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Poster Presentations

A study of patient satisfaction level in inpatient spine department of a tertiary care multi-speciality hospital: Designing an App

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Aims and Objectives: This study aims to investigate the prognosis and satisfaction level of patients/relatives operated with spinal surgery. This shall not only help the spinal hospitals to know the ways to improve the patient outcome but methods to provide better services. The data may be used to develop an app to study patient satisfaction in hospitals. **Material and Methods:** The study was conducted by carrying out survey amongst 39 patients and their relatives at inpatient department of spine surgical unit by using structured questionnaire and analysing the data using SPSS software. The patients were examined before and after surgery and their VAS (Visual Analogue Score) and ODI (Oswestry Disability Index) were also documented. The SERVQUAL methodology was also studied to understand if it could be implemented in the study to understand better and make the study more conclusive. **Results:** The study composed of 39 individuals with an average age of 75.6 +-10.2 years.39 percent of the study group were females and 61 percent males. The ODI score in post-operative stage (18.97+_12.97) was significantly reduced as compared to pre-operative stage (76.66+-17.23) ($p<0.05$). The VAS score in post-operative stage (1.48 +-1.8) was also significantly reduced as compared to pre-operative stage (9.51 +- 0.22) ($p<0.05$). Ninety-Two percent people were satisfied with the housekeeping services while Ninety-Eight percentage were satisfied with the medical care provided. Ninety-five percentage of people were satisfied by the behaviour of staff and nurses. The nursing department, cleanliness and behaviour of the doctor satisfied 90 percent, 87 and 84.59 percent. The admission and reception satisfied only 66 percentage . The SERVQUAL study was not incorporated because the questionnaire designed through this methodology requires to be administrated by face to face interviews along with moderate to large sample size for statistical reliability. **Conclusion:** This study has clearly shown that satisfactory results are obtained after spine surgery. However, the results are better when performed by a fellowship trained surgeon. Moreover, doctors who spend time in explaining the ailments and possible outcomes to the patients have more satisfactory results. A caring attitude of the staff and empathy in interaction makes a lot of difference in the success of the practice of a surgeon.

Innovative rehabilitation devices for persons with spinal cord injury: Scope for collaboration

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Spinal Cord Injury (SCI) is a devastating, long term and costly injury. SCI remains a frequently terminal condition, with limited availability of dedicated spine specialized rehabilitation services and resources, as well as reduced opportunities and guidance for meaningful home integration and continuity of care. Life expectancy of persons with SCI in low and middle income countries (LMICs) is shorter compared to high income countries (HICs). In low-income countries, SCI remains a frequently terminal condition, with limited availability of dedicated spine rehabilitation resources and facilities. Persons with SCI have a high lifetime risk for serious and costly secondary complications such as pressure ulcers, urinary tract infections, pain, spasticity, and respiratory complications. Many of these conditions can be prevented or minimized through timely self-care practices and proper guidance. It has also been highlighted in the literature that due to the decrease in length of stay, many patients and caregivers get discharged without taking proper training in rehabilitation and functional independence. In the subsequent years the cost for person with SCI can range from $41,000 to 178,000 based on the severity of injury. Rehabilitation devices have a potential and can play a vital role in both the diagnostic and therapeutic care of person with SCI which may help in promotion of long term recovery. It has been noticed that innovative rehabilitation appliances can contribute to the improvement of patient care. Like disease specific or customized virtual reality portable system/ SCI specific virtual reality tool, remote rehabilitation kit for discharged SCI individuals, bed sore mapping devices for early detection and prevention, Low cost head nodding environmental control devices, posture corrector devices in

sitting and standing, fatigue and strain analysis for lower limb to accelerate good posture and walking, Push-up pusher device for tetraplegics, robotic assisted tool for hand function training for tetraplegics, Software to detect video-based analysis of exercises and bedsores images sent to telehealth department for further guidance and support and Electronic device/ sensors based applications to measure ASIA to maintain the uniformity in the assessment of SCI individuals. It may be expected that with the help of these proposed devices SCI individuals may reach closer to normal health outcomes and lead full and meaning full life in reduce cost. Thus, development of such devices may cut the cost of avoidable secondary complications and admissions solely for rehabilitation purposes.

Computer assisted versus conventional total knee arthroplasty: A comparison of mechanical alignment and blood loss

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Conventionally, total knee replacement (TKA) are performed with the use of either intra or extra-medullary alignment jigs placed onto femur or tibia. Computer assisted methods have been developed to improve the positioning and alignment of the prosthesis components with the aim to improve the postoperative prosthesis alignment.Aim of our study is to compare whether Computer assisted TKA have an added advantage of achieving greater accuracy in postoperative mechanical alignment.We collected data of 100 patients,divided onto two groups of 50 each based on whether they underwent TKA via conventional or computer assisted technique. Full-length standing antero-posterior radiograph of the pelvis with both hip, knee and ankle region of all patients were taken in preoperative and postoperative period and Hip-Knee-Ankle(HKA) Angle was measured. The mean pre-operative and post-operative HKA angle in conventional group was 12.5 +/- 6O and 4.7 +/- 3O respectively and in computer assisted group 13.0 +/- 2O and 3.2 +/- 2.1O respectively. This correction was statistically significant (p value 0.001). Of the 74 knees operated in computer assistance TKA group, 52 knees achieved acceptable mechanical alignment i.e. 70% and rests 30 % were outliers while in conventional group it was 43% and rest were outliers.This was statistically significant (p value 0.011).We conclude that there is significant improvement in the mechanical alignment using computer assisted TKA over conventional methods and it does not increases operative time.

Surgical management of infected charcot spinal arthropathy: One-staged posterior approach and fusion

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Charcot spinal arthropathy (CSA), though initially described as a complication of tertiary syphilis (described after tabes dorsalis) infection, is more commonly seen after traumatic spinal cord injury (SCI). Loss of deep pain and proprioception (neuro- traumatic theory), autonomic dysregulation (neuro -vascular theory) after SCI or in the setting of any other pre-existing condition causes progressive inflammatory destruction of the intervertebral joints (intervertebral disc and facet joints) due to repetitive micro-trauma leading to intervertebral fluid collection and malalignment of vertebral column. We discuss a case series of three atypical cases studies of CSA that presented with infection. There are very few case reports till date of infected Charcot Spine (ICS) reported till date. Common neurological symptoms typically include an increase or loss of spasticity and development of new bowel and bladder complaints. The inflammatory changes are picked up earlier by MRI than that of CT which may demonstrate the joint space narrowing. These early changes on CT or MRI are usually incidental as the patient remains asymptomatic during this stage. The late hypertrophic stage is characterized by the classical six D's (distension, increased density, destruction, debris, disorganization, and dislocation) seen in Charcot's arthropathy. All the three cases discussed, presented with the classic clinico-radiological features of CSA.The source of infection in CSA can be hematogenous or through the fistulous track or through infected bedsores. All the reported cases were managed surgically by an instrumented circumferential fusion except in one case report where an instrumented postero-lateral fusion was done. So, it is imperative to manage the infections in SCI vigilantly and follow-up the SCI victims with full-length spinal radiographs instead of focal radiographs which are usually done to assess the surgical fusion, so that CSA is identified before symptomatic presentation after gross vertebral destruction leading to a spinal deformity or sitting imbalance.

