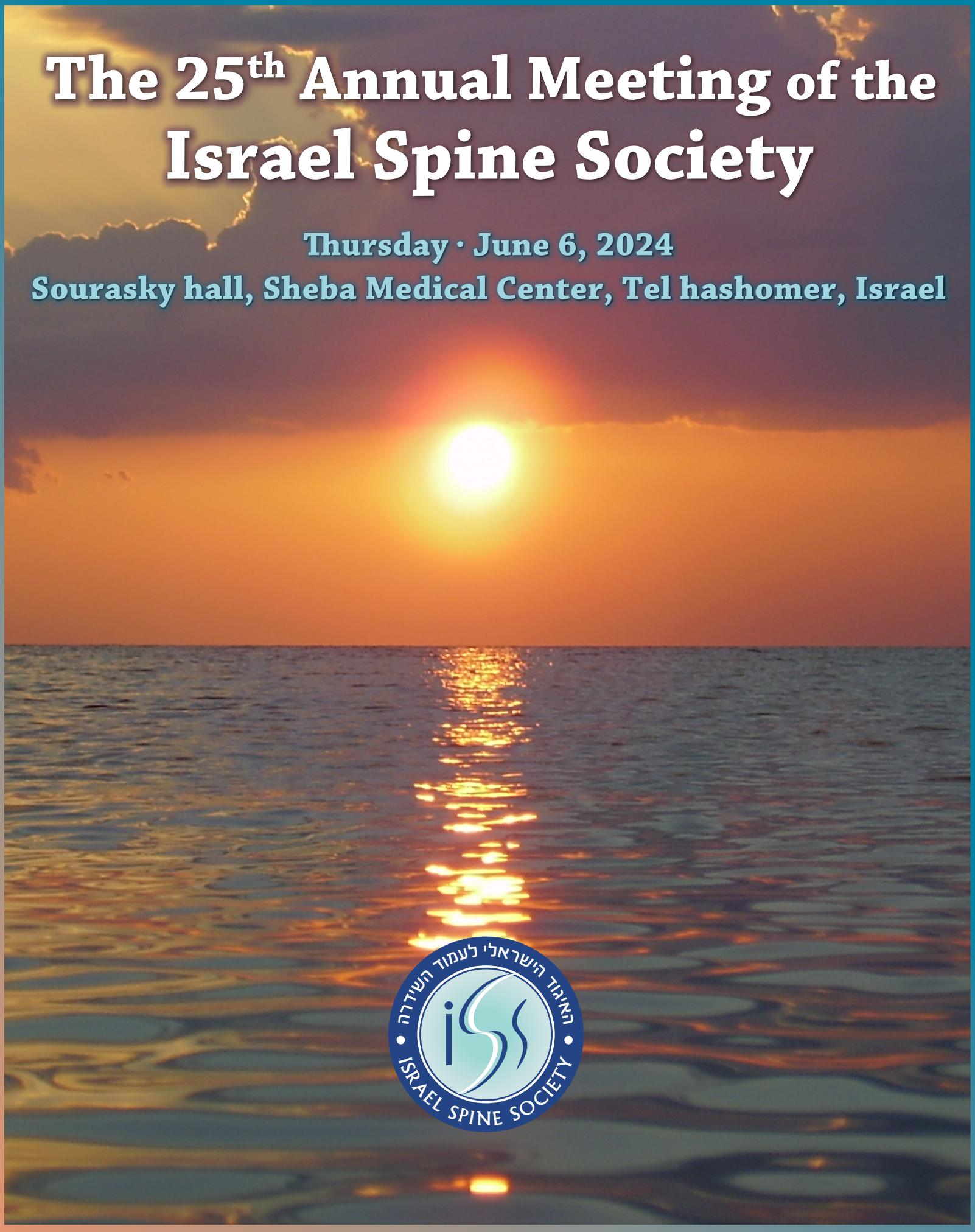
The 25th Annual Meeting of the Israel Spine Society

Thursday · June 6, 2024

Sourasky hall, Sheba Medical Center, Tel hashomer, Israel



WELCOME

תכנית כנס אחיות/ים

יום חמישי, ה- 6 ביוני 2024

08:40 - 08:00
הרשמה
אולם סוראסקי

08:40
פתיחת המושב
ד"ר נמרוד רחמימוב, מר אדוארד בקרמן

09:10 - 08:40
ניתוחי עמוד שדרה זעיר-פולשניים
ד"ר יובל ברוך, היחידה לניתוחי עמוד שידרה, בי"ח מאיר, כפר סבא

09:25 - 09:10
מניעת זיהומים בניתוחי עמוד שידרה -התערבות מולטידסציפלינרית
גב' נטלי חודריאן, BA, אחות אחראית חדר ניתוח, נאמנת מניעת זיהומים בחדר ניתוח, המרכז הרפואי תל-אביב

