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Sessions on

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Spine and Spinal Cord | Spine Surgery and Spine Therapy | Neuroanatomy and Spine | Spinal Injury and Spine Fracture



Chair

Lucy Whyte Ferguson

University of New Mexico | USA

Session Introduction

Title: Management of Thoracic Spine Dislocation by Spine Shortening and Total Vertebrectomy

Turki S. AlMugren | King Abdul-Aziz Medical City | Saudi Arabia

Title: Transverse Process Fractures: A Clinical Series and Coronal Injury of the Spine

Guliz D Gultekin | Istanbul Medeniyet University | Turkey

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Management of thoracic spine dislocation by spine shortening and total vertebrectomy

Turki S. AlMugren, Sami AlEissa, Faisal Konbaz, Fahad AlHelal, Majed Abalkhail
King Abdul-Aziz Medical City, Saudi Arabia

The treatment of thoracic spine fracture-dislocations is now well established with the recent progress in spine surgery. Although most of the patients have a degree of spinal cord injury, early surgical reduction and stabilization of the unstable deformity allow an immediate program of rehabilitation. Vertebrectomy is considered as the last surgical technique reserved for the most persistent spinal deformities that cannot be brought to an acceptable correction with less invasive methods.

We present a case of a 19-year-old male with a sub-acute thoracic spine fracture-dislocation at the level of T7 - T8 who underwent a posterior T8 vertebrectomy with reduction and instrumentation from T4 down to T1. Patient had excellent results during follow-ups regarding alignment, fusion and rehab program.

In this case we present the good outcome of vertebrectomy and spine shortening in the spine fracture-dislocation patients, and the advantages of posterior approach.

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Biography

Turki AlMugren graduated from King Saud Bin Abdul-Aziz University for health sciences in 2016, and finished his residency program at King Abdul-Aziz Medical City in 2021. He is now a board-certified orthopedic surgeon at KAMC, Riyadh. He has been cited over 20 times with over 9 publications, and his publication H-index is 3.

E: turki.almugren@gmail.com

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Transverse process fractures: a clinical series and coronal injury of the spine

Güliz D Gültekin

Istanbul Medeniyet University Göztepe Education and Research Hospital, Turkey

Transverse process fractures (TPFs) in trauma patients frequently are diagnosed using computed tomography and result in severe pain and limitation of motion. However, there is no accepted standard of care. Thus, these fractures can be treated with excessive measures or inadequately treated. In this study, diagnosis and treatment of transverse process fractures are examined and concluded that;

Transverse process fractures can be treated quickly and effectively with nonsteroidal anti-inflammatory drugs, muscle relaxants, flexible support corsets, and early mobilization after excluding any accompanying organ injuries or other spinal injuries.

TPFs most often occur during backward falls or blows to the back, commonly low-energy injuries. This trauma mechanism can be described as a "coronal injury of the spine".

When TPF is detected by the emergency medical team without any other spinal injury in a trauma patient, abdominal, urogenital, and thoracic organ injury examinations should be carried out, especially in cases of 4 or more Transverse TPFs. Because Transverse Processes are junction points, these systems are connected via muscles and fascia. In cases in which TPFs are detected on CT imaging without another spinal injury, MRI is unnecessary.

TPFs occur after coronal injury of the spine, commonly in Low Energy Injuries or during blunt abdominal trauma in High Energy Injuries. Both mechanisms cause fascia and muscle injury around the Transverse Processes and result in

inflammation, edema, and hemorrhage. These injuries can be treated effectively with NSAIDs, muscle relaxants, and a mucosal protective agent for 1 week; flexible support corset with steel stays for 2-6 weeks; early patient mobilization; and sick notes for 2-6 weeks to promote rest. The flexible support corset is used for muscle immobilization. The case should be treated as a stabilized spinal injury, and its management should be the same as a myofascial injury rather than a spinal injury.