Concurrent validity of smartphone Clinometer application in measuring scapular rotations

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Introduction: Abnormalities in 3-dimensional scapular motions are associated with glenohumeral pathologies, therefore requiring a clinically accessible and valid tool. The current study assesses the concurrent validity of scapular upward rotation and tilt measures using a smartphone application (using inbuilt accelerometer). **Methods:** Static position testing for scapular motions at rest, 30, 60, 90 and 120° of scapular plane elevation for dominant right hand was done for 10 healthy adults (3 Males, 7 Females; age: 27.3 ± 4.08 years; height: 1.64 ± 0.68 meters; weight: 66.8 ± 10.84 kg; BMI: 24.54 ± 3.03). Upward rotation was measured along scapular spine and tilt was measured along line joining root of spine and inferior angle by 'Clinometer' mobile application. The scapular motions in world reference frame were assessed by trakSTAR™ electromagnetic motion capture system using ISB recommended protocol. Repeated measures ANOVA was run across angles and 2 methods at $p<0.05$ followed by Tukey Kramer post-hoc testing. **Results:** Upward rotation was not different at rest, 30°,60° and 120° but was statistically different at 90° (8.8°, $p<0.05$). There were no differences for scapular tilt at rest and 30° elevation. **Conclusion:** As compared to other conventional tools using linear measurements, angular measures using mobile app may be more suitable for assessing scapular rotations especially at lower elevation angles.

A study on the quality of life among stroke survivors

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Background: The World Health Organization defines - Health as a "state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." It follows that measurement of health must not only include estimates of frequency and severity of diseases, but also well-being and quality of life. Many of stroke patients struggle with numerous physical problems, social problems, psychological and environmental problem which can affect their quality of life not only from physical health aspect, but also from mental and social health point of view and cause numerous problems. Hence, this study was done to estimate and to know the factors determining the quality of life in stroke patients and recommend suggestions to improve these factors. **Objectives:** 1. To estimate the quality of life (QOL) among stroke patients, 2. To determine the factors that affects the quality of life (QOL) in stroke patients, 3. To assess the functional and social activities among stroke patients, 4. To determine the Burden and the quality of life (QOL) in caregivers of stroke patients, 5. To analyses potential relationships between patient – related variables and the most affected aspects of caregivers. **Methodology:** A cross sectional study on 96 patients with stroke aged more than 30 years was carried out NIMS Hospital, SMS Hospital, Advanced Neurology & Super Speciality Hospital, Jaipur for a period of 4 months from 1st January 2018 to 30th April 2018, to estimate quality of life and to determine the factors affecting quality of life. The data for factors was collected using a predesigned and pretested proforma for estimating Quality of life a summarized quality of life questionnaire of World Health Organization "WHOQOL-BREF" with socio-demographic profile was used as a tool. The data entry and all the statistical analysis were performed by using Microsoft Excel and SPSS version 22respectively. By using the WHO QOL-BREF instruction manual, the raw score are converted to transformed scores. Quantitative assessment of quality of life was done by estimating mean and standard deviation. Mean and standard deviation of the quality of life scores are calculated for each of the socio-demographic variable and compared and suitable statistical test like t-test/ANOVA are applied. Finally, the minimum, maximum and mean score are calculated as on overall domain score for the each four domain i.e. physical domain, psychological domain, social relationship domain and environment domain. **Results:** Out of 96 patients, 75(78.13%) were males and 21(21.87%) were females. Majority 87(90.6%) of patients were married, 93(96.9%) of patients were Hindu religion, 64(66.7%) were from joint family, most of them were 28(29.2%) having no school education, 28(28.0%) were semi-skilled, 65(67.7%) were from urban area sand 31(32.3%) were from rural areas. Most of the patients belonged to Socio -economic status class II. Mean quality of score of patients with stroke was 65.04±9.982 there was significant difference seen in quality of life score according to sex, side of lesion, duration of stroke, socioeconomic status, occupation and hypertension. Statistically significant difference in quality of life score was not seen with respect to age, locality, religion, marital status, type of family, educational status, occupation, alcohol intake, smoking, diet. **Conclusions:** It can be said that quality of life is a multidimensional concept. As stroke cases is among the most devastating of health aspect, having multiple and profound effects upon all aspects of life, hence evaluation of quality of life is very important. Quality of life depends on patients with physical, social, psychological, and environmental aspects. Each and every effort should be made to improve these aspects and in turn to activity daily living (ADL) and improve the overall quality of stroke patients. Key words: Quality of Life, strokes, WHOQOL-Brief.

Should implant breakage always be considered as implant failure?- A case report

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The term implant failure implies that failed implant was inadequate for the function expected of it. There are many reasons of implant failure in spine surgery. The causes can be defective surgical technique or wrong surgical decision. On the other hand, there can be reasons related to implant design

or strength of implant. Other reasons could be uncontrolled infection, implant loosening, osteoporosis or hypersensitivity reactions. Implant failure present as either breakage or loosening of implant. But should implant breakage always be considered as failure? We present a case report of a female patient, 35 yrs old presented to us with complaints of weakness of all 4 limbs to the extent of inability to walk. Symptoms were gradually progressive and all features of myelopathy was present. She was evaluated and diagnosed as pott's spine of cervicodorsal region. She was operated with instrumentation and decompression. She recovered gradually to normal neurology. A year later she presented with breakage of implant spontaneously. She was neurologically fine except some pain. Decision was made to have close watch on her neurology and manage conservatively. We have 6 years follow up with broken implant and patient is completely asymptomatic. To conclude, not all cases of broken implant need revision surgery. Hence, clinical correlation Is necessary to decide plan of action.