09:40 - 09:25
הצגת מקרה: שחזור וקיבוע שבר בשיטה מלעורית
מר דניס אוסוב, ראש צוות חדר ניתוח אורתופדיה ב', מרכז הרפואי לגליל, נהריה

09:55 - 09:40
דיוק הכנסת ברגים לעמוד השדרה בעזרת מערכת ניווט מול שיטה קלאסית
מר עז אלדין עבאס, BA, אח חדר ניתוח בית חולים איכילוב

10:30 - 10:00
הפסקת קפה וארוחת בוקר

10:45 - 10:30
הצגת מקרה: תיקון high grade spondylolisthesis, טכניקה ניתוחית ובעיות אפשריות
מר מואנס היב, BA, אח חדר ניתוח, המרכז הרפואי לגליל, נהריה

11:00 - 10:45
חדשנות בהדמיה תוך ניתוחית בעמוד שידרה
מר מוחמד מוסלם כבהא, BA, אח חדר ניתוח, איכילוב

11:15 - 11:00
Navigated MIS TLIF
מר ארתור אברמוב, BA, ראש צוות ניתוחי עמוד שידרה, המרכז הרפואי ע"ש חיים שיבא, תל השומר

11:30 - 11:15
Failure of scoliosis repair
מר ארתור אברמוב, BA, ראש צוות ניתוחי עמוד שידרה, המרכז הרפואי ע"ש חיים שיבא, תל השומר

11:45 - 11:30
הצגת מקרה: En-bloc resection of C5-7 chordoma in a 10 yr old girl
מר אדוארד בקרמן, BA, ראש צוות ניתוחי עמוד שידרה, חדר ניתוח איכילוב

12:00 - 11:45
תפקיד האוקסיטוצין בתהליכי שיכוך כאבים
גב' עדי שני, MA, מתאמת מחקר, המחלקה לאורתופדיה ב' ויחידת עמוד שידרה, המרכז הרפואי לגליל, נהריה

12:30 - 12:00
עקמת אידיופטית, גישה ושיטות טיפול
ד"ר יונתן קוך, יחידת עמוד שידרה, בית חולים מאיר

13:30 - 12:30
ארוחת צהרים וביקור בתערוכה

14:30 - 13:30
הצטרפות להרצאות במליאה באולם סוראסקי

THE 25TH ANNUAL MEETING OF THE ISRAEL SPINE SOCIETY

SCIENTIFIC PROGRAM

THURSDAY 6 JUNE

08:30 - 08:40 - WELCOME NOTE
Rahamimov N.

SESSION 1: TECHNOLOGY
Moderators: Bazilai Y, Smorgik Y.

08:40 - 08:50
1.1 ASSESSING THE PERFORMANCE OF CHATGPT IN ANSWERING QUESTIONS REGARDING LUMBAR DISC HERNIATION.
Mahamid A, Maman D, Keren A, Laver L, Hodruj M, Zahalka S, Finkel B, Mansour A, Berkovich Y, Behrbalk Y.

08:50 - 09:00
1.2 NEURO REACH - MAKING SURGERY IN NEUROSURGERY ACCESSIBLE - AN INTRADURAL SPINAL CATHETER DEVICE.
Hadelsberg U.

09:00 - 09:10
1.3 COMPARATIVE EVALUATION OF POSTOPERATIVE OUTCOMES AND EXPENDITURE BETWEEN ROBOTIC AND CONVENTIONAL SINGLE-LEVEL LUMBAR FUSION SURGERY: A COMPREHENSIVE ANALYSIS OF NATIONWIDE INPATIENT SAMPLE DATA.
Maman D, Mahamid A, Finkel B, Gan-Or H, Fourinier L, Berkovich Y, Behrbalk E.

09:20 - 09:10
1.4 IS MAZOR X ROBOTIC PEDICLE SCREW INSERTION ACCURACY SURPASSING HIS ANCESTOR, MAZOR RENAISSANCE? A RETROSPECTIVE STUDY.
Asa Z, Einav O, Kaplan L, Schroeder J.E.

09:50 - 09:20
REVIEW: NEW TECHNOLOGIES IN SPINE SURGERY - WHERE ARE WE NOW, AND WHERE IS IT GOING
Arzi H.

09:50 - 10:00 - DISCUSSION

10:00 - 10:30 - COFFEE BREAK

SESSION 2: PAIN
Moderators: Behrbalk E, Rahamimov N.

10:30 - 10:37
2.1 LOW BACK PAIN PATIENTS' PERCEPTIONS REGARDING THEIR OWN RADIOLOGY REPORTS - ASSOCIATIONS WITH CATASTROPHIZING AND ANXIETY-RELATED SYMPTOMS: PREINTERVENTION SURVEY.
Regev G, Treister R, Brill S, Ophir D, Salame K, Lidar Z, Khashan M, Litvin R, Hochberg U.