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Biography

Güliz D. Gültekin is currently working in İstanbul Medeniyet University, Göztepe State Hospital neurosurgery department as a neurosurgeon. She complemented İstanbul University İstanbul medical faculty in 1990 and completed neurosurgical education in 2012. She has been working since then as a neurosurgeon.

E: op.dr.gulizgultekin@yahoo.com

Palliative care | Spine Disorders and Spinal Abnormalities | Spinal Cord Tumor | Spine Fusion



Chair

Shinya Tajima

National Hospital Organization Shizuoka Medical Center | Japan

Session Introduction

Title: Enhanced Recovery after Spinal Surgery Protocol Versus Conventional Care in Non-Insulin Diabetic Patients: A Prospective Randomized Study

Sarah M Elgamal | Alexandria university | Egypt

Title: Estimation of Body Height from Spinal Length Measurements using Postmortem Computed Tomographic Images

Tawfiq YT Zyoud | University Putra Malaysia | Malaysia

Title: Awake Spinal Fusion – Endoscopic Facet Sparing TLIF under Caudal epidural, A Game Changer

Rahul Ahluwalia | Suyash Hospital | India

Title: Association of Tenodesis Grip Strength with Functional Hand Recovery in Patient with Cervical Spinal Cord Injury

Amna Ali | Riphah International University | Pakistan

Title: Impact of Specific Training on Fear Avoidance Beliefs and Postural Stability in Nonspecific Chronic Low Back Pain

Marzieh Saeidi | Shariati Hospital | Iran

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Enhanced recovery after spinal surgery protocol versus conventional care in non-insulin diabetic patients: A prospective randomized study

Sarah M Elgamal, Ashraf A Abdelhalim, Emad A Arida, Rania A Sabra, Abdelrahman M Elhabashy
Alexandria university, Egypt

Background: The Enhanced Recovery after Surgery (ERAS) approach was established in many surgical specialties. This prospective, randomized, single-blinded clinical study was designed to evaluate the efficacy of (ERAS) protocol on quality of recovery after surgery in non-insulin dependent diabetic patients undergoing lumbar decompression surgery.

Patients: 72 patients aged 30 to 65 years of ASA II-III requesting general anesthesia for elective lumbar decompressive surgery were randomly assigned to 1 of 2 equal groups receiving either general anesthesia with ERAS protocol in group E or conventional general anesthesia in group C. Quality of recovery after surgery QOR-40 score, length of hospital stay, postoperative pain score using the visual analogue scale (VAS), perioperative opioid consumption, time to early ambulation, serum markers of stress response, and possible perioperative complications were recorded.

Results: QOR-40 scores were significantly higher in group E in post anesthesia care unit (PACU), postoperative day 1 (POD1), and postoperative day 2 (POD2) ($P = 0.015$, 0.041 and 0.048 , respectively). VAS at 0,2,4,6, and 8 hrs postoperatively were significantly lower in group E ($P = 0.011$, 0.035 , 0.042 , 0.022 and 0.005 , respectively). Intraoperative fentanyl and postoperative nalbuphine requirements were significantly lower in group E ($P = 0.004$, and 0.0001 , respectively). Time to first postoperative analgesic requirement was significantly shorter in group E ($P = 0.0001$). Time to early ambulation was significantly lower in group E ($P = 0.013$). Both CRP and interleukin-6 were significantly lower at POD2 in group E ($P = 0.001$, and 0.017 , respectively). There was no significant difference between groups in length of hospital stay and intraoperative insulin requirements ($P=0.062$, and

0.347 , respectively).

Conclusions: Enhanced recovery protocol combined with general anesthesia in non-insulin diabetic patients who are undergoing lumbar decompressive surgery improves quality of recovery after surgery, reduces perioperative opioid consumption, and shorten time to early ambulation.

Keywords: Enhanced, recovery, spinal, surgery, conventional, diabetic.