Lumbopelvic rhythm in patients with chronic non specific low back pain

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Introduction: Subjects with chronic back pain show changes in kinematics due to pain, muscle weakness and soft tissue tightness. The current study evaluated the 3-dimensional kinematics of lumbar spine, pelvis and hip joint motions in patients with chronic non-specific low back pain. **Aims:** The study aimed to find descriptively the relation between their lumbopelvic rhythm and clinical presentations. **Methods:** Ten subjects (mean age 35.4 ± 11.5 years, 6 males, BMI <30) with symptoms of back pain for >3 months were included. Their average numerical pain rating score (0-10) was 4.4±2.2 and average ODI was 14.2±9.7. Trakstar 3 dimensional sensors were attached over L3 spinous process, sacrum and on femur. International Standards of Biomechanics recommended protocols were used for anatomical descriptions of motions as the subjects bent forward and back. The lumbopelvic rhythm was calculated as regression slopes in 20-degree increments between 20° to 80° hip flexion. **Results and Conclusion:** The rhythm was 4.0 ± 3.5, 3.57 ± 2.5, 3.8 ± 3.2 during bending forwards and 0.66 ± 10.8, 3.43 ± 2.7, 2.88 ± 1.8 while returning to initial position. Subjects with relatively tight hamstrings showed overall lesser ROM and higher lumbar contributions whereas subjects with relatively lesser mobility as tested with modified Schober's test presented with lower lumbar contributions. The study helped to determine the lumbopelvic rhythms and their associations with clinical findings in patients with back pain.

Variable link knee prosthesis based on centrode approach along with enhanced functionality

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Approximately 5.4 million lower limb amputees are currently living in India as per Census 2011 data. Commercially available prosthetic devices are expensive or functionally underperformer, which is unsuitable for 80% of the amputees. An existing four-bar kinematic design of above knee prosthesis "Sankalp Knee "was chosen as reference. Kinematic simulation analysis is performed by varying length of horizontal and vertical links of four-bar mechanism to get the socket (ICR with socket fixed) and shank centrode (ICR with pylon fixed). Based on the obtained centrodes minimum toe clearance and kinematic stability of the knee joint is assessed. Additionally, a knee rotation mechanism (360°) and anterior-posterior (AP) translation mechanism (± 5 mm) is incorporated within the developed knee joint to provide internal-external rotation of knee prosthesis at no load condition, whereas AP translation provides freedom to a prosthetist to align knee prosthesis according to an individual's need. A software model with rotation and AP translation mechanism is designed and tested as per the ISO 10328 load of 2240 N. Maximum stress, strain and deflection were found to be within acceptable limits. A prototype is developed with nylon-66 and stainless steel material with rotation and translation mechanism which has to be tested on subjects for feedback. Passive knee prosthesis with varying link option has to be designed and tested as per the loading requirement with further more studies.

Approach for shifting GRF to prevent joint space narrowing of damaged condylar surfaces in knee joint using monotonous corrective force

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Introduction: The most common type of osteoarthritis is single compartment knee osteoarthritis which is ultimately a conscious of lifestyle and continuous loading of knee joint which lead to degeneration of the single knee condyles either medial or lateral. The management for OA is ultimately is

Total knee replacement in severe conditions, but for mild to moderate is by taking NSAIDS or Gait pattern alteration. Orthotic knee braces for this conditions are very helpful to reduce pain or support the knee joint and provide the Q-angle correction. But Orthotic management in developing countries are not properly used and lack of functional knee braces are developed for persons living in developing countries.so new Orthotic knee joint is designs to achieve the utmost functionality with proper correction. **Objective:** The aim is to design the orthotic knee brace for single compartment Osteoarthritis and provide support the movement of anatomical knee joint with monotonous correction force. **Methodology:** The proposed knee brace is a device which is used to provide assistance and give appropriate corrective force to shift the load line or GRF line to the healthy side of the knee during activities of daily living which include the continuous loading of knee joint like walking, stairs up stair down. The design of knee brace provides two function simultaneously which are Anatomical movement of the knee joint during activates with passive assistance and corrective force. There are two independent mechanism explained below: a) Polycentric hinge joint with passive assistance b) Jackscrew mechanism to provide force for correction of Genu Varus/Valgus. **Conclusions:** The final prototype 3D model is generated and Static force analysis is performed to study stress distribution. We applied for the human ethical clearance for testing the first prototype. We anticipate that this device provides the monotonous corrective force during weight bearing activates and normal activities of daily living with proper support. The proposed Knee brace provides the shifting the load line towards healthy knee joint condyle which prevents the loading of degenerated cartilage with increasing joint space and have immediate pain relief during weight bearing activities resulting to improve the regeneration of cartilage and meniscus in due course of time. Which will lead to either delaying the total knee replacement surgery for the significant period of time or avoiding the same if systematic study is carried out.

Health monitoring of human spine employing non-bonded piezo sensor flexible belt

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Extensive research is currently underway across the world for employing piezo sensors for biomedical health monitoring taking into account their clear cut advantages such as low cost, fast dynamics response and bio-compatibility. The recent research for the development of non-bonded piezo sensor (NBPS) configuration based on electro-mechanical impedance (EMI) technique that overcomes the ill effects of bonding such as irritation, bone and skin disease is a welcome step towards the field use of piezo sensors for biomedical health monitoring. It has been noted that the conductance signatures obtained in non-bonded mode are significantly close to the conventional bonded configuration. This paper shall explore the utilization of both NBPS and directly bonded piezo sensor (DBPS) for health monitoring of other critical organs like spine and cartilage, etc. A flexible belt type NBPS configuration that can be tied across the width of the human body with position varying from rib cage to the waist shall be employed. The variance in conductance signature of this configuration would help to monitor the healing or damage in spine.

Osteoporotic spinal fixation using vertebroplasty augmented pedicle screws - A retrospective analysis

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Introduction: Surgical management in the elderly population presents some challenges.Pedicle screws that can provide 3-column fixation are the most common implants used in spinal surgery, but screw performance depends on bone quality.Accordingly, patients with osteoporosis may be predisposed to higher failure rates following posterior internal fixation system failure. Osteoporotic bone has a higher risk of implant failure. **Materials And Methods:** Study design: It is a retrospective study including patients treated at our institution. **Results:** We analyzed 101 patients with 103 involved vertebral segments with 812 cement augmented pedicle. There was no clinically significant cement leakage, screw migration, adjacent segment fracture, degeneration or proximal junctional kyphosis. **Discussion:** Pedicle screws use is controversial in patients with osteoporosis or fragile bone, since pull out strength and fatigue failure are linearly related to bone mineral density and also rates of pseudarthrosis are higher. The use of expandable screws, bicortical screws, dual outer diameter screws, and screws with various diameters have been also recommended.

Does prophylactic vertebroplasty prevent proximal junctional kyphosis?