10:37 - 10:45
2.2 NOL MONITORING IN SPINE SURGERY.
Vodovozov D, Saliman A, Alexandrovsky V, Halaila A, Grach M, Goldik Z, Spiegelman A.

10:45 - 11:05
KEYNOTE: EXPLAINING UNEXPLAINED CHRONIC PAIN - INTRODUCTION TO THE BAYESIAN THEORY.
Treister R.

11:05 - 11:35
KEYNOTE: THE STATE OF THE ART IN PAIN MANAGEMENT IN SPINE
Hochberg U.

11:35 - 11:40 - DISCUSSION

SESSION 3: CERVICAL SPINE
Moderators: Hasharoni A, Harel R.

11:40 - 11:50
3.1 RARE CASE OF REPERFUSION INJURY CASE FOLLOWING CERVICAL FUSION WITH OPLL: CASE PRESENTATION AND COMPREHENSIVE REVIEW.
Mahamid A, Zahalka S, Maman D, Alfandari L, Samara S, Keren A, Behrbalk E.

THE 25TH ANNUAL MEETING OF THE ISRAEL SPINE SOCIETY

SCIENTIFIC PROGRAM

11:50 - 12:00
3.2 CASE REPORT: RARE COMPLICATION - WHITE CORD SYNDROME DURING CERVICAL SPINE SURGERY.
Vodovozov D, Saliman A, Alexandrovsky V, Halaila A, Grach M, Goldik Z, Spiegelman A.

12:00 - 12:10
3.3 ODONTOID SYNCHONDROSIS FRACTURES IN CHILDREN.
Rennert N, Harel R.

12:10 - 12:20
3.4 POSTOPERATIVE CERVICAL JUNCTIONAL KYPHOTIC DEFORMITY IN CHILDREN AFTER CERVICAL FUSION - CASE SERIES AND REVIEW OF LITERATURE.
Gabay S, Bergman L, Regev G.J, Khashan M, She'ar Yashuv H, Salame K, Lidar Z, Ofir D.

12:20 - 12:30 - DISCUSSION

12:30 - 13:30 - LUNCH

SESSION 4: LUMBAR
Moderators: Hershkowitz O, Khashan M.

13:30 - 13:40
4.1 RESTORATION OF THE SAGITTAL PROFILE ACCORDING TO THE ROUSSOULY CLASSIFICATION REDUCES MECHANICAL COMPLICATIONS AND REVISION SURGERY IN OLDER PATIENTS UNDERGOING SURGERY FOR ADULT SPINAL DEFORMITY (ASD).
Koch J, Gessara A, Patel M.S, Estefan M, Gutman N, Mardashti A, Shetaiwi A, Quraishi N.A.

13:40 - 13:50
4.2 NOVEL INSTRUMENTS AND METHOD OF POSTERIOR COMPRESSION IN LUMBAR FUSION SURGERY CREATING MORE LORDOSIS THAN CONVENTIONAL METHODS.
Menachem S, Seex K.

13:50 - 14:20
DEBATE: RESTORATION OF LUMBAR SAGITTAL PROFILE IN A ONE LEVEL FUSION IN ADULT SPINAL DEFORMITY - IS IT REALLY NECESSARY?
13:50 - 14:05 PRO - Menachem S.
14:05 - 14:20 CON - Koch J.

14:20 – 14:30 - DICUSSION

14:30-14:40 - CLOSING REMARKS
Rahamimov N.

14:40-15:30 - BUSINESS MEETING

SEE YOU ALL NEXT YEAR.

ABSTRACTS:

ASSESSING THE PERFORMANCE OF CHATGPT IN ANSWERING QUESTIONS REGARDING LUMBAR DISC HERNIATION

MAHAMID A[1], MAMAN D[1], KEREN A[1], LAVER L[1], HODRUJ M[2], ZAHALKA S[3], FINKEL B[1], MANSOUR A[1], BERKOVICH Y[1], BEHRBALK Y[1].

1. Division of Orthopedic Surgery, Hillel Yaffe Medical Center, Hadera, Israel.
2. Department of Obstetrics and Gynecology, Bnai-Zion Medical Center, Haifa, Israel.
3. Faculty of Health Sciences, Joyce and Irving Goldman Medical School, Ben-Gurion University of the Negev, Beer-Sheva, Israel.

INTRODUCTION

ChatGPT and related language models can potentially transform healthcare delivery and enhance patient outcomes in medicine. The deep learning method of ChatGPT uses large volumes of text data to discover patterns, correlations, and linguistic semantics. Subsequently, it undergoes extensive training to achieve high accuracy and precision. Since the vast popularity of this tool, we believe that these models can be helpful in answering orthopedic patients' questions regarding classifying musculoskeletal disorders, making preliminary suggestions for treating pain or injuries, as well as providing preoperative and postoperative instructions; unfortunately, the literature lacks evidence in this matter. In this study, we opt to investigate the accuracy and reproducibility of ChatGPT in answering questions regarding knowledge, management, both non-surgical and surgical treatment, and emotional support for patients with lumbar disc herniation.

