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#ESA Abstracts 20230101

Oberlin Procedure for Restoration of Elbow Flexion in Traumatic Brachial Plexus Injured Patients, Center Experience

Mohamed E. ElSebaey, MD

Department of Neurosurgery, Benha Teaching Hospital, Benha, Egypt

Introduction: Peripheral nerve injuries are common presentation among who present to a trauma facility. Males are affected more than females with a median age of 34 year old because of the association of such injuries with violent trauma and contact sports. 80% of patients with severe traumatic brachial plexopathy had multiple traumas to the head and skeletal system and may result in profound functional impairment of the upper extremity. Over the last two decades, refinements in microsurgical techniques, and significant advances in the concepts of peripheral nerve repair and reconstruction have greatly expanded treatment options for these otherwise devastating injuries. Brachial plexus injuries present by loss of single or combined movements among the upper limbs. In adults, elbow flexion is the fundamental movement among them. Neurotization of the musculocutaneous nerve (MCN) is done using intra-plexal elements like (median nerve, ulnar nerve, combined or medial pectoral nerve) or extra-plexal elements like (Intercostal nerve (ICN)). This retrospective study aims to demonstrate the results neurotization of MCN in restoring satisfactory elbow flexion by nerve transfer using Oberlin technique.

Methods: Between January 2019 and January 2023, the nerve surgery team did neurotization of MCN using Oberlin technique in 40 patients who had traumatic brachial plexus injuries.

Results: All forty patients were adult and were presenting with loss of elbow flexion after traumatic brachial plexus injuries. 95% of the patients (n=38) patients were males while 5% were females (n=2). The mean time interval between injury and surgical intervention was 6-month duration. All the patients were operated under general anesthesia in supine position. The mean time of the surgical intervention was 80 minutes. Mean amount of blood loss was about 70 ml. Neither vascular injuries nor added motor deficits nor wound complications were accused by the surgical intervention. Mean time of gaining motor recovery was 7-month duration. 25% of the patients complained after the surgery with little finger and index mild to moderate annoying dysesthesia and all recovered with medical treatment. All the patients received illustrated discharge report for the follow up in the out-patient clinic of neurosurgery and rehabilitation department. All the patients underwent physiotherapy with close contact with the team of surgery. Only 12 % of the patients had drainage catheter (n=5). 82% of the patients showed functional elbow flexion recovery (n=33) with MRC grade 4- or more. But about 17% of the patients did not show any motor recovery (n=7).

Conclusion: From this current study, we might consider that the following items when done in optimum way the success of the procedures of the nerve transfer increases: The functional capacity of the donor nerve, The integrity of the neuro-muscular junction of the recipient nerve, Accuracy of the coaptation of the both end stumps, Presence of inter-stump clots or gaps (utilization of fibrin glue), Total free Length of the stumps of the donor, Wrapping of the suture stump, Taking in mind that the biceps muscle bulk will press on the suture stump, The rehabilitation program that ensure the strengthening of

the hand muscles, The body mass index and the bulk of the arm, and Position of the drainage catheter if used.

#ESA Abstracts 20230102

Endoscopic and Endoscopic Assisted Trans-Oral Approaches for Management of Craniocervical Chordoma, Individual Evaluation and Experience

Mohammad Fathy Eissa, MD

Neurosurgery department, Al-Azhar Faculty of Medicine for Girls, Al-Azhar University, Cairo, Egypt

Introduction: The management of craniocervical chordoma is challenging with different surgical approaches could be offered to patients. This study aims to evaluate the use of endoscopy in Trans-oral approach and its benefits of more exposure in cases of craniocervical chordomas.

Methods: In this study, 12 cases were diagnosed as craniocervical destructive lesions that confirmed as Chordoma after histopathological examination. All cases operated by the author using microscopic transoral approach in 6 cases and endoscopic assisted microscopic transoral approach in 3 cases and pure endoscopic transoral and transphenoidal approaches in 3 cases. 8 cases needed posterior cervical fusion according to the extent of instability. Preoperative and postoperative data were collected including radiological examinations and clinical status.

Results: In this study, 12 cases were evaluated clinically and radiologically and it was found that the use of endoscopic assistance in microscopic transoral approach or pure endoscopic transoral and transphenoidal approaches added more angles of exposure of the tumors that can't be reached when using microscope alone in such approach and that led to more tumor removal and excision with the same precautions and safety for the patient as in traditional microscopic approach alone. The use of endoscopy alone minimized the incision of posterior pharyngeal wall and that led to good healing which is an important goal in this area in addition to more angles of view.

Conclusion: The use of endoscopy either as assistance in microscopic transoral approach or alone led to safer and more extent of tumor removal and excision. We might recommend populating the use of endoscopy in such cases.

#ESA Abstracts 20230103

Uniportal Multitask Endoscopic Spine Procedures in Lumbar Spine Radiculopathy

Omar Y. Hammad, MD

Neurosurgery department, Ain shams University, Cairo, Egypt

Introduction: Minimally invasive spine surgery MISS is progressing and evolving rapidly. It has been adopted by many surgeons. Endoscopic spine surgery all over literature offers less tissue trauma, preserves the motion segment, preserves stability and avoids the postoperative sequela of adjacent segment diseases.