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Proximal junctional kyphosis (PJK) is a common complication following long posterior spinal fusion (PSF), and a subset of these patients will develop proximal junctional failure (PJF). PJK occurs in 9.2-46% of cases following long PSF, and a subset of these will develop PJF, resulting in a 26–39% revision rate within the first six months postoperatively. Risk factors for development of PJK include age > 55, osteopenia, and global sagittal imbalance. We hereby report a intresting case of degenerative scoliosis with multilevel lumbar canal stenosis in osteoporotic female with positive sagittal balance in which proximal junctional failure happened inspite of prophylactic vertebroplasty above the Upper instrumented vertebra (UIV). Our observations contradict the literature that say prophylactic vertebroplasty in long PSF in adult spinal deformity is a safe and effective method of minimizing the incidence of PJF/PJK.

Proximal junctional kyphosis in paediatric kyphoscoliosis correction surgery: An analysis of 2 cases

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Proximal junctional kyphosis (PJK) is a known complication after fusion or fusion less surgery for these deformities. Though there is abundant literature on PJK in adult spinal deformity (ASD), the literature is very sparse following surgeries in this regard in congenital kyphotic scoliotic deformities.Though literature regarding PJK after pediatric and adolescent deformity correction is available, much of this data is focused on Adolescent Idiopathic Scoliosis (AIS), Scheuermann's kyphosis and early onset scoliosis(EOS) with only very sparse literature on congenital kyphosis and kyphoscoliosis.We studied two of our cases of congenital kyphoscoliosis with spinal toppling where PJK developed and attempted to look in to the possible causative factors. Among the established risk factors for PJK,which include iatrogenic PLC disruption at UIV, lack of soft endpoint at UIV, pedicle screw malposition at UIV, failure to select the end vertebra as UIV, selecting UIV at the apex of the thoracic kyphosis, deformity at dorso lumbar junction, greater preoperative segmental pathological kyphosis, thoracic kyphosis and a greater than 300 change in lumbar lordosis after surgery ,except for the lack of soft end point at UIV and presence of severe deformity at dorso-lumbar junction, we could not find any other cause from literature for the occurrence of PJF in both of our cases.We hypothesized that the unaddressed PJK because of delayed follow-up in the first case could have led to more stress at the VCR zone that have led to rod breakage at the site of VCR. On analyzing the cause for PJF in the second case, we retrospectively found that the UIV after 1st surgery was far away from C2 plumb line. Though it is not possible to draw any strong conclusion based on our hypothesis, we feel that it will help the surgeon to keep these parameters in mind at the time of surgical planning for such severe deformities.In severe thoracolumbar kyphotic deformities with normal or negative sagittal balance, it might be a safer option to select the sagittal stable vertebra as UIV based on the C2 plumb line and there should be a greater threshold for the surgeon to rely entirely on reduction screws or usage of rod persuasion device for fixing rod to the proximal screws.

Failure of cervical anterior plate fixation in traumatic cervical injuries – A report of 5 cases

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Cervical injuries can be treated with anterior or posterior stabilization alone or combined anterior and posterior approach. There is no consensus over line of management in cervical spine injured patients .The primary objective of this study was to report the incidence of radiographic failure following anterior cervical osteosynthesis in cervical trauma patients. There is high Biomechanical and clinical data conflict regarding the appropriate approach and method of fixation in traumatic cervical spine injuries. Inclusion criteria included all Cervical traumatic injured patients admitted in Indian Spinal Injuries centre from 01/01/2010 to 31/07/2011 treated by only anterior approach under single surgeon .42 patients were included in this study and we have reported 5 failure cases following anterior only approach . Radiographic failure was defined as a change in translation of greater than 4 mm and/or change in angulation of greater than 11 degrees between the immediate postoperative films and the most recent follow-up. A 8% incidence of radiographic loss of alignment is reported in our case series following cervical anterior plate fixation in traumatic cervical spine injuries . Concern regarding mechanical failure of single level cervical spine injuries should be high when they are treated with single approach.

Flap surgery for pressure sores in spinal cord injury patients

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Dr. Harnam Singh Madan Sensory and motor impairment places persons with spinal cord injury (SCI) at risk of numerous long term secondary medical conditions such as pressure ulcers (PU). Conservative management lengthens

the healing time and early surgical therapy may offer the best hope in the form of earlier closure and improved ability to withstand subsequent trauma. The present study was conducted on 25 patients of pressure ulcers (PU) admitted or followed up in the Department of Orthopaedic Surgery, Pt. B.D. Sharma PGIMS, Rohtak, India. Twenty five patients with 27 PU with SCI were included in this study. Patients were in the age group of 16-50 years (mean = 33 years). Seven (26%) fasciocutaneous rotation flaps; six (22%) tensor fascia lata flaps; three (11%) gluteus maximus island flaps; and 11 (39%) gluteus maximus V-Y advancement flaps (4 unilateral and 7 bilateral) were done. Hematoma (7%), seroma (4%), superficial infection (7%), total flap necrosis (4%), recurrence (11%), and short flap (7%) were main complications observed. The overall results were excellent in 89%, good in 7% and poor in 4% of flaps. Though possible surgical complications are numerous and the recurrence rate is relatively high, the surgical management of patients with PU can be very rewarding. Goals for surgical closure of PU include reduction of protein loss through the wound, reduction of rehabilitation costs, prevention of progressive osteomyelitis, improvement of personal hygiene, and early rehabilitation & societal reintegration.

Ligamentum flavum cysts: Severe lumbar canal stenosis with or without neurodeficit, response to surgical treatment: An experience in three cases

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Introduction: Ligamentum flavum cysts were first described by Moiel et al in 1967. They are among the types of juxta facetal cysts and one of the rare causes of canal stenosis. Most of the times they are diagnosed during surgery but if looked closely can be diagnosed Preoperatively by MRI. More than half are found in Lumbar spine at L4-5 level and rarely at cervical or thoracic spine. **Material and Methods:** We had three cases of Ligamentum Flavum cysts. Our first patient was 89-year-old male with 1-year history of LBA with B/L progressive neurogenic claudication (R>L) with severe difficulty in standing and walking. The patient was neurologically intact with normal bowel and bladder. The patient underwent B/L L4-5, L5-S1 laminoforamonotomy with excision of flavum cyst and improved significantly in postoperative period. Our 2nd patient was a 55-year-old female with 20 days history of LBA with B/L neurogenic claudication with L foot drop of 10 days duration. There was grade 1 listhesis L4-5 with LCS L3-4, L4-5. L4-5 TLIF along with L3-4 laminoforaminotomy was done with excision of flavum cyst. There was significant improvement in pain and neurodeficit. Our 3rd patient was 69-year-old male with Chronic LBA with B/L neurogenic claudication with acute exacerbation for 10 days with both side foot drop with b/l abductor weakness with severe difficulty in standing and walking. Laminectomy and excision of cyst was performed and there was significant improvement in pain as well as neurology. All the cysts were sent for histopathological examination and were confirmed by biopsy to be ligamentum flavum cysts. **Discussion:** Ligamentum flavum cysts represent a unique entity of cysts from inner surface of ligamentum flavum with no epithelial lining and no association with spinal facet. Ligamentum flavum cyst is regarded to be associated with microtrauma due to increased motion at a particular motion segment or segmental instability and local stress associated with degeneration at the level of occurrences. Improvements in pain and neurological function in the majority of patients suffering from laterally located ligamentum flavum cysts after surgical decompression have been documented. **Conclusion:** Ligamentum flavum cysts are rare but they should remain in the differential diagnosis of any extradural intraspinal mass and neurogenic claudication or lumbar radiculopathy. If they don't respond to conservative treatment or if the symptoms are severe enough to warrant surgical treatment the response to surgical treatment is very good.