METHODS

ChatGPT's responses to 33 questions were independently graded by two orthopedic spine surgeons and subsequently resolved by a third spine surgeon reviewer. In addition, its emotional support capacity was tested. We evaluated the reproducibility rate among the questions.

RESULTS

ChatGPT showcased strong accuracy in addressing 33 inquiries across diverse domains. Responses were largely deemed comprehensive or correct but inadequate. concerning "knowledge", 70% of the questions scored comprehensive answers. However, in the domains of "diagnosis" and "treatment" these rates slightly dipped to 25% and 35.7%, respectively. Impressively, no response was entirely incorrect, and only one question was graded as "correct but irrelevant to the patient". Notably, around 82.58% of the questions received varying grades from two reviewers, demonstrating high reproducibility rate.

CONCLUSION

We thoroughly investigated the strengths and weaknesses in ChatGPT's ability to address lumbar disc herniation and provide emotional support for patients. ChatGPT could potentially serve as an additional informational resource for both patients and physicians, possibly contributing to improved outcomes.

NEURO REACH – MAKING SURGERY IN NEUROSURGERY ACCESSIBLE - AN INTRADURAL SPINAL CATHETER DEVICE

HADELSBERG U.

INTRODUCTION

At present, there are no medical devices to aid in providing a minimally approach into the spinal canal or into the intracranial vault. The only way to access a spinal intramedullary/intradural tumor or to perform a microvascular deompcression, endoscopic third ventriculostomy, or the insertion of intrathecal/intratumor/spine neurotrauma protective drug administration, among other procedures, is via surgery. In addition, neural foramen decompression via a complete spinal intradual approach might be feasible using this device as well as radiofrequency techniques. This requires general anesthesia and admission to the intensive care unit for a lengthy hospital stay. We propose a novel device which will address these pathologies and other patgoloties by the use of a camera-equipped catheter and a working channel inserted via a lumbar puncture and insertion of a catheter, thus eliminating the need for craniotomy or spinal canal exploration.

MATERIAL AND METHODS

We have developed and patented a device which comprises of a mini-camera and a working channel through which micro-tools (a knife, forceps and other devices) can travel up to the brainstem and cerebrum and perform the above mentioned and other neurosurgical procedures. We have received $250K USDs funding from the Israeli innovation authority and our institution to pursue this idea.

RESULTS

In August 2022 we used grant money from our hospital and developed and tested a catheter prototype equipped with a mini camera and working channel. Three (3) prototype catheters were produced and were tested in an animal (swine). Helsinki approval and the hospital ethics comittee approved the experiment using our device, approval for developing the device and testing it on the animal were obtained prior to the trial. During the procedure we inserted our catheter in the lumbar spinal sac of a male swine. We managed to progress the catheter all the way up the spinal canal and harbor it infront of the brainstem with visualization of the brainstem structures itself. We recorded our results of which some are attached in this absatrat (figurs 1-6). More experiments ensued, with the latest one occurring in March 2024, with the execution of a spinal cord biopsy through this approach, (as seen in a recorded video).

CONCLUSIONS

To the best of our knowledge this is the first time a camera recording of the brainstem and intracranial anatomy as well as the spinal canal were visualized in a living animal. We are developing our device and hope to apply this as a standard of care in future.

COMPARATIVE EVALUATION OF POSTOPERATIVE OUTCOMES AND EXPENDITURE BETWEEN ROBOTIC AND CONVENTIONAL SINGLE-LEVEL LUMBAR FUSION SURGERY: A COMPREHENSIVE ANALYSIS OF NATIONWIDE INPATIENT SAMPLE DATA.

MAMAN D[1], MAHAMID A[1], FINKEL B[1], GAN-OR H[1], FOURINIER L[2], BERKOVICH Y[1], BEHRBALK E[1].

1. Division of Orthopedic Surgery, Hillel Yaffe Medical Center, Hadera, Israel.
2. Department of Pediatrics, Clalit Health Care Organization, Carmel Medical Center, Haifa, Israel.

INTRODUCTION

In this study, we investigate the evolution of lumbar fusion surgery with robotic assistance, specifically focusing on the impact of robotic technology on pedicle screw placement and fixation. Utilizing data from the Nationwide Inpatient Sample (NIS) covering 2016 to 2019, we conduct a comprehensive analysis of postoperative outcomes and costs for single-level lumbar fusion surgery. With a dataset of 461,965 patients, our aim is to provide insights into the impact of robotic assistance on patient care and healthcare resource utilization. Our primary goal is to contribute to the ongoing discourse on the efficacy of robotic technology in lumbar fusion procedures, offering meaningful insights for optimizing patient-centered care and healthcare resource allocation.

