle Screws:- In these devices, pedicle screws are connected by plates or rods that span single or multiple vertebral segments. Crossbars may be added for additional strength. For multilevel fusion, rods are generally preferred over plates because rods can be individually cut and molded as required to facilitate maintenance of sagittal alignment.



Translaminar or Facet Screws:- Translaminar or facet screws provide an alternative form of posterior instrumentation when the posterior spinal elements are left intact. The screws may be inserted by using a minimally invasive approach and oriented at different angles to avoid impingement on other screws.

Hartshill Rectangles: - Hartshill rectangles are a fixation device that consists of stainless steel rectangles held in place posteriorly by sublaminar wires. The wires (particularly those at the superior end of the rectangle) contribute to the structural integrity of the device. This device was used before the advent of pedicle screws but is seldom used now.



POSTERIOR SURGICAL APPROACHES

A posterior approach is used when posterior de-compression is required in addition to fusion.

Posterior Lumbar Interbody Fusion (PLIF): - The posterior lumbar interbody fusion procedure is performed by using a posterior surgical approach. Bilateral partial laminectomies are performed (caudad and cephalad) and are followed by disk-ectomy. Bone graft material is packed into the anterior disk space before the insertion of an interbody spacer or two interbody spacers placed side by side and packed with graft material. Further bone graft material is then packed into the remainder of the disk space. Posterior instrumentation is performed to provide a rigid support until bone fusion occurs.

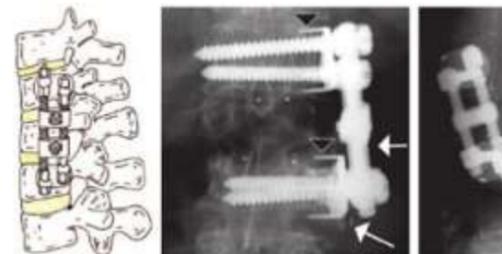
Transforaminal Lumbar Interbody Fusion: - This procedure is similar to the posterior one but is performed by using a more lateral approach that leaves the midline bone structures intact, minimizes central spinal canal disruption, and reduces dural tube traction and exposure. A total facetectomy is generally performed to gain access to the lateral disk space. Transforaminal inter-body spacers are crescent shaped and are placed anteriorly in the disk space.

Posterolateral Fusion: - This procedure is performed as an alternative to posterior lumbar interbody fusion when there is a severe loss of disk space height and when the insertion of a posterior interbody spacer might cause neurologic compromise. Bone graft material is placed laterally (between transverse processes) rather than anteriorly (between vertebral bodies). Posterolateral fusion is usually supplemented by posterior instrumentation.

ANTERIOR SURGICAL APPROACHES

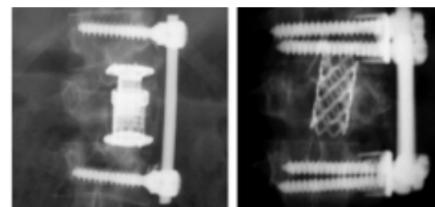
Fusion is performed by using an anterior approach when pain is predominantly diskogenic and posterior decompression is not required.

Anterior Lumbar Interbody Fusion: - Like the posterior and transforaminal lumbar interbody fusion techniques, the anterior fusion procedure is performed to remove degenerated disk material, replace disk height and give immediate stability for anterior osseous fusion. However, anterior lumbar interbody fusion is performed by using a lower abdominal incision or retroperitoneal approach through the flank. The spacers used in anterior fusion are single, large cages. These are supplemented by screws and rods or plates, which may be placed either anteriorly or posteriorly, depending on access. At the level of the L5 through S1 vertebrae and sometimes that of the L4 through L5 vertebrae, anterior fusion must be supplemented by instrumentation with a posterior approach because the iliac crests limit lateral access. Several rod and screw devices, such as the Kaneda device (DePuy Spine, Raynham, Mass), are specifically designed for insertion with an anterior approach.

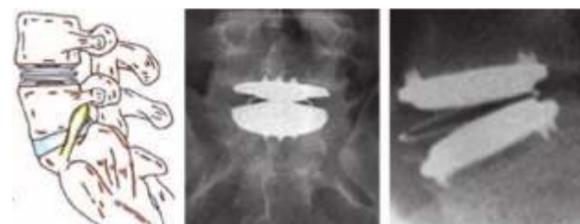


Alone Lumbar Interbody Fusion: - This procedure is similar to the others, but the cage is fixed with screws to the adjacent vertebral bodies to obviate further posterior instrumentation.