Which parameters other than and in addition to neurological status are relevant on surgical decision making in spinal tuberculosis?

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Background: Spinal tuberculosis (TB) constitute nearly 50% of all osteoarticular disease, the commonest site being in the paradiscal region. The aim of this study was to analyze the predictive factors other than and in addition neurological deficit on deciding surgical treatment in patients with spinal TB. **Method:** A retrospective review of a single center case series was performed, and a total of 99 patients with spinal TB, managed surgically (S) or non-surgically (NS) between 2006 and 2016,were analyzed. **Result:** Of the 99 patients (60F/39M) with a median age of 27years; 83(83.8%) were treated S and 16 (16.2 %) were managed NS. The median values for VAS score, number of vertebral involvement, erythrocyte sedimentation rate (ESR), and preoperative kyphotic angles were 9, 2, 56 and 30, respectively. Multivariate logistic regression test results showed that the probability of having a surgical intervention increases by 8.036 and 5.249 times

for the patients with deformity and with contiguous disease, respectively ($p<0.05$). Moreover, one-unit increment on VAS score increases the probability of having a spinal surgery by 1.371 times, as well ($p<0.05$). **Conclusion:** In this study based on pure surgeon and patient preferences, the presence of kyphotic deformity, contiguity of the lesion and pain intensity were shown to be relevant factors in addition to neurology while making the decision for surgery.

Pneumocephalus and Pneumorachis following dural tear in lumbar spine: A case report

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Introduction: Dural tear causing CSF leakage is a common complication of lumbar spine surgery which may further complicate to meningitis, wound healing problems, pseudomeningocele or CSF fistula formation. However the occurrence of pneumocephalus and pneumorachis is an extremely rare phenomenon after CSF leakage. **Case:** A 70 year old man was operated at our institute for multilevel lumbar canal stenosis (LCS). There was no evidence of intraoperative dural tear or any postoperative symptoms of CSF leakage. He presented one month after surgery with CSF leakage from the surgical site since one week after surgery with headache for last 4 to 5 days. There was no fever, vomiting or neck rigidity. MRI of the spine revealed air in the cervical and lumbar region. CT scan of the brain revealed large pockets of air in the frontal regions, Sylvian fissure and in the ventricles. The patient was managed with tight closure of the fascial defect, antibiotics and high flow oxygen. there was gradual resolution of the gas in few days to normal looking CT and MRI. The wound healed well and the patient had no further issues till final follow up at 2 years. **Conclusion:** Pneumocephalus and Pneumorachis are a rare occurrence after spinal dural breach and may cause symptoms severe enough to require management. Early identification and prompt intervention can prevent devastating complications.

Denosumab in treatment of giant cell tumor of upper cervical spine

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Background: Upper cervical spine is an uncommon location for Giant Cell Tumour (GCT). The management of GCT is usually surgical i.e. Excision and curettage. We present a rare case of GCT of axis vertebra managed without excision. Methodology : A 23 year old with axial neck pain and left arm weakness was diagnosed with GCT of axis vertebra with atlantoaxial instability. He was managed with posterior stabilization for instability and injection Denosumab for GCT. **Results:** The patient was pain free with improvement in neurology at 3 months follow-up, MRI showed consolidation of tumour mass at 1 year follow-up. **Discussion:** Denosumab is a potential drug therapy for GCT of bone which can be used for resolution of tumour mass in surgically inaccessible or difficult sites. However long term clinical results still need to be investigated.

To compare the radiological and functional outcomes of intracapsular fracture neck femur with comminution managed by either three or four cannulated cancellous screws

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Objectives: To compare the radiological and functional outcomes of intracapsular fracture neck femur with comminution managed by either three or four cannulated cancellous screws. **Design:** Prospective study. **Setting:** Department of Orthopaedics UCMS and GTB Hospital, Delhi, India. Patients/ Intervention: Total of 23 patients (group 1) with ICNF with comminution were managed with 3 CCS in inverted triangle manner and were followed up till average 2.5 years. While 25 patients (group 2) with the same inclusion and exclusion criteria had been managed with 4 CCS in diamond configuration previously in the same department and were followed up till average 3.5 years. Final outcome of the 19 patients of group 1 was compared to the 20 patients of group 2 in final analysis. **Main Outcome Measurements:** Radiological outcomes were compared in terms of union, nonunion, avascular necrosis and implant backout while functional outcome was measured by Harris hip score at more than 18 months. **Results:** In group 1 with 3 CCS, mean union time was 15 weeks (12-24 weeks) while in group 2 with 4 CCS, mean union time was 14 weeks (12-24weeks). There was total of 4 (21%) cases of nonunioun in 3 CCS group while it was 2 (10%) cases in 4 CCS group. Total number of avascular necrosis was 1(5%) in 3 CCS group while it was 2 (10%) in 4 CCS group. Mean implant backout was more in 3 CCS group then 4 CCS group. In 3 CCS group, the average Harris Hip Score was 87 (range 84-94) while in 4CCS group, average Harris Hip Score in this group

was 93 (range 78-96). **Conclusions:** Statistically there is no difference between 3 CCS and 4 CCS in the treatment of ICNF fracture. Thus we conclude that both 3 CCS and 4 CCS are effective treatment modality for fracture neck femur with comminution and in the absence of larger study and long term follow up the superiority of one over the other cannot be recommended.