Methods: Between 1998 -2020, 2000 cases with lumbar spine radiculopathy underwent endoscopic spine surgery either posterior endoscopic interlaminar lumbar discectomy, foraminotomy (PEILD, F,) or

posterior endoscopic interlaminar laminotomy (PEILL) through uniportal approach, using Easy Go Endoscope, STORZ CO. Using my own modified trocar diameter of 18mm outer diameter, 17mm inner diameter or 14mm outer diameter, 13mm inner diameter in all cases. **Results:** MISS using spine endoscopy uniportal PEILD, F, and PEILL was successful in multitask procedures dealing with variant pathologies in one or multiple levels, unilateral or bilateral sides simultaneously, prolapsed disc, ruptured disc, migrating disc either at subligamentous, anterior epidural, posterior epidural, or lateral either in one compartment or in multicompartments and Lumbar canal stenosis.

Conclusion: Spine Endoscopy using PEILD, F, and PEILL Uniportal multitask procedures (14-18mm) is successful in dealing with variant pathologies simultaneously in Lumbar spine radiculopathy. Learning curve is very essential to master this technique.

#ESA Abstracts 20230104

Clinical and Radiological Findings with Long-Term Conservative Therapy in Lumbar and Cervical Disc Prolapse

Omar Abdelhay ElDanasory, MD

Neurosurgical department, Al-Azhar University,
Faculty of Medicine for Girls, Cairo, Egypt

Introduction: Conservative therapy in lumbar and cervical disc prolapse is very appealing therapeutic options. This retrospective analytic study of 40 patients, with cervical, and/or lumbar disc prolapse aims to evaluate the effectiveness of long-term conservative treatment.

Methods: The study involved 40 patients with acute, or chronic onset of cervical or lumbar radiculopathy, due to disc prolapse between 2015 and 2019. All the data were obtained from the database in our institution. All patients had a standard neurological and clinical assessment, with follow-up Magnetic Resonance Imaging (MRI) for a period ranging from 2 to 3 years. The Associations between clinical findings during the physical examination and follow-up MRI imaging findings were compared and discussed. All patients were refusing surgery because of the surgical drew back occurring to their family members, medical problems preventing surgery, or they had improvement with long-term conservative therapy. The protocol of medical treatment and physiotherapy were the same for all patients.

Results: Long-term conservative treatment for cervical and lumbar disc prolapses could be superior and better than surgical treatment in acute disc prolapse without any neurological deterioration. The surgical treatment of the cervical and lumbar disc prolapses in young patients has not been considered the gold slandered option of treatment because of the postoperative complications especially recurrence disc and the failed back surgery syndrome.

Conclusion: The conservative treatment of cervical and/or lumbar disc prolapses of all patients was effective for long-term therapy. The follow-up MRI spine shows spontaneous regression of the disc materials. Therefore, conservative management of disc prolapses could be better than surgical management especially in acute stages.

#ESA Abstracts 20230105

A Standardized Imaging Algorithm for the Diagnosis of Thoracolumbar Posterior Ligamentous Complex Injury in CT and MRI

Mohamed Aly, MSc, MD, PhD, FRCS (SN)^{1,2}

¹ Associate Professor of Neurosurgery, Mansoura University, Egypt;

² Prince Mohamed Ben Abdelaziz Hospital, Riyadh, Saudi Arabia

Introduction: Assessment of the Posterior Ligamentous Complex integrity has been cited as a significant factor in Thoracolumbar fracture classification. However, there is no systematic approach for image interpretation to diagnose PLC injury.

Methods: A systematic review was conducted following PRISMA guidelines. The Scopus database was searched from its inception until July 21, 2022, for studies evaluating CT or MRI assessment of the PLC injury following thoracolumbar trauma. The studies extracted key findings, objectives, injury definitions, and radiographic modalities.

Results: Twenty-three studies were included in this systematic review, encompassing 2,021 patients. Five studies evaluated the accuracy of MRI in detecting thoracolumbar PLC injury using intraoperative findings as a reference. These studies indicate that black stripe discontinuity due to supraspinous or ligamentum flavum rupture is a more specific criterion of PLC injury than high-signal intensity. Thirteen papers evaluated the accuracy or reliability of CT in detecting thoracolumbar PLC injury using MRI or intraoperative findings as a reference. The overall accuracy rate of CT in detecting PLC injury was 68-90%. Two studies evaluate the accuracy of combined CT, showing that ≥ 2 CT findings are associated with a positive predictive value of 88-91%. Vertebral translation, facet joint malalignment, spinous process fracture, horizontal laminar fracture, and interspinous widening were independent predictors of PLC injury.

Conclusion: We provided a comprehensive imaging algorithm for diagnosing PLC in CT and MRI based on available literature and our experience. The algorithm includes standard definitions for CT/MRI findings, the best imaging planes/sequences, and the pitfalls and pearls of image interpretation.

#ESA Abstracts 20230106

Multi-Centre Validation of CT Criteria for Thoracolumbar Posterior Ligamentous Complex Injury: Preliminary Results

Mohamed Aly, MSc, MD, PhD, FRCS (SN)^{1,2}

¹ Neurosurgery department, Mansoura University, Egypt;

² Prince Mohamed Ben Abdelaziz Hospital, Riyadh, Saudi Arabia

Introduction: Two recent single-institution studies have proposed criteria for posterior ligamentous complex (PLC) status in Computed Tomography (CT) based on the number of positive CT findings. PLC should be considered injured if ≥ 2 positive CT findings based on a high positive predictive value (PPV, 91%) for PLC injury in MRI, indeterminate PLC (M1 modifier) if there is a single positive CT finding (PPV 31%), and intact if there are no positive CT findings (PPV 9%). This retrospective multicenter study aims to validate those CT criteria for PLC injury in a large, independent population from different settings.