METHODS

This study employed data from the Nationwide Inpatient Sample (NIS) spanning the years 2016 to 2019, involving a cohort of 461,965 patients. The study focused primarily on one-level lumbar fusion surgery and excluded non-elective cases and those with prior surgeries. The analysis encompassed the identification of comorbidities, surgical etiologies, and complications using specific ICD-10 codes.

RESULTS

Robotic-assisted lumbar fusion surgeries demonstrated a significant increase from 2016 to 2019, comprising 1.25% of cases. Robotic surgery has higher charges, with a mean charge of $154,673, whereas non-robotic surgery had a mean charge of $125,467 ($p < 0.0001$). Robotic surgery demonstrated lower rates of heart failure, acute coronary artery disease, pulmonary edema, venous thromboembolism, and traumatic spinal injury compared to non-robotic surgery, with statistically significant differences ($p < 0.05$). Conversely, robotic surgery demonstrated increased post-surgery anemia and blood transfusion requirements compared to non-robotic patients ($p < 0.0001$). Renal disease prevalence was similar before surgery, but acute kidney injury was slightly higher in the robotic group post-surgery ($p = 0.038$).

CONCLUSION

This is the first big data study on this matter, our study showed that Robotic-assisted lumbar fusion surgery has significantly shorter LOS, fewer post-operative complications such as heart failure, acute coronary artery disease, pulmonary edema, venous thromboembolism, and traumatic spinal injury in comparison to conventional methods.

IS MAZOR X ROBOTIC PEDICLE SCREW INSERTION ACCURACY SURPASSING HIS ANCESTOR, MAZOR RENAISSANCE? A RETROSPECTIVE STUDY

ASA Z, EINAV O, KAPLAN L, SCHROEDER J.E.
Department of Orthopedic Surgery, Hebrew University Hadassah Medical Center, Jerusalem, Israel.

BACKGROUND

Accurate pedicle screw placement is essential, as misplaced screws can lead to complications such as nerve injury and vascular damage. In recent years, the incorporation of robotic technology into spine surgery has revolutionized the field by offering improved precision and control during screw insertion.

Many studies have demonstrated that robotic-assisted systems significantly improve the accuracy of pedicle screw placement compared to traditional free-hand techniques and therefor optimizing patient.

Hadassah Medical Center has been utilizing the Renaissance robot for spine surgeries for years. More recently, the Mazor X robot, with enhanced capabilities, has been implemented at the Hadassah Ein Kerem Hospital, while the Renaissance robot continues to be used at the Hadassah Mount Scopus Hospital.

We aimed in this study to compare the accuracy of pedicle screw in both generations and look if there is any supremacy in the newer version Mazor X.

METHODS

Patient data extracted retrospectively from PACS software and electronic patient management software 'MAHAR' from January 2021 to January 2024.

Inclusion Criteria: Patients aged 18-90 with degenerative or trauma related spinal conditions, who underwent surgery with pedicle screw fixation from T8 to S1 levels using either the Mazor Robotics Renaissance or Mazor Robotics X systems, and had a postoperative CT scan. Single main surgeon was involved in both surgical groups.

Pedicle screw accuracy was evaluated using the CT-based Gertzbein and Robbins system (GRS), which categorizes screw placement into Grades A to E based on breach distance.

RESULTS

Total of 61 patients were finally include in this study, 38 patients registered in Ein-Karem campus and 23 patients registered in Mount Scopus campus.

Total number of pedicle screws evaluated in Ein-Karem group was 143, and 103 screws in Mount Scopus group.

High level of accuracy of pedicle screws, grade A and B, were noted in both groups, as only one patient in each group had only one screw graded C and above.

CONCLUSION

In this study we aimed to compare the accuracy of robotic pedicle screw insertion between two generations of Mazor robotics, the older Renaissance robot and the newer Mazor X robot.

We recorded very high level of pedicle accuracy in both robots in degenerative and trauma cases, and we demonstrated no difference in their utility.

LOW BACK PAIN PATIENTS' PERCEPTIONS REGARDING THEIR OWN RADIOLOGY REPORTS - ASSOCIATIONS WITH CATASTROPHIZING AND ANXIETY-RELATED SYMPTOMS: PREINTERVENTION SURVEY

REGEV G, TREISTER R, BRILL S, OPHIR D, SALAME K, LIDAR Z, KHASHAN M, LITVIN R, HOCHBERG U.

INTRODUCTION

While advanced medical technology and unlimited excess to medical information might benefit and empower patients, these advantages might pose risks. As such, patients suffering from lower back pain are frequently referred to advanced imaging studies. These patients are often provided with direct access to their radiology reports prior to a medical consultation. As these reports are written in a professional language, oriented towards a medical audience, patient might not understand the clinical meaning of medical terms in the report, which might result in uunwarranted fear and anxiety. Furthermore, patients' tendency for catastrophic thinking might contribute to this process.

The aim of this work was to evaluate the patients' perceptions and misconceptions following direct access to their Thoraco-Lumbar spine radiology report, and to assess possible associations with catastrophizing.