Distal forearm fractures in children: How to avoid failures in conservative treatment

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Distal forearm fractures are common injuries in childhood. Closed reduction and cast application is the preferred treatment due to the good healing potential and remodelling capacity of these fractures. This paper studies the determinants of successful treatment outcomes of conservatively treated distal forearm fractures in children. 45 prospective cases belonging to the age group of 1 to 15 years underwent intervention in form of closed reduction and above elbow cast application. The treatment was done by a single senior paediatric orthopaedic surgeon placed at a tertiary care hospital. The follow-up period was 12 months. Pre and post-operative angulations, Cast Index, Padding Index and Canterbury Index was calculated on radiographs. Clinical assessment was done with range of motion of the wrist and forearm. The mean Cast Index was 0.75, mean Padding index was 0.23 and the mean Canterbury index was 0.98. Commonest fracture observed was complete fracture (48 %). The average preoperative fracture angulation was 10 ° and 15 ° in anteroposterior and lateral views respectively which was reduced to 2.5 ° in anteroposterior and lateral views. There was no case of complications including stiffness, redisplacement, compartment syndrome or persistent swelling. We concluded that displaced and angulated distal forearm fractures in children can be successfully treated with closed reduction cast giving good functional and clinical outcomes provided the above determinants for successful treatment are well followed.

Oral Presentations

Lateral approach to the lumbar spine of sprague dawley rat; development of a novel animal model for spine surgery

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Background: Low back pain is a common ailment affecting individuals all around the globe. Animal models are required to study and further explore the treatment modalities. Lumbar spinal surgeries and disc repair is an important tissue engineering research domain. Dorsal and ventral approaches to access rat spine have been traditionally performed but suffer from a number of shortcomings like higher morbidity, loss of neurology, high post-operative pain and longer surgery. **Methods:** We used ten male Sprague-Dawly rats, 3 months of age and weighing an average of 280 gm. The surgeries were performed under dissociative anesthesia (Ketamine: 50 mg/kg body weight). The spine was approached by left lateral incision extending from iliac crest and centering the level to be exposed. Skin, sub-cutaneous tissues were cut, External and Internal Oblique muscles were split in the direction of fibers, Transverse Abdominus was split vertically and Psoas was sacrificed. This made the spine and disc levels visible from the left lateral aspect. The muscles were approximated and skin closed with non absorbable mattress sutures. Post operative analgesics (Meloxicam 5 mg/kg body weight) and antibiotics (Ceftriaxone 30 mg/kg body weight) were used. **Results:** This work has led to the development of a novel in-vivo rat model using lateral retro-peritoneal approach. This approach provides less pain and faster recovery in the post-operative stage. Moreover it allows easy exposure and little surgery related peri or post-operative complications. **Conclusion:** Lateral retroperitoneal approach is a novel and safe method of spinal exposure in rats which may pave way for various live rat spine surgery models and experiments in future.

Multipurpose adaptable cane

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The majority of the old individuals and rheumatic patients related to joint inflammation bear the contention when they move up and down the stairs, likewise when they sit on the seat and get up. These ordinary happening issues affect their everyday life which harvests higher odds of mental and physical inability. Therefore, to help such individuals a multipurpose flexible stick is unquestionably an actual existence hack that can make their life simpler and can positively affect physical just as mental wellness in the long run. The system is made to experience the issue that the patient dependably faces at whatever point they attempt to sit up and take a seat. At whatever point they need it, the instrument will direct their knee by making an intense edge with the vertical pivot of the casing and help them to hold up. The knee supporting part is covered with rubber treated material, so that at whatever point the patient will utilize it, use it with solace. The casing of the stick is tallness flexible with interlock component so that at whatever point it is required to change the stature of the stick, the stick can be balanced by the need of the patient. The lower some portion of the stick has a metal surrounded box at its base inserted with expandable stage instrument which offers help by levelling the expandable stage with the tallness of the every stage of the stairs which will be useful for those patient who can't lift their foot or whose flexion and augmentation point of the foot has decreased fundamentally because of the less development. The oddity of the proposed arrangement lies in its adaptability, customizability, and in giving additional help to the knees which have never been done just as having the most extreme level of opportunity makes it multipurpose being used. The component of the stick is balanced so well that it doesn't require any electrical power contribution to work which implies, the expandable stage will be operable with a foot went ahead board catch which will be put on the upper surface of the base box.

Effects of reaction time training on dynamic balance in diabetic adults

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Background: Reaction time is an important resource for maintenance of balance and it is poorer in diabetics as compared to normal elderly, it is speculated, that addition of reaction time training protocol to the conventional physiotherapy for balance rehabilitation may help diabetics improve better on balance measures. **Purpose:** To evaluate the effect of reaction time training in diabetic adults (40 yrs and above). **Methods:** It is an experimental study with

pre-test- post-test control group design. 30 diabetic subjects were assigned into two groups by block randomization. Group 1 (control group) received conventional balance physiotherapy for 5 days in a week for 4 weeks. Group 2 (experimental group) received reaction time training using reaction time machine for 5 days a week for 4 weeks. Pre and Post assessment on Timed Up and Go Test, Berg Balance Scale, Four Square Step Test and Simple Reaction Time were taken. Repeated Measures ANOVA was used to analyze the results. **Results:** The two groups did not differ significantly on the outcome measures but time X group interaction showed faster improvement with respect to time in the group that received reaction time training. Pre and post intervention values of BBS, TUG, FSST, and Reaction time between i.e., left reaction time and right reaction time groups were analyzed using repeated measure ANOVA. The analysis revealed non-significant difference between the two groups, $F=0.94$, $p>0.05$, $F=0.36$, $p>0.05$, $F=0.26$, $p>0.05$. $F=1.46$, $p>0.05$ $F=4.55$, $p<0.05$, $F=0.78$, $p>0.05$, respectively. However, there was a significant main effect of time, BBS, TUG, FSST, left reaction time and right reaction time $F=4.55$, $p<0.05$, $F=30.731$, $p<0.05$ $F=34.06$, $p<0.05$, $F=21.40$, $p<0.05$, $F=38.10$, $p<0.05$ respectively, indicating improvement over time in both the groups. Time x group interaction is non-significant TUG, left reaction time and right reaction time $F=0.0.18$, $F=2.00$, $p>0.05$ $F=0.15$, $p>0.05$, $F=3.19$, $p>0.05$ respectively, indicating similar rate of improvement in both the groups. But in FSST Time x group interaction was also significant, $F=9.79$, $p<0.05$, showing marked difference between the groups with respect to the rate of improvement. **Conclusion:** The findings of the present study may pave a way to include reaction time training in balance rehabilitation for diabetic individuals. Keywords: Reaction time training, Diabetes, Balance.