Methods: Three hundred fifty-seven consecutive patients with at least one vertebral body fracture (T1-L5) who underwent CT and MRI within ten days of injury will be enrolled in participating centers. Patients with translation injury, osteoporotic or pathological fractures or incomplete imaging were excluded. At least two reviewers from each center will assess CT for the following findings according to proposed definitions: facet joint malalignment, facet joint widening, horizontal laminar fracture, spinous process fracture, and interspinous widening. The reference standard is PLC injury defined by black stripe discontinuity due to supraspinous or ligamentum flavum rupture. Each reviewer will interpret all de-identified CT/ MRI images independently, blinded to clinical data and other readings, within a 4-week interval. When the two reviewers disagreed about the MRI's PLC status or the Number of CT findings, the case was resolved by a third reviewer. Prior consensus training will be done for all reviewers to

standardize the imaging interpretation protocol. Multivariate association between CT findings and PLC injury will be examined.

Results: the preliminary results from multiple centers will be presented. The diagnostic accuracy of combinations of those CT findings with independent association with PLC injury will be examined (0, 1, ≥ 2 findings). The following measures will be reported: sensitivity, specificity, accuracy, positive and negative predictive values, and positive and negative likelihood ratio. Inter-intra-observer reliability in identifying each CT finding or combinations of CT findings will be assessed using Cohen's Kappa (k) and Fleiss Kappa statistics.

Conclusion: We provided a comprehensive methodology for a multicenter validation of a CT criteria for PLC injury. A multicenter design is needed to improve the generalizability of the findings. A retrospective study with well-balanced study population is more feasible than a prospective design.

#ESA Abstracts 20230107

Can Sacropelvic Fixation Improve Outcome of Long-Segment Lumbar Spine Fusion in Patients with Degenerative Lumbar Spine Disease?

Shamel ElGawhary, MD, Mohammed Khalid Saleh, MD, Sherif Alagamy, MD

Department of Orthopedic Surgery, Faculty of Medicine, Zagazig University, El-Sharkia, Egypt

Introduction: Posterior spinal fusion has been more and more used for management of degenerative disorders of the lumbosacral spine. Long-segment fixation of three or more motion segments extending down to the sacrum has been associated with loosening or failure of S1 screws. This study aims to comparison between fixations extending to S1 and those to S2 (S2-alar-iliac screws) with sacropelvic fixation in the management of multilevel lumbar spinal canal stenosis.

Methods: This prospective controlled cohort study we recruited 45 patients suffering from lumbar spinal canal stenosis of 3 or more levels including 16 revision cases in the whole group. In 23 patients, posterior lumbar fusion extended to S1 and in 22 fixations extended to S2. Pre- and postoperative clinical evaluation included Visual Analogue Scale (VAS) for back pain and Oswestry Disability Index (ODI). Preoperative radiological evaluation included plain X-ray and MRI. Postoperative clinical evaluation included VAS and ODI and radiological evaluation included X-ray and CT. The mean follow-up duration was 14.1 \pm 1.7 months (range, 12-24) in S1 group and 14.3 \pm 1.9 months (range, 12-24) in S2 group.

Results: The mean VAS improved from 8.1 \pm 0.8 to 4.9 \pm 0.9 in S1 group and from 7.7 \pm 1.2 to 1.95 \pm 0.79 in S2 group. The mean ODI improved from 77 \pm 10.5 and 76.8 \pm 10.9 to 45.9 \pm 7.3 and 29.5 \pm 8.4 in S1 and S2 groups, respectively. Two dural tears were repaired intraoperatively with no postoperative consequences. Seven cases in S1 group had loosening of S1 screw that was evident at 6-month follow-up.

Conclusion: Sacropelvic fixation in the form of S2-alar-iliac screws provides a significantly more rigid construct, decreasing the incidence of loosening of S1 screws and improving the overall outcome in patients treated with long lumbar fusion.

#ESA Abstracts 20230108

Comparison of Anterior Versus Posterior Approach for the Treatment of Cervical Compressive Myelopathy Due to Ossification of the Posterior Longitudinal Ligament; A Systematic Review and Meta-Analysis

Amr Abdelazem Gaber, MD, Mohamad AlaaEl-Din Habib, MD, Mohamed A. Abdelfatah, MD, Mostafa K. Gobashy, MD

Neurosurgery Department, Faculty of Medicine, Ain Shams University, Cairo, Egypt

Introduction: Cervical myelopathy is a dysfunction of the spinal cord. It is often caused by a narrowing of the cervical spinal canal. Cervical spondylotic myelopathy (CSM) is the most common cause of spinal cord dysfunction in the elderly. Ossification of the posterior longitudinal ligament (OPLL) is a rare but potentially devastating cause of degenerative cervical myelopathy (DCM). The pathogenesis of OPLL is poorly understood. Some have suggested it as a variant of diffuse idiopathic skeletal hyperostosis (DISH). The purpose of the study is to perform a systematic review and meta-analysis to evaluate the Clinical results of anterior and posterior approaches for the treatment of cervical compressive myelopathy Due to cervical ossification of the posterior longitudinal ligament (OPLL).

Methods: Randomized clinical trials, prospective cohort, retrospective observational cohort, and case-control Studies that compare the surgical outcome of an anterior versus a posterior approach for cervical myelopathy due to OPLL from January 2006 to October 2021. Databases (PubMed, EMBASE, Cochrane library). A total of 12 studies (1070patients) were included in this systematic review and meta-analysis.