MATERIAL AND METHODS

Patients who were referred to the spine clinic of a tertiary medical center for first evaluation, or first follow-up appointment regarding their low-back pain were invited to participate in the study. All patients arrived to the clinic following the completion of a CT or MRI of their thoracolumbar spine. A set of questionnaires was used to evaluated three domains: 1) patient perceptions of the value of direct access to the radiology report; 2) patient and experts perceptions of the degree of concerns associated with medical terms found in the report; 3) aassessment of patients' subjective experience of anxiety-related symptoms, and 4) pain catastrophizing.

RESULTS

Data from 162 participants (44.6% female), with mean age of 53.1 ± 15.6, ranging 20 to 92 was collected. Sixty-three percent of patients stated agreed with the statement that reading the report helped them gain better understanding of their medical condition and 84% agreed that having early access to the report helped improve communication with the physician.

The degree of concerns associated with each medical term ranged between 2.07 to 3.75, on a scale of 1 to 5. The patient's degree of concerns, as compared to experts opinions, was significantly higher for six medical terms (Disc bulge, Disc extrusion/protrusion, Discogenic changes, Osteopenia, Ligamentum Flavum hypertrophy) and significantly lower in one (spinal cord signal change).

A mean (± SD) of 2.86±2.79 anxiety-related symptoms were reported, with the most common symptom "being restlessness" reported by 49%. The mean pain catastrophizing scale (PSC) score was 29.18 ±11.86, ranging 2 to 52. Both the degree of concerns and the number of symptoms reported were significantly associated with the PCS.

CONCLUSIONS

Direct access to radiology reports might provoke anxiety symptoms, especially in patients with tendency for catastrophic thinking. Increasing awareness amongst spine clinicians and radiologist about possible risks associated with direct access to radiology report, could contribute to preventing patients' misconceptions and unnecessary anxiety-related symptoms.

NOL STUDY DURING SPINAL SURGERIES

VODOVOZOV D, SALIMAN A, ALEXANDROVSKY V, HALAILA A, GRACH M, GOLDIK Z, SPIEGELMAN A.

BACKGROUND

Assessing the intensity of chronic pain is a significant challenge because of its complex nature, which includes physical, psychological and social factors. The most common tools for measuring pain intensity are those that use the following scales: Numerical Rating Scales (NRSs), Visual Analogue Scales (VASs), Verbal Rating Scales (VRSs) and Faces Pain Rating Scales (FPSs). But these scales are influenced by various unrelated factors directly to the pain, such as understanding, cooperation and awareness of the subjects. Also, these scales include various questionnaires as well as verbal descriptions that are difficult to quantify.

The purpose of the present study is to estimate the NOL values during the main and painful stages of spine surgery, to check whether the monitoring of the NOL values will allow reducing the use of opiates during the operation while achieving comfortable and stable haemodynamic parameters.

METHODS AND MATERIALS

The study conducted is an observational prospective study. The study included patients undergoing spine surgery (elective or non-elective) under general anaesthesia with remifentanil and propofol. The operations were standardized and divided into stages. we collected the values of the NOL index, via a PMD -200 monitor, during each stage and personalized the anaesthetic medication given to each patient.

RESULTS

We were able to monitor and single out the most painful stages of each operation, and as a derivative, personalize the anaesthetic medication given in each stage. By thus we were able to shorten the time of recovery from the surgery, decrease the amount and severity of side effects from anaesthetic medication, and hasten ambulation.

RARE CASE OF REPERFUSION INJURY CASE FOLLOWING CERVICAL FUSION WITH OPLL: CASE PRESENTATION AND COMPREHENSIVE REVIEW

MAHAMID A*[1], ZAHALKA S*[2], MAMAN D[1], ALFANDARI L[1], SAMARA S[1], KEREN A[1], BEHRBALK E[1].

*Equally contributed

1. Division of Orthopedic Surgery, Hillel Yaffe Medical Center, Hadera, Israel.
2. Faculty of Health Sciences, Joyce and Irving Goldman Medical School, Ben-Gurion University of the Negev, Beer-Sheva, Israel.

INTRODUCTION

Spinal cord ischemic reperfusion injury is characterized by an abrupt decline in neurological function and only a few cases have been published in the literature. Herein, we present a white cord syndrome following anterior decompression cervical fusion.

CASE REPORT

A 54-year-old male patient was diagnosed with disc herniation among the intervertebral discs at C2, C3, C4, C6, and C7, along with ossification of the posterior longitudinal ligament (OPLL), pressuring more to the right side of the spinal canal, ruling-out cervical myelopathy. Under General anesthesia and multimodal intraoperative monitoring, he underwent laminectomy surgery from C3 to C6 and cervical fixation from C3 to C7. No blood pressure fluctuations occurred during surgery, and complete pressure release was achieved on the spinal cord and the nerve roots. In addition, neuromonitoring did not alert any nerve damage during the surgery. A neurologic exam in the post-anesthesia care unit (PACU) revealed weakness in his right hand and leg. A brain computed tomography (CT) scan ruled out cerebrovascular accident, neck CT revealed optimal implant position, and MRI ruled out spinal cord distress or injury. We treated him with intravenous fluids, steroids, painkillers, and anticoagulants. Following the surgery, we involved the occupational therapy department. After a few days, we observed a significant improvement in motor function in the right leg; however, there was no change in the right hand.