Vertebral Body Replacement: - A vertebral body replacement may be necessary after a resection (corpectomy) because of a tumor, infection, or major trauma. The vertebral body replacement device may be an expandable hollow cylinder packed with bone graft material or cement, like the Synex cage (Synthes Spine, Paoli, Pa) or made of mesh, like the Moss cage (DePuy-AcroMed). Vertebral body replacement may involve one or more segments. Stackable carbon-fiber-reinforced polymer cages are radiolucent, but the metallic rods that hold them together mark their position, as do radiopaque metallic dots. Lateral, anterior, or posterior screws with plates or rods are inserted for additional stability.



Disk Replacement: - Total disk replacement is performed in patients whose pain is believed to originate primarily from disk degeneration without nerve root involvement, rather than from spinal stenosis or spondylolisthesis. The presence of facet joint degeneration is a contraindication to total disk replacement. There must be at least 4 mm of residual disk height and a lack of significant endplate degeneration to provide satisfactory anchorage for the replacement device. The goal of disk replacement is to avoid arthrodesis related complications of pseudarthrosis, iliac crests donor site pain and degeneration of the adjacent segment.



DYNAMIC STABILIZATION

Dynamic stabilization may be an alternative to fusion in some patients with low back pain originating from chronic degeneration of the lumbar spine. By altering load bearing and controlling abnormal motion, stabilization helps limit the stress placed on the segment adjacent to the level of fusion and thus helps prevent progressive degeneration. A wide variety of dynamic stabilization devices are in various stages of clinical development. These devices may be used alone for stabilization or used in combination with fusion devices. Dynamic stabilization devices may be broadly grouped, according to their design, in the following categories:



- Pedicle screws and artificial ligaments (eg. Dynesys device),
- Inter-spinous process decompression devices (eg. Wallis system, X STOP)
- Posterior element replacement systems.



Dr. Sulakshan Kumar Tewari

MENTAL HEALTH

is a complex subject - it's hard to define and difficult to grasp all of the different aspects of mental health. Still, however, there are simple steps that you can take in your life to keep your mind healthy.

Mental health problems have existed ever since the existence of human race itself. In the earlier times, these disorders were considered to have been caused by evil spirits and black magic etc and treatment modalities were also designed accordingly causing a lot of physical and mental torture to the patient and his family. But by virtue of systematic and scientific efforts made by the great physician of the last two centuries or so led to the advent of Psychiatry as a speciality. A lot of work has been done to understand the phenomenology of mental disorders. The advent of newer medicines, ECT, Psychotherapies and Behavior therapies has made a sea change in the quality of life of mentally ill patients.

It is estimated that five out of ten most disabling disorders are Psychiatric in nature. Depression, Alcohol abuse, Bipolar mania, Schizophrenia and obsessive compulsive disorder are among ten leading causes of disability worldwide.

Signs and symptoms of Psychiatric disorders vary a lot eg. disturbed sleep and appetite, irritability, changes in behavior, mood, thought process and perceptions, poor performance in personal sexual, family, social and professional spheres. At times clinical picture may mimic the symptoms of Heart disease, Hypertension, Arthritis, Gastric or Lung disorders. Headaches, body aches, muscular pains, weight loss and general weakness are common a mental disorders. Psychiatric disorders do occur in 15-30 % of patients suffering from chronic and life threatening physical disorders like IHD, hypertension, Diabetes mellitus, arthritis, gastric problems and cancer patients.

Genetics, stress and drug abuse are some of the common causative factors. Most of these disorders respond nicely to rationally applied therapies. Generally these treatments are lengthy and need regular visits to the doctor. Some of these disorders get cured completely while in still others the quality of patient's life and that of his or her family becomes much better with timely intervention. Though growing awareness about these illnesses has reduced the stigma attached with these but still people feel hesitant visiting a mental health professional thereby aggravating the problem.

"Sooner the better" is the mantra to have a good outcome of the treatment and better quality of life for the patients and their caregivers.

Care Plus



SPECIALITIES:

- ▶ Chemotherapy
- ▶ Cancer Operation
- ▶ Radiotherapy
- ▶ Surgical Oncology
- ▶ Cardiac Sciences
- ▶ Neurosciences
- ▶ Orthopaedics
- ▶ Internal Medicine
- ▶ Obs & Gyn
- ▶ Gastroenterology
- ▶ General & Laproscopic Surgery
- ▶ Nephrology
- ▶ Ophthalmology
- ▶ ENT
- ▶ Paediatrics
- ▶ Dermatology
- ▶ Diabetes
- ▶ Asthma
- ▶ Diet
- ▶ 24x7 Blood Bank
- ▶ 24x7 Pharmacy
- ▶ 24x7 Lab Services
- ▶ 24x7 Radiology Services

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