Results: indicated that no statistically significant differences between the anterior group and posterior group in terms of preoperative mJOA score [P = 0.23, SMD = 0.9; heterogeneity: (P = 0.85); I² = 18%, while the postoperative JOA score was significantly higher in the anterior surgery group compared with the posterior surgery group [P 0.004, SMD = 0.67; heterogeneity: P < 0.001; I² = 82%. The recovery rate was significantly higher in the anterior surgery group compared with the posterior surgery group of patients with canal-occupying ratio < 50% - \geq 60% [P < 0.01, SMD = 0.43; heterogeneity: (P < 0.57), I² = 91%]. The overall recovery rate (regardless the canal occupying ratio) was significantly higher in the anterior surgery group compared with the posterior surgery group (P < 0.01 SMD = 0.84). It also revealed that the postoperative complication rate (P < 0.01 OR = 1.88), operation time (P < 0.01 SMD = 1.52), intra operative blood loss (P = 0.04 SMD = 0.74) are higher in the anterior group.

Conclusion: Based on the results of this meta-analysis, anterior approach surgery was associated with better overall (Regardless of the canal-occupying ratio) postoperative neural function than posterior approach in the treatment of cervical compressive myelopathy due to OPLL. We thought anterior approach especially preferable to patients with canal-occupying ratio > 50%-60%, although it leads to a higher surgical trauma and incidence of surgery-related complications. Posterior approach surgery was relatively safer with lower surgical trauma and incidence of complications. We also suggest posterior approach for patients with canal-occupying ratio < 50%-60%.

#ESA Abstracts 20230109

Postoperative Management Protocol for Incidental Dural Tears During Degenerative Lumbar Spine Surgery A Review of 2100 Consecutive Degenerative Lumbar Cases

Mostafa ElAskary, MD

Department of Neurosurgery, Alexandria university, Alexandria, Egypt

Introduction: DTs are a common complication of degenerative lumbar spine surgery. However, the management strategies for this complication vary from one surgeon to another. This study retrospective review aims to review the incidence of incidental durotomy in degenerative lumbar surgery and to report on the efficacy of our postoperative management protocols for DT.

Methods: A total of 2,100 degenerative lumbar spine cases over a period of 7 years (decompression and/or fusion) were reviewed. 105 Cases complicated by an incidental DT were identified. Cases with dural tear were subjected to 2 different protocols of management. A-Fifty-five patients subjected to direct repair, Valsalva to evaluate

efficacy of primary repair then fat graft and fibrin glue followed by small haemo-vac for one day only with putting the patient in complete bed rest Trendelenburg position for 10 days. **B-** Fifty-five patients subjected to direct repair, Valsalva to evaluate efficacy of primary repair then fat graft and fibrin glue followed by small redy vac for 10 days.

Results: A one hundred ten patients out of 2100 were identified with incidental durotomy, 70 case out of 500 Recurrent spinal cases and 40 case out of 1600 fresh cases. Fifty case out of 200 cases of Lumbar decompression multiple levels and fixation and 20 case out of 1200 discectomy cases. Multiple level decompression only for LCS shows 10 out 400 case and Spondylolisthesis single level with stenosis decompression and fixation in 30 cases out of 300 cases. Total number of patients with ID:110 divided into 60 patients in protocol A and 50 patients in protocol B. Protocol A: Fifty patients (83.3%) recovered very smoothly without any complication. 2 patients (3.3%) had leakage percutaneous with mild superficial wound infection. One patient (1.65%) of these two superficial wound infections required wound exploration and revision. 6 patient (10%) developed bougenies which required multiple aspiration and tight dressing till resolved. Protocol B: One patient (0.5%) had deep wound infection with spondylodiscitis 3 weeks later. One patient developed serious complication in the form of post fossa hematoma and subdural hematoma.

Conclusion: Incidental durotomy is a common complication of spine surgery. All incidental durotomies must be repaired primarily. Dural tears that were immediately recognised and treated accordingly did not lead to any significant sequelae. Protocol A had many complications than B. Complication of protocol B are serious one.

#ESA Abstracts 202301010

Outcome of Lipomyelomeningocele Surgery in Relation to Degree of Lipoma Debulking in Children: Challenges and Considerations

Mostafa ElAskary, MD

Department of Neurosurgery, Alexandria university, Alexandria, Egypt

Introduction: Lipomyelomeningocele (LMMC): Is a closed neural tube defect in which neural elements are incorporated into a spinal lipoma, occurs in 3–6 Patients per 100,000 live births. Traditionally, spinal lipomas have been classified into three groups based on the location of the neural placode–lipoma junction into: caudal, dorsal, and transitional. In dorsal spinal lipomas, the junction is on the dorsal aspect of the lumbar spinal cord and spares the conus medullaris. The dorsal root entry zone (DREZ) and neural elements are displaced lateral and ventrolateral to the placode–lipoma junction, respectively. In contrast, the conus is involved with caudal lipomas, and neural elements are located rostral to the junction, The fatty tissue can extend from within the central canal caudally, where the fat is intermixed with nerve roots. Transitional lipomas have characteristics of both dorsal and caudal types, with viable nerve roots passing through the lipoma tissue.