Recent Publication

1. Soffin EM, Beckman JD, Tseng A, Zhong H, Huang RC, Urban M, Guheen CR, Kim HJ, Cammisa FP, Nejm JA, Schwab FJ, Armendi IF, Memtsoudis SG. Enhanced Recovery after Lumbar Spine Fusion: A Randomized Controlled Trial to Assess the Quality of Patient Recovery. *Anesthesiology*. 2020 Aug;133(2):350-363.
2. Kurnutala LN, Dibble JE, Kinthala S, Tucci MA. Enhanced Recovery After Surgery Protocol for Lumbar Spinal Surgery With Regional Anesthesia: A Retrospective Review. *Cureus*. 2021 Sep 16;13(9):e18016.
3. Enhanced recovery after surgery (ERAS)—concepts, components, and application to spine surgery. Wainwright TW, Wang MY, Immins T, Middleton RG. *Semin Spine Surg*. 2018;30:104–110.

Biography

Sarah M Elgamal is an assistant lecturer at the department of anesthesia and surgical intensive care, faculty of medicine, Alexandria University, Egypt. She is a diplomate at European society of anesthesiology and intensive care since 2020. She got her master's degree in anesthesia and surgical intensive care and she is about to finish her doctorate of philosophy in anesthesia and surgical intensive care.

E: sarahelgamal1990@yahoo.com

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Estimation of body height from spinal length measurements using Post-mortem computed tomographic images

Tawfiq Y T Zyoud, Saiful Nizam Abdul Rashid, Subapriya Suppiah, Rozi Mahmud, Abubakar Kabeer, Rosliza Abd Manaf, Ezamin Abdul Rahim

Universiti Putra Malaysia, Malaysia

Post-mortem computed tomography (PMCT) provides information that helps in the determination of the cause of death and corpse identification of disaster victims. One of the methods for corpse identification includes assessment of the body stature. There is a lack of post-mortem imaging studies that focus on the anthropometric assessment of corpses. Our aim was to identify the relationship between cadaveric spine length and autopsy length (AL) among and autopsy length (AL) among a Malaysian population and derive a regression formula for the estimation of corpse body height using PMCT. We retrospectively assessed 107 cadavers that had undergone conventional autopsy and PMCT. We made 5 measurements from the PMCT that included cervical length (CL), thoracic length (TL), lumbosacral length (LS), total column length of the spine, excluding the sacrum and coccyx (TCL), and ellipse line measurement of the whole spine, excluding the sacrum and coccyx (EL). We compared these anthropometric PMCT measurements with AL and correlated them using linear regression analysis. The results showed a significant linear relationship existed between TL and LS with AL, which was higher in comparison with the other parameters than the rest of the spine parameters. The linear regression formula derived was: $48.163 + 2.458 (TL) + 2.246 (LS)$. The linear regression formula derived from PMCT spine length parameters particularly thoracic and lumbar spine gave a finer correlation with autopsy body length and can be used for accurate estimation of cadaveric height. To the best of our knowledge, this is the first ever linear regression formula for cadaveric height assessment using only post

mortem CT spine length measurements.

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Biography

Tawfiq Zyoud is doing his PhD at the University Putra Malaysia (UPM) his scientific life journey started in 2012 at Palestine Ahliya University, where he got his Bachelor's Degree in Medical Imaging. He organized workshops at the UPM Malaysia and participated as a speaker and poster at several international conferences in 2019 he got the Best Poster Award. He got scientific representative of Palestine in the 4th Annual Radiology Meeting in UAE conference. Moreover, in 2021 from ARID Scientific Platform, he earned an Initiative researcher Badge, an Activist at ARID Scientific Events Badge 2021, and an Innovative researcher Badge. Also, he received the Distinguished Researcher Award of the Year by Asia Awards powered by RULA Awards. His plan for the future, after he finishes his PhD is to apply for a post-doctoral program, and in addition to that, he aspires to be famous researcher, especially in the field of forensic medicine.