CONCLUSIONS

White cord syndrome likely arises from reperfusion injury subsequent to surgical decompression of a compressed spinal cord segment. Although infrequent, it is imperative for spine surgeons to recognize this potential complication and apprise patients of it prior to the procedure.

CASE REPORT: RARE COMPLICATIO- WHITE CORD SYNDROME DURING CERVICAL SPINE SURGERY

VODOVOZOV D, SALIMAN A, ALEXANDROVSKY V, HALAILA A, GRACH M, GOLDIK Z, SPIEGELMAN A.

BACKGROUND

White cord syndrome or as it is better known, Reperfusion spinal cord injury is an extremely rare complication of cervical spinal surgeries.

It is manifested as an unexplained neurological deficit following surgical decompression, which among others may manifest as a motor or sensory conduction loss to the limbs.

The pathophysiology of this pathology is not completely clear but it is speculated that it is caused due to reperfusion and edema of previously compressed areas of the spine.

CASE REPORT

A patient admitted to our department with a known cervical myelopathy with motor and sensory deficit in the upper limbs, planed for cervical spine surgery on two different levels for decompression and fusion, under neurological monitoring. During the surgery, after decompressing one of the known stenotic sites, with tools and hands off the patient, an abnormal neurological reading appeared – the patient had developed a sudden neurological deficit in all 4 limbs. When awakened from the surgery the patient demonstrated quadriplegia with no plausible explanation for the phenomenon. An emergent MRI was conducted and an edema below the decompressed site was observed, it was later concluded that the complication we are witnessing is white cord syndrome and the patient was treated accordingly.

DISCUSSION

Even though rare, white cord syndrome should be taken in account when sudden neurological deficit appears during cervical spinal surgeries, with no obvious iatrogenic cause. However, since only few cases have been documented A standardized treatment of the pathology does not exist yet

ODONTOID SYNCHONDROSIS FRACTURES IN CHILDREN

RENNERT N, HAREL R.
Spine Surgery Division, Department of Neurosurgery, Sheba Medical Center, Ramat-Gan, Israe

INTRODUCTION

In pediatric patients spinal injuries are relatively uncommon due to the flexible ligamentous structure and hypermobile spine compared to adults. However, when these injuries do occur, over 70% are concentrated in the upper cervical spine, with odontoid synchondrosis fractures are one of the most common fractures in very young children.

Initial treatment is usually indicated with external immobilization showing favorable outcomes with high union rates, though some cases presenting with displacement and angulation suggest an unstable spine, and often requiring an open surgical reduction and fixation. Surgical options vary from a posterior approach only, combined or to the less common, an anterior approach using odontoid screw fixation, as done in this study.

Yet, such interventions pose unique challenges in this age group, given the small and pliable nature of pediatric bones, leading to risks such as fractures and screw pullouts during manipulation. More over almost all surgical treatments in the literature present posterior-only surgery. In this case study we present 2 case reports of pediatric Synchondrosis odontoid fracture treated surgically in an anterior approach using an odontoid screw for stabilization.

METHODS

We retrospectively analyzed 2 cases of young pediatric patients with displaced odontoid synchondrosis fractures that had undergone surgical treatment with an odontoid screw fixation. We will present history and physical examination, imaging studies, surgical method selected and postoperative course.

RESULTS

Case 1

A 5-year-old female patient was admitted after sustaining a head injury from a MVA. Her GCS on admission was 11. Diagnostic imaging revealed an odontoid synchondrosis fracture. The treatment decision was to perform an odontoid screw fixation.

Case 2

A 2.6-year-old female patient sustained a head trauma from an MVA outside of Israel. Upon arrival, she had a GCS score of 8. She arrived intubated, sedated, with an ICP monitor and immobilized with a SPICA cast. The patient underwent an odontoid screw.

At the 4-month follow-up, both patients demonstrated favorable outcomes. They were able to ambulate freely with a normal gait and had no neurological deficits. The patients had successfully returned to their normal activities. imaging revealed solid fusion and good alignment of the fracture sites.

CONCLUSIONS

These cases highlight the challenges of managing odontoid synchondrosis fractures in very young patients, emphasizing technical strategies used to address them effectively. Odontoid screw were found to be feasible in very young children with favorable outcomes.

POSTOPERATIVE CERVICAL JUNCTIONAL KYPHOTIC DEFORMITY IN CHILDREN AFTER CERVICAL FUSION – CASE SERIES AND REVIEW OF LITERATURE

GABAY S, BERGMAN L, REGEV G.J, KHASHAN M, SHE'AR YASHUV H, SALAME K, LIDAR Z, OFIR D.