Methods: Twenty-five children with LMM aged from 2 months to 6 years underwent surgery between January 2016 and December 2022. Magnetic resonance imaging (MRI) of the spine and electromyography (EMG) of the lower limbs was conducted in all patients preoperatively. Urodynamic studies were appropriate even in asymptomatic patients. The operation was composed of subtotal excision of lipoma, suturing of the spinal pia mater, and section of the filum terminale. Suturing of the spinal pia mater was performed in a wide process of reconstruction of meningeal layers including the dura. Follow-up lasted 1–4 years (mean 2.1 years), in which all children underwent neurological examination, EMG and MRI.

Results: After surgery a temporary neurological deterioration was found in two patients including slight weakness of a leg in one patient and urinary retention in the other, but it recovered completely a few days later. No postoperative complications were encountered. During the follow-up, 20 asymptomatic patients remained symptom-free. Symptoms disappeared totally in 2 of the 5 patients with neurological deficits, improved in one patient and stabilized in the remaining.

Conclusion: Only through thorough understanding of the pathology of the lipoma of the conus medullaris, we could optimally excise the lipoma, untether the spinal cord, reconstruct the normal anatomy of the spinal cord, and rehabilitate neurological function. Early operation for LMM patients, even asymptomatic ones, should be performed to prevent the development of neurological deficits.

#ESA Abstracts 202301011

Radiological Evaluation of Changes in Slip Percentage and Slip Angle in Spondylolytic Listhesis after Transforaminal Lumbar Interbody Fusion with Clinical Correlation

Mahmoud Nafady, MD

Orthopedic department, Alexandria University, Alexandria, Egypt

Introduction: Spondylolisthesis is the relative anterior slipping of a vertebra over those below it. It commonly affects the lumbosacral junction. Isthmic spondylolisthesis is the result of a pars interarticularis defect and will be the only type of spondylolisthesis addressed in this review. There are two components involved in the underlying deformity: translational and angular Isthmic type makes up most cases. It may be low grade or high grade listhesis. However, there is no strong data in the literature supporting this assumption. In addition, other authors suggest that correction of LSK is the most important aspect in the surgical management of spondylolisthesis, rather than the correction of the translational component of the deformity, as this restores global spinal balance. This prospective study aims to radiologically assess the post operative slip percentage and slip angle of spondylolytic listhesis cases after transforaminal lumbar interbody fusion (TLIF) through prospective evaluation and clinical correlation.

Methods: This study was carried out on 46 adult patients (19 males and 27 females) with mean age of 45.35 ± 5.82 years. Inclusion Criteria included patients suffering from symptomatic lumbar and /or lumbosacral isthmic spondylolisthesis, all grades, treated by TLIF using cages supplemented by pedicle screw-rod system fixation during the period between March 2019 and October 2022. The indications for surgery were failure of response to conservative treatment for more than six months, or the presence or development of neurological deficits. All data were collected from the departmental database. All Procedures were done by the same surgical team at El Hadra University Hospital Spine Unit, Egypt.

Results: The difference between preoperative and post-operative slip angle and slip percent was statistically significant ($P > 0.0001$). The mean preoperative slip angle was 2.28 ± 6.1 and increased significantly post operative to be 10.41 ± 4.49 , the slip percent preoperative was 22.91 ± 6.40 and decreased significantly post operative to be 6.0 ± 3.51 . There is correlation between degree of slip angel correction and postoperative clinical improvement.

Conclusion: The using of TLIF technique fixation by indirect reduction can restore the slip and percentage postoperatively to satisfied level. Angel correction postoperatively correlate significantly with clinical improvement.

#ESA Abstracts 202301012**Tranexamic Acid Effect on The Intraoperative and Postoperative Accumulative Bleeding in Elective Degenerative Spine Surgery**

Mahmoud Abdou, MD¹, Ji-Won Kwon, MD³, Hye Jin Kim, MD², Bora Lee, MD², Yong Seon Choi, MD², Seong-Hwan Moon, MD³, Byung Ho Lee, MD³

¹ Department of Orthopedic Surgery, Fayoum University College of Medicine, Fayoum, Egypt;

² Department of Anesthesia, Yonsei University College of Medicine, Seoul, Korea;

³ Department of Orthopedic Surgery, Yonsei University College of Medicine, Seoul, Korea

Introduction: Spinal surgeries are often associated with a high incidence of perioperative blood loss, which can lead to several complications. Much current research focuses on the importance of using antifibrinolytic drugs during spinal surgeries to decrease blood loss, which can also decrease the risks associated with blood transfusions. **Methods:** In this study, we evaluated the use of a prophylactic, low dose of tranexamic acid administered during spinal fusion surgeries and assessed the effects on blood loss, blood transfusions, and associated complications in 181 selected cases. Tranexamic acid was administered to 90 patients at a constant infusion rate of 10 mg/kg for 20 minutes after anesthesia induction, followed by a maintenance dose of 1 mg/kg/h until the end of the operation. An additional 91 patients without tranexamic acid administration were included as controls. All cases had degenerative lumbar diseases that required posterior lumbar inter-body fusion at 2–3 levels. Patient demographic data, estimated intraoperative and postoperative blood loss volumes, blood transfusion requirements, operative and anesthesia times, and complications were evaluated.

Results: No significant differences between groups were observed for intraoperative blood loss, blood transfusion requirements, or complications; however, a significant reduction in postoperative blood transfusion events was observed.

Conclusion: Although tranexamic acid can decrease postoperative blood transfusion requirements, we are unable to recommend the routine use of tranexamic acid during short structural spinal fusion procedures.