E: tawfiq_1994@yahoo.com

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Awake spinal fusion – endoscopic facet sparing TLIF under caudal epidural: A game changer

Rahul Ahluwalia

Suyash Hospital, India

Background: TransKambin fusion offers the advantage of providing reduced morbidity and awake surgery allowing for patient's own neuromonitoring during the procedure, along with reduced hospital stay, early mobilization, reduced blood loss and reduced operative time, while maintaining the standard of fusion that can be achieved with open/MISS TLIF.

Methods: EKLIF was performed in total of 19 patients with 17 single-level and 02 patients with multilevel lumbar discopathy and/or degenerative spondylolisthesis resulting in axial back pain and claudication, pseudo radicular, or radicular symptoms. Endoscopic discectomy, and inter-body cage insertion were performed through a 1 cm lateral incision used for TransForaminal access followed by percutaneous pedicle screw-rod fixation. Clinical outcome was assessed by early postoperative pain scores (visual analog score). Fusion rates were assessed by X-rays at 6 months. Clinical outcome, time in the operating room, intraoperative blood loss, and postoperative access-site pain were determined in all patients

Results: Excellent and good clinical results were obtained in 16 (84%) out of 19 patients at 6 months. The mean time spent in the operating room 76 minutes and no patient required a blood transfusion. Mean hospital stay was 2.8 days, with 1 patient having a prolonged stay of 8 days due to an intra-operative dural tear that was repaired endoscopically. There was no morbidity related to instrumentation. Postoperative stay was reduced with all patients mobilized on next day. Fusion was achieved in all patients on follow up of 6 months.

Conclusions: EKLIF allows for safe and efficient minimally invasive treatment of single and multilevel degenerative lumbar instability with good clinical results. Further prospective studies investigating long-term functional results are required to assess the definitive merits of TransKambin fusion of the lumbar spine.

Recent Publication

1. Anjeev Kumar Chaurasia, Pushpendra Bhagel, Rahul Ahluwalia. Effectiveness of Anti-Epileptic Drugs in Prophylaxis of Post Traumatic Epilepsy. Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 31, April 16; Page: 5371-5375
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3. Anjeev Kumar Chourasia, Hement Kumar Ahirwar, Anuradha Choudhary, Rahul Ahluwalia, M. C. Songra. Prospective Study of Serum Electrolyte (Na^+ , K^+ , Ca^{++} , PO_4^{--}) Imbalance in Severe and Moderate Traumatic Head Injury. Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 30, April 13; Page: 5115-5120.

Biography

Rahul Ahluwalia completed his training in Neurosurgery from the prestigious Post Graduate Institute, Kolkata, India in 2019 and currently is Head of Dept. of Neurosurgery at Suyash Hospital, Raipur. A dedicated Endoscopic Neurosurgeon, having performed over 300 endoscopic spine surgeries using PELD & UBE techniques, along with more than 500 endoscopic brain surgeries.

E: rahul.ahluwalia@gmail.com

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Association of tenodesis grip strength with functional hand: Recovery in patient with cervical spinal cord injury

Amna Ali

Riphah International University, Pakistan

Spinal cord injury (SCI) is a devastating event, the individual becomes a significant burden on their family and society. SCI involves impairments of sensory, motor and autonomic functions. The objective of this study is to find the tenodesis grip and hand strength associated with functional hand recovery according to neurological level of lesion C5-C7 in tetraplegic patients. In upper extremity the hand function can be used and improved by compensatory methods for Activities of Daily Life, with the help of different modalities as Electrical stimulations, Neuroprosthesis, splints, orthotic devices, wrist-driven orthotics, tenodesis grip Emulator and upper limb surgery.