Posture correction device for prevention of spine ailments

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Posture can dramatically affect the capabilities of a person. Inappropriate posture is the cause of many musculoskeletal disorders, which can be prevented by posture rectification and monitoring. Few previous studies have worked on innovative ideas and reported the techniques like a posture correction garment with easy integration into aesthetic qualities; a mechanical head posture device was created with mounted motion trackers and customized software. Also there was fabrication of a wearable sensor based system, which can detect vital signals along with posture, which could be monitored with help of web/mobile application. The proposed project aims to develop the low cost posture correction and detection device, which will guide the accepted posture biomechanics and alignment of the alignment of cervical, thoracic and lumbar region, and how posture can be scrutinized and corrected with means of a wearable device that would help patients in recovering from poor posture. This wearable device works with a self-feedback system with the aim of reinforced learning algorithm so that patient can be treated with maximum efficiency for correction of their stance. The device can be positioned over spinal cord (cervical, thorax, lumbar) and can be calibrated according to patient if needed to help with pose improvement. The working model of the prototype has been tested on normal healthy individuals and found positive feedback. The prototype is working and is in refinement stage. Future developments of the device aim for to determine its feasibility and easy accessibility to connect it to the individual phone for further ease of understanding and timely feedback for posture guidance.

A randomised controlled trial comparing outcome of conservative versus operative treatment in traumatic thoracolumbar fractures without neurological deficit in adults

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Introduction: Spine fractures are common injuries in today's society. 15%- 20% of traumatic fractures occur at the thoracolumbar junction (T11–L2), 9–16% occurs in the thoracic spine (T1–T10). Operative management has been proposed to offer immediate stability, correction of the deformity, earlier ambulation, and less reliance on orthotic containment. Nonoperative care offers the avoidance of surgical intervention with its attendant risks and morbidity. Although a large number of publications have described, no general consensus has been reached with regard to the optimal treatment. **Methods:** Randomized Controlled Trial after IRC approval of 12 months was done. Patients (>18 years) of traumatic thoracolumbar fractures without neurological deficit presenting to Emergency & Outpatient Department of Orthopaedics, BPKIHS giving written informed consent for the trial were included in the study. **Results:** The mean age of patients in conservative group was 51.53+/-16.27 years and operative group was 43.38±17.2 years. Most of the fractures were found to occur at thoracolumbar junction (35% in conservative group and 30.7% in operative group). Mean hospital stay (in days) in conservative group was 6.3+/-4.46 and operative group is 9.46+/-4.17. Oswestry disability

index score was 34.2 in conservative group and 39.6 in operative group. **Conclusion:** Our study shows that there is no significant difference in terms of post-operative pain, kyphotic angle, anterior vertebral height compression (%), and Oswestry disability index between two groups.

Nucleus polposus embolism causing anterior spinal artery syndrome: A case report

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Introduction: Anterior Spinal Artery (ASA) embolism is a rare cause of spinal cord infarction causing sudden onset of weakness and dissociated sensory loss. The herniation of nucleus polposus fibrocartilaginous material causing ASA syndrome is an extremely rare entity. We describe such a case highlighting the importance of recognition of this as a probable differential diagnosis. **Case:** A 58 year old man presented with acute onset of weakness in bilateral lower limbs and numbness in lower half of the body along with bladder and bowel involvement 3 to 4 days following a trivial fall due to tripping from 2 to 3 stairs. There was no pain. There was complete paraplegia with loss of pain and temperature sensations below T12 with preservation of posterior column sensations suggesting ASA syndrome. MRI of the spine revealed diffuse intramedullary hyperintensity extending from T5 to conus region with disc herniation at T4-5. Fibrocartilaginous embolism was suspected on the established clinico-radiological grounds as there is no conclusive test except biopsy. On serial MRI scans the changes were that of ASA infarction. The patient was managed conservativey with rehabilitation as there is no described surgical or medical management. There was no recovery at final follow up at 2 years. **Conclusion:** Fibrocartilaginous embolism of nucleus polposus material causing ASA syndrome is a rare but possible cause of acute onset of paralysis with no definite treatment and poor prognosis.

Load transfer across a lumbar functional spinal unit during physiological movements

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An accurate numerical model of the lumber spine is necessary to gain an insight into the load transfer during physiologic movements and to investigate the effects of surgical intervention and associated risk of vertebral fracture. The objective of this study is to develop a realistic three-dimensional model of a lumbar functional spinal unit based on CT-scan dataset and evaluate deformation and stress distributions in the spinal unit. The FE model of the L3-L4 spinal unit, consisting of 523265 tetrahedral elements, was developed by segmenting the vertebrae into the cortical and cancellous regions based on thresholding of CT grey value, including the posterior part. Material properties were allocated to each element based on pixel-grey value of CT-scan dataset. Applied loading conditions included forces and moments during extension, flexion, lateral bending and torsion. The equivalent (von Mises) stress distribution mostly varied between 1-30 MPa, whereas equivalent strains varied from 0.1 to 1.2% during various movements. High stresses of 32-46 MPa were observed near the pedicles in the anterior region of the vertebrae during flexion-extension movements. A pronounced increase in stress of 6 MPa was observed in the facet joints during torsion movement. During flexion, a maximum angular deformation of 4.24 degrees was observed. These results were in agreement with earlier studies. This improved FE model can therefore be used for further biomechanical investigations with spinal implants.

Efficacyof Kinesio-Taping over levator scapulae trigger point on pain, pressure pain threshold and function in chronic mechanical neck pain: A randomized clinical trial

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Introduction: Chronic Mechanical Neck Pain (CMNP) is one of the most common health problems. Patient with neck pain were found to have the highest prevalence rate of myofascial trigger points. **Subjects and Methods:** Forty-five (45) subjects with CMNP were randomly assigned into three groups. Subject in Group–A (n=15) with mean age of 29.47±5.85 (KT+SE protocol+home exercise program (HEP)), Group–B (n=15) with mean age of 31.53±7.80 (SKT+SE protocol+HEP) & Group–C control group (n=15) with mean age of 32.00±8.37 (SE protocol+ HEP) received 5 sessions 2 session per week & HEP was advised for every day for 2 weeks. Outcome measure were Pain intensity was measured by Visual Analogue Scale (VAS), Pressure Pain Threshold (PPT) was measured by Algometer & Function was measured by Neck Disability index (NDI)

were obtained at baseline and after completion of 5 session. **Results:** All the groups showed statistically significant improvement after 5 session of intervention in respect to pain intensity, pressure pain threshold and functional in CMNP. But when compared among the groups group A & group B showed significant ($p<0.05$) improvement in PPT when compared to Group C where as other parameters showed non-significant ($p>0.05$) difference among the groups after 5 session of treatment. **Conclusion:** The results of this study suggested that KT with SE protocol and SKT with SE protocol has a significant effect in improving pressure pain threshold in subjects with levator scapulae trigger point in CMNP.