#ESA Abstracts 202301013**Can Cortical Bone Trajectory Screws Replace Traditional Trajectory Screws in Osteoporotic Lumbar Spine Fusion?**

Mohamed Ahmed Moussa, MD¹, Kamal Mohamed AbdelMeguid, MD¹, Haytham AbdelMoneim AbdelAti, MD¹, Mahmoud Abdou, MD¹, Ihab Mohammed Emran, MD²

¹ Orthopedic Surgery department, Faculty of Medicine, Fayoum University, Fayoum, Egypt;

² Orthopedic Surgery department, Faculty of Medicine, Cairo University, Cairo, Egypt

Introduction: Osteoporosis is a challenging condition for spine surgeons. So improving the instrumentation techniques is mandatory. Cortical trajectory screws in comparison to pedicle screws take the most cortical path, which is less affected by osteoporosis, so in this study, we aim to compare the clinical and radiological outcome of cortical bone trajectory screws (CBTS) to traditional trajectory screws (TTS) in osteoporotic patients.

Methods: A randomized clinical trial study was done on 59 osteoporotic patients indicated for lumbar spine fusion: 27 patients in group A

treated using CBTS and 32 patients in group B were treated with TTS. Patients were followed for at least one year clinically and radiologically. Dynamic X-rays and CT to assess fusion and VAS and ODI for clinical assessment.

Results: In terms of fusion rate, implant failure, operational time, incisional length, hospital stay, the incidence of complications, and clinical outcome, there was no significant difference between the two study groups (VAS, ODI). It was accompanied by decreased intraoperative blood loss than the TTS group ($P=0.012$), but with greater radiation exposure ($P < 0.001$).

Conclusion: In osteoporotic patients receiving short lumbar fusion surgery, CBTS revealed comparable clinical and radiological outcomes to TTS. So, CBTS could safely replace TTS in short-structure spine fusion surgery in osteoporotic patients.

#ESA Abstracts 202301014**Posterior Expansive Foraminotomy Combined with Pedicle Screw Fixation Can Decrease the Incidence of C5 Palsy in Complex Cervical Spine Surgery in Patients with Severe Myeloradiculopathy**

Mahmoud Abdou, MD^{1,2}, Ji-Won Kwon, MD², Kyung-Soo Suk, MD², Seong-Hwan Moon, MD², Byung Ho Lee, MD²

¹ Department of Orthopedic Surgery, Fayoum University College of Medicine, Fayoum, Egypt;

² Department of Orthopedic Surgery, Yonsei University College of Medicine, Seoul, Korea

Introduction: In concert with the increasing age of the population, the frequencies of cervical myelopathy and myeloradiculopathy have also increased. C5 palsy is a frequent sequela of cervical decompression surgeries. Although many researchers have suggested that foramen size is an independent risk factor for C5 palsy, there is no consensus regarding this issue. This retrospective cohort study aims to investigate different techniques for foramen decompression with posterior cervical fusion and assess the incidence of C5 palsy with each technique.

Methods: A total of 362 patients were investigated: 208 underwent posterior decompression with lateral mass screws, followed by an anterior approach with uncovertebrectomy and finally posterior rod insertion (PAP LMS group); 72 underwent a posterior approach with pedicle screw insertion and foraminotomy, followed by anterior decompression and finally posterior rod insertion (PAP pedicle group); and 82 underwent posterior laminectomy and foraminotomy with pedicle screws (posterior pedicle group). Motor manual testing was performed preoperatively and postoperatively to assess C5 palsy. Neck Disability Index (NDI) and Japanese Orthopedic Association (JOA) scores were determined before and after surgery to evaluate myelopathy symptoms and neck pain. Lateral radiographs were obtained to assess cervical lordosis (C2–C7 Cobb angle, C2–C7 sagittal vertical axis [SVA], C2 slope, T1 slope, and T1s–CL [T1 slope minus C2–C7 Cobb angle]) preoperatively and postoperatively.

Results: The incidence of C5 palsy was significantly lower in posterior foraminotomy groups with pedicle screws (groups 2 and 3) than in LMS with uncovertebrectomy (group 1) ($p < 0.001$). Postoperative cervical lordosis parameters (T1s–CL, and C2–C7 Cobb angle) were significantly better in the PAP pedicle group than in the other two groups ($p < 0.001$).

Conclusion: Preventive expansive foraminotomy can significantly decrease the incidence of C5 palsy associated with posterior and combined posterior and anterior cervical fusion surgeries. Expansive foraminotomy is only appropriate with pedicle screw insertion to preserve stability.

#ESA Abstracts 202301015

Cervical Transpedicular Irrigation and Drainage in A Patient with Cervical Spondylodiscitis After Hypopharyngeal Cancer Treatment: A Case Report

Mahmoud Abdou, MD¹, Kyung-Soo Suk, MD, PhD², Ji-Won Kwon, MD², Seong-Hwan Moon, MD², Ju Hunjin, MD², Byung Ho Lee, MD²

¹ Department of Orthopedic Surgery, Fayoum University College of Medicine, Fayoum, Egypt;

² Department of Orthopedic Surgery, Yonsei University College of Medicine, Seoul, Korea

Introduction: Cervical spondylodiscitis is a rare condition, but it is usually associated with rapid neurological deterioration so urgent surgical intervention is mostly indicated.