Cross-sectional study will be designed, non-probability purposive sampling technique will be selected in setting Bahawal Victoria Hospital in Bahawalpur and sample of study was 75 patients. With age group 21-55, both male and female will be included, Mini Mental State Examination ≥ 24 , patient will be medically stable. According to ASIA impairment scale grade C, D and E will be included while A and B will not be considered and 0, 1, +1 will be included in this study according to Asworth scoring. The patient will be excluded with contracture of upper extremity or with increasing tone of muscle. Fracture in hand area, history of surgery in upper extremity after tetraplegia and combined peripheral or central nervous system disease. For assessment tools will be used for tenodesis grip strength is assessed by Graded Redefined Assessment of Strength, Sensibility and Prehension (GRASSP) test, and

functional hand recovery will be assessed by Jebsen-Taylor Hand function test (JTHFT_IT), hand dynamometer for grip strength and spinal cord independence measure will be used. Pearson correlation was used to find the association between grip strength and functional activities of hand. The collected data will be analyzed by using SPSS 23.

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3. Kalsi-Ryan, S., Curt, A., Verrier, M. C., & Fehlings, M. G. (2012). Development of the Graded Redefined Assessment of Strength, Sensibility and Prehension (GRASSP): reviewing measurement specific to the upper limb in tetraplegia. *Journal of Neurosurgery: Spine*, 17(Suppl1), 65-76.

Biography

Amna Ali is doing her MS in Neuromuscular physiotherapy from the Riphah International University Lahore. She completed her graduation in 2014-2019 from University of Sargodha from Pakistan. She has her thesis on "Prevalence of Low Back pain in female Nurses in Bahawalpur" and case report on "Effectiveness of trunk training on dynamic balance in chronic stroke" which is under process of publication.

E: amnasundus123@gmail.com

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Impact of specific training on fear avoidance beliefs and postural stability in non-specific chronic low back pain

Marzieh Saeidi¹, Abdolkarim Karimi²

¹Management Treatment of Isfahan social security organization, Iran

²Isfahan University of Medical Sciences, Iran

Background: Fear-avoidance beliefs (FAB) are related to disability and chronicity of low back pain. The aim of this study is to investigate the association between FAB and postural stability and also the influence of specific training for FAB on postural stability and FAB in patients with non-specific chronic low back pain (NCLBP).

Methods: In this quasi experimental study, 51 subjects (27 females and 24 males) with NCLBP were evaluated. Pain intensity, FAB, and disability were measured using questionnaires and Postural stability was measured using force plate. Abdominal and back muscle endurance was measured respectively by sit up and Sorensen tests. All the tests were repeated one week and one month after a short-term specific training for FAB. Mixed model repeated measure test was used to evaluate trend of changes in variables before and after the intervention and the association of the changes in FAB and pain intensity with the changes in parameters of postural control.

Results: After the intervention, pain intensity, FAB and disability score decreased significantly ($p < 0.001$). Postural stability and the time of sit up, Sorensen and single leg stance tests increased significantly ($p < 0.001$). FAB (physical activity) was related to the center of pressure excursion and velocity in unilateral standing in sagittal and frontal plan. Trend of changes in pain intensity and FAB (physical activity) were re-

lated to trend of the changes in postural stability in unilateral standing significantly ($p < 0.05$).

Conclusion: Pain intensity and FAB were related to postural stability in unilateral standing significantly. Specific training for FAB resulted in decreasing pain intensity, FAB and disability scores and improved postural stability as well as increasing the time of sit up, Sorensen and single leg stance tests in patients with CLBP.

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3. Taylor RS, Dalal H, Jolly K, Moxham T, Zawada A. Home-based versus centre-based cardiac rehabilitation. *Cochrane Database Syst Rev* 2010; (1): CD007130

Biography

Marzieh Saeidi is a MS Student in the Department of Physiotherapy, Isfahan University of Medical Sciences. She is a Physiotherapist at Shariati Hospital and Management Treatment of Isfahan Social Security Organization, Isfahan, Iran.

E: pt_msaeidi@yahoo.com