Efficacy of Russian current on pain, strength of quadriceps and function in subjects with primary knee osteoarthritis: A randomized clinical trial

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Background and Purpose: The purpose of this study was to find out the efficacy of Russian current on pain, strength of quadriceps and function in subjects with primary knee osteoarthritis. **Material and Methods:** 31 subjects with unilateral or/bilateral knee osteoarthritis were included and randomly assigned into two groups. Group-A (n=16) received Russian current along with supervised exercises, Group-B (n=15) received supervised exercises only, for 5 session per week for 2 consecutive weeks. The outcome parameters were measured pre-treatment, post-treatment and at 4th week follow up. **Outcome Measures:** Pain intensity was measured using numeric pain rating scale (NPRS), Isometric strength of quadriceps muscle was measured using Handheld Dynamometer and functional disability was assessed using Lysholm knee scoring scale. **Results:** Baseline data were homogenous ($p>0.05$) for age, gender, BMI, NPRS, SOQ & LYSH. Within group analysis shown statistically significant ($p<0.05$) improvement in both Group A & B for all parameters were after 2 & 4 weeks of treatment. Between group analysis shown statistically insignificant difference. **Conclusion:** The results of this study suggest that supervised exercises with Russian current and supervised exercises alone were effective in reducing pain, improving strength of quadriceps and function. Key Words: Exercise, NPRS, LYSH, SOQ functional performance, Hand held dynamometer, Osteoarthritis, and Russian current.

An unusual cause of buttock pain after posterior thoracolumbar fixation: Rod migration into the pelvis

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Rod migration is an extremely rare complication after thoracolumbar fracture fixation. We report a case of a twenty-five-year-old patient who presented to our centre with complaints of right buttock and groin pain for eight weeks. He had a history of an unstable thoracolumbar fracture treated by a short segment posterior stabilization five years back. Upon examination and investigations, we found that the right sided rodmigrated into the posterior sacrum and partially into pelvis. The fracture had united well in kyphosis. Anticipating complications, the rod removal was done through an incision over buttock and the original implants were also removed. The patient was asymptomatic at two years follow up. To the best of our knowledge, this is the first case report of distant rod migration into the posterior sacrum and pelvis which had to be removed surgically after a posterior thoraco-lumbar trauma fixation.

Flip laminoplasty - A novel technique for decompression in dorsolumbar spine injuries

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Introduction: To study the safety & efficacy of repositioning laminoplasty in posterior decompression of dorsolumbar spine injuries. **Material and Methods:** Hospital based prospective interventional study conducted in 40 patients of traumatic dorsolumbar spine fractures with evidence of spinal cord compression and neurological deficit. After appropriate clinical and radiological diagnosis, all underwent repositioning laminoplasty method for posterior decompression of spinal cord. Midline incision given centering at affected level. Bilateral laminae were raised with the help of ultrasonic knife for flip laminoplasty. After achieving adequate decompression of spinal cord, the laminae were repositioned with sutures. **Results and Conclusions:** Males of 18-30 years due to fall from height were majority. Mean timing of surgery from incision to application of dressing was 115 minutes. Mean blood loss was 631 ml. Average follow up of 2 years showed

that those with complete cord transection had no neurological recovery. All the rest had improvement of at least 1 grade in ASIA grading. No patients showed deterioration of neurology. There was an increase of 70% of pre-operative size of spinal canal; and a decrease in lateral cobb's angle from a mean pre-operative angle of 26° to 2 years post-operative mean of 14°. None had post-operative complications like scar formation, spinal instability, migration of cut lamina or progression of deformity. Evidence of fusion of cut lamina seen in 75%. **Summary:** Repositioning laminoplasty performed in a step-wise & consistent manner is a reliable and safe method of decompression to treat a variety of dorsolumbar spine injuries with cord compression.

Functional and radiological outcome of early mobilization in unstable AO type a thoracolumbar fractures without neurological deficit

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Introduction: The aim of this study was to see the functional and radiological outcome of early mobilization with Taylor's brace in unstable AO type A thoracolumbar fractures without neurological deficit managed non-operatively. **Materials and Methods:** The study included 20 patients. Patients were mobilized with Taylor's brace as soon as acute pain subsided (<2 wks) and reviewed till at least 2 years with standing radiographs. **Results:** The mean progression of kyphosis over 2 years duration was 7.9 degrees. The mean vertebral height loss also progressed from a mean of 51.9% at presentation to 60.4% at 2 year follow-up, a mean progression of 8.5%. At 2 year follow up, the mean ODI was 10.1% and mean VAS score was 0.7. No patient developed neurological deficit. **Conclusion:** Even though there is some deterioration in radiological parameters, there is constant improvement in functional parameters. For these fractures, non-operative management using brace and early mobilization, promises comparable results without the cost and risk of surgery.

Role of rod contouring in thoracic myelopathy

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Surgery for thoracic myelopathy due to anterior pathology can be challenging due to the anatomical position. Direct decompression through anterior approaches are associated with complications whereas anterior decompression through posterior approaches are technically demanding and may result in neurological deterioration. We present a novel surgical technique represented by two cases with thoracic myelopathy, one with ossification of posterior longitudinal ligament and the other with multi-level intervertebral disc prolapse. Both the patients were classified as having a high risk for surgery due to co-morbidities. We performed laminectomy and lordotic rod fixation through a posterior approach in both the cases. Postoperative imaging confirmed adequate decompression of the spinal cord. Both the cases improved substantially in terms of clinical outcome. To date, we have used this technique in five patients with thoracic myelopathy due to predominant anterior pathology. All the patients had good clinical improvement. This surgical technique could be a useful alternative to direct anterior decompression and could be the standard of care in patients at high risk for a major surgery who present with symptoms of progressive severe myelopathy.

A novel method to augment pedicle screw pull out strength in osteoporotic spine

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Introduction: The study was done to describe a new technique in pedicle screw fixation in osteoporotic spine to enhance the pull out strength of pedicle screws. **Material and Methods:** It was a prospective study done in patients of osteoporotic spine pathologies needing pedicle screw fixation of different etiologies like degenerative disorders, trauma etc. Our technique combines the principles of bicortical fixation with cement augmentation wherein central part of vertebral body was filled with bone cement and screw was of sufficient length so that after crossing the bone cement anterior cortex of vertebral body was purchased by screw threads to increase the overall pull out strength of pedicle screws in osteoporotic spine. **Discussion:** Our study showed better screw hold and pull out strength by using this combine technique without any additional side effects. **Conclusion:** This new technique utilises the principles of both Cement augmentation and bicortical screw fixation. This technique seems to be theoretically and practically superior to either technique alone in osteoporotic spine regarding the pull out strength. The technique needs to be validated in a larger subset of patients and also needs to be biomechanically proven.