Case Presentation: We are presenting a case of cervical spondylodiscitis in patient with history of cancer hypopharynx. The patient had lateral pharyngotomy wide excision followed by radiotherapy so we started immediate antibiotic thereby after CT guided biopsy but the presence of epidural abscess made surgical intervention inevitable. Anterior cervical debridement might lead to esophageal perforation due to the extensive tissue scaring, so transpedicular irrigation and drainage technique was decided. However, there was some concerns regarding cervical pedicle screws insertion as it may be associated with neurovascular complications, our emerging MPPP technique allows us to do safe and effective debridement. So we are reporting the first case of transpedicular curettage and drainage using the freehand cervical pedicle screw insertion technique for the treatment of cervical SD.

Conclusion: Transpedicular irrigation and drainage technique is effective and less aggressive treatment for cervical SD.

#ESA Abstracts 202301016

Constipation as a GIT Comorbidity Postoperative Elective Lumbar Spine Surgery

Mohammed ElMahdy Ismail, MD

Department of Neurosurgery, Fayoum General Hospital, Fayoum, Egypt

Introduction: Many patients experience gastrointestinal (GI) morbidity after spine surgery. Constipation tops the list of these gastrointestinal morbidities. In this study, we investigated the likelihood of constipation and potential risk factors in patients having lumbar spine surgery.

Methods: The case-control study was carried out at the department of orthopedics at Fayoum General Hospital in Fayoum, Egypt. We looked through hospital databases and file records for patients who had spine surgery between 2019 and 2022. All patients who met our inclusion criteria were included. Patients were interviewed at the orthopedic clinic and asked about any gastrointestinal morbidity symptoms, particularly constipation. Data from file records and patient interviews were combined and analyzed to identify potential risk factors for GI morbidity. The findings were compared to a control group.

Results: A total of 194 patients were assigned to the opioid (116) and control groups (78). Constipation affected 36 females and 17 males. Females had significantly more constipation than males ($p = 0.028$). Constipation, however, did not correlate with age, operative time, comorbidities, or the need for transfusion. In terms of constipation, there was no significant difference between the opioid and control groups ($p = 0.157$).

Conclusion: Female patients were more likely than male patients to have constipation. Diabetes, hypertension, and neurology were not found to have a strong correlation with constipation. In addition, patients who received opioids were more likely to have constipation than those who did not.

#ESA Abstracts 202301017

Short-Term Outcomes of Fracture Odontoid Management: A Prospective Case Series Study

Ahmed Shaif Al-huthaifi, MBBCh¹, Mahmoud Fouad Sayed Ibrahim, MD¹, Ahmed Mohammed Shawky M. Abdelgawaad, MD¹, Mohammad El-Sharkawi, MD¹

¹ Department of Orthopedic and Trauma Surgery, Faculty of Medicine, Assiut University, Assiut, Egypt

Introduction: Odontoid fractures are common fractures, accounting for 10-15% of all cervical spine fractures. It has a bimodal age distribution in both elderly and young patients. Treatment decision depends on many factors. There is no consensus in the literature about the best treatment options and uncertainty always exists about the outcome of this treatment. This prospective observational case series study aims to assess the percentage of improvement in the Neck Disability Index (NDI) following conservative and surgical treatment of odontoid fracture during the follow-up visits.

Methods: This prospective case series study was carried out on patients who presented to Assiut University Hospital, a tertiary care center, with fracture odontoid from October 2021 to June 2023. Ethical approval was obtained before the start of the study (IRB number: 17101609). Data were collected and recorded on REDCap database. Patients were followed at the outpatient clinic at 2 weeks, 6 weeks, 3 months, and 6 months.

Results: Between October 2021 and June 2023, 312 patients presented to Assiut University Hospital with cervical fractures, among them 38 patients had upper cervical fractures (12.17%); and 24 (63%) patients had fracture odontoid, 7 patients had fracture C1 (18%) and 7 patients had Hangman fracture (18%). Twenty-four patients (22 males and 2 females) with mean age 34.5 years were included. Twelve patients (50%) were treated operatively, and 12 patients were treated conservatively (50%). Two non-operatively treated patients died early in the hospital due to associated serious injuries. The subjective evaluation according to the neck disability index at the 6-week follow-up revealed no disability in 8 patients (36.4%), mild disability in 5 patients (22.7%), moderate disability in 5 patients (22.7%) and severe disability in 4 patients (18.2%). At the 3-month follow up, 13 patients (59.1%) reported no disability, 7 patients (31.8%) reported mild disability, one patient (4.5%) reported moderate disability, and one patient (4.5%) reported severe disability. At the 6-month follow up, 12 patients (80%) reported no disability and only 3 patients (20%) reported mild disability. The remaining 7 patients (31.8%) have not yet completed the 6 months follow up. No significant difference was found when we compared the results of those patients treated operatively and non-operatively.

Conclusion: All patients showed good functional outcome with excellent Neck Disability Index regardless the type of managements. This is an ongoing study and larger number of patients, stratified into different fracture types, with longer follow up period is needed to draw a more concrete treatment recommendation.

#ESA Abstracts 202301018

Major vascular injury in lumbar disc surgery series of three cases and review of literature

Mohamed ElGohary, MD

Department of Neurosurgery, Damanhour Medical National Institute, Damanhour, Egypt

Introduction: Vascular complications related to posterior lumbar disc surgery are not common. Incidence of major vascular injury is rare (0.01%-0.05%) but mortality rate is as high as 10% to 65%. This retrospective case presentation study aims to evaluate the major vascular injury in lumbar disc surgery series.

Methods: From 2012-2022 we reported 3 cases of vascular injury DMNI. This 3 cases represent a ratio 0.063% out of total 4800 lumbar spine surgeries.

Results: Case 1 Female 53 years, L4-5 disc, the step of injury during disc removal by rongeur. Call of vascular team ultrasound laparotomy direct ripper right common iliac, Ischemia, redo, Ischemia, stent, ischemia, amputation, infection, death. Case 2 Female 45 years, L4-5 slippage, the step of injury during disc curettage and cage placement leading to sever bleeding, shock, and death on table. Case 3 Male 45 years, L4-5 disc, the Step of injury during opening of disc by scalpel, sever bleeding, shock, then call senior surgeon, success of management with complete cure.

Conclusion: Vascular injury associated with posterior lumbar disc surgery is not common but can be fatal. Early recognition, diagnosis, and prompt treatment are essential to prevent fatal outcomes.

#ESA Abstracts 202301019

Shilla Technique Using Titanium Non-Polyaxial Screws

Amer Alkot, MD, Mahmoud Gaber, MD

Orthopedic department, Al-Azhar university hospital, Assiut, Egypt

Introduction: The management of scoliotic deformities in young children with skeletal immaturity is challenging, especially in those with early onset scoliosis (EOS), which presents earlier, progresses more rapidly and results in more serious deformity, creating great difficulties in the treatment. Etiologically EOS is classified as idiopathic, neuromuscular, syndromic, and congenital. The Shilla is a growth guidance system that does not require repeated surgical lengthening. The Shilla system guides growth at the ends of dual rods with the apex of the curve corrected, fused, and fixed to the rods. The aim of this work is a clinical trial using fixed titanium screws in managing patients with EOS by Shilla technique. Study design: case series study.

Methods: 10 patients were enrolled in this study complaining of EOS managed by Shilla technique and modified screws and minimal follow up period 18 mm. we used Shilla system which permits growth at both ends of construct without need to more surgeries for lengthening. Rods slide in the proximal and distal modified screws which placed extra periosteal and insert the rods sub muscular. The apex of deformity were corrected and fused with non-Shilla screws. Follow up done by comparing preoperative clinical and radiological parameters including Cobb angle, apical vertebral distance (AVD), sagittal balance, spinal length (T1-S1) and kyphosis angle.

Results: Ten eligible patients with EOS participated in this study. The average age was 6-9 years and mean follow up 12 months. patients show significantly better clinical and radiological improvements.

Conclusion: Using modified fixed titanium screws in managing cases of EOS showing promising and acceptable clinical and radiological results but we need further studies and longer duration of follow up.

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Video-Assisted Thoracoscopic Surgery (VATS) in the Management of Posterior Mediastinal Neurogenic Tumors

Hussein Elkhayat, MD¹, Roshdy Elkhayat, MD², Ahmad Abdalla, MD², Abdelhakeem Essa, MD², Mohamed I. Omar, MD³, Belal Elnady, MD⁴, Ali A. Abd Elaleem, MD²

¹ *Cardiothoracic Surgery Department, Faculty of Medicine, Assiut University, Assiut, Egypt;*

² *Neurosurgery Department, Faculty of Medicine, Assiut University, Assiut, Egypt;*

³ *Surgical Oncology Department, South Egypt Cancer Institute, Assiut University, Assiut, Egypt;*

⁴ *Orthopedic and Traumatology Department, Faculty of Medicine, Assiut University, Assiut, Egypt*

Introduction: Complete surgical resection is the mainstay of the management of posterior mediastinal neurogenic tumors (PMNT) (benign or malignant), and it offers excellent survival outcomes in most cases. Dumb-bell tumors occur in less than 10% of all PMNT, but they constitute a surgical challenge because they need a combined approach for the intraspinal extension and the intrathoracic part either as a staged or as a single-stage approach. Until recently, a classic posterolateral thoracotomy was the gold standard for surgical resection of dumb-bell PMNT. To avoid having to make two large incisions, different approaches were used to improve pain and cosmesis. In cases with associated scoliosis, one can perform scoliosis surgery to fix the angle of the thoracic vertebra, and the posterior incision is large enough to accommodate a thoracotomy incision without a separate skin incision. If the tumor has an extrathoracic extension, a thoracotomy incision can be tailored laterally from the posterior incision in a T or inverted Y fashion. In giant tumors that will eventually need a thoracotomy, VATS helps in the choice of an optimal site for a tailored thoracotomy incision plus its application to rule out any metastatic pleura seedings. In cases with a small intrathoracic part of a dumb-bell tumour ($\leq 6-8$ cm), a combined posterior and VATS approach can be implemented for total resection of the tumor.

Methods: We conduct a retrospective study enrolling all patients with dumb-bell tumor operated in our center as a single stage combined approach within the last 5 years.

Results: During the study time frame, we operated upon 9 patients with dumb-bell tumors. The main pathology was ganglioneuroma. One patient had scoliosis correction with tumor removal, three patients had inverted Y incision for a single stage resection, and five patients were operated using hybrid approach via thoracoscopic approach for the intrathoracic part of the tumor.

Conclusion: VATS offers improved surgical outcomes in terms of enhanced recovery, less postoperative pain, decreased analgesic demands, fewer complications, and shorter hospital stays. Proper selection of cases for uniportal thoracoscopic hybrid excision is crucial for ensuring good surgical outcomes.