Spine Surgery Unit, Department of Neurosurgery, Tel Aviv Sourasky Medical Center affiliated with Tel Aviv University, Tel Aviv, Israel.

INTRODUCTION

Pediatric post-operative cervical kyphosis is reported as a complication of decompressive spinal surgery and the addition of preventive arthrodesis to decompression is therefore recommended. The aim of this study is to share our experience and to review the literature regarding the risk factors of post-operative kyphosis following in the pediatric population.

METHODS

Between December 2018 and February 2022, a total of 17 pediatric patients aged (x-y) underwent posterior cervical fusion, with or without laminectomy, for various pathologies at our center. Medical records and imaging studies for these patients were reviewed and collected.

RESULTS

Over a follow-up period of 3 - 61 months (mean 18 ± 15.8). Six patients developed DJK, among them 5 patients required additional corrective surgery. In the DJK group, a higher rate of kyphosis was noted in patients in which the posterior spinal fusion ended at the subaxial level.

CONCLUSION

We present a cohort of children that underwent posterior cervical fusion, with or without associated laminectomy, done for various pathologies. High rates of post-operative kyphotic deformity were found, in more than a third of the patients. Due to the small sample-sized cohort, an inter-group analysis for more specific risk factors wasn't possible. We promote tight clinical and radiological follow-up until maturity.

RESTORATION OF THE SAGITTAL PROFILE ACCORDING TO THE ROUSSOULY CLASSIFICATION REDUCES MECHANICAL COMPLICATIONS AND REVISION SURGERY IN OLDER PATIENTS UNDERGOING SURGERY FOR ADULT SPINAL DEFORMITY (ASD)

KOCH J, GESSARA A, PATEL M.S, ESTEFAN M, GUTMAN N, MARDASHTI A, SHETAIWI A, QURAISHI N.A.

Spine Unit, Shaare Zedek Medical Center, Hebrew University, Jerusalem, Israel.

BACKGROUND

The mechanical complications related to ASD remain a concern due to their morbidity and associated revision surgery. Restoration of each patient's Roussouly profile may reduce these. Our aim was to examine if the restoration of the

Roussouly profile reduced these complications and revision rates in older patients operated for degenerative ASD.

METHODS

Retrospective analysis of a single-centre (Queens Medical Centre, Nottingham, UK), 2-year minimum follow-up patient database. All patients undergoing corrective surgery (≥ 4 levels) for ASD were included with analysis of demographic data, operative records, restoration of

Roussouly sagittal profile, mechanical complications, and revision rates. Univariate and multivariate analysis was conducted.

RESULTS

Fifty-two patients were included (mean age was 72.3 years, average follow-up 56.3 months). Twenty-six patients had a "restored" profile (50%) and 26 an "unrestored" profile (50%). The incidence of mechanical complications was 7 (27%)

and 23 (88%) for the restored and unrestored groups, respectively ($p < 0.001$). Revision rates were 4 (15.4%) and 18 (69.2%), respectively ($p < 0.000$), in the restored and unrestored profiles. Univariate analysis determined that profile restoration and BMI were associated with mechanical complications and revision surgery, whilst only the profile restoration status maintained its statistical power in multivariate analysis ($p = 0.002$ and $p = 0.002$, respectively). Age was not a significant factor in univariate analysis. The relative risk for mechanical failure and revision surgery was 5.6 times (CI 1.929–16.39) and 3.08 times (CI 1.642–5.734) greater if the profile was not restored.

CONCLUSIONS

Achieving each patient's ideal Roussouly profile is associated with a reduced incidence of mechanical complications and revision rates in the older population after surgery for degenerative ASD.

NOVEL INSTRUMENTS AND METHOD OF POSTERIOR COMPRESSION IN LUMBAR FUSION SURGERY, CREATE MORE LORDOSIS THAN THE CONVENTIONAL ALTERNATIVES.

MENACHEM S, SEEX K.
Macquarie university hospital, Sydney, Australia.

INTRODUCTION

Restoring appropriate segmental lumbar lordosis is one of the goals in modern fusion surgery. However, this is frequently not achieved. A novel system "Metro" (MS) aims to increase lordosis gained in posterior compression by initial posterior translation of the superior vertebrae before compression. This occurs in normal spinal extension to unlock the facets but is prevented in the standard technique with conventional compressors. This study is a direct comparison of the two methods on a biomechanical model, cadavers and in several patients.

METHOD

One biomechanical Sawbones verified model and 8 patients (9 segments) who underwent interbody fusion plus pedicle screw fixation for degenerative conditions were included in the study. Interbody cages, decompressions and osteotomies were performed as required. Conventional compression was performed and measured followed by MS compression. Metallic markers and optical markers were used on the model, in the clinical swtting, the change in disc space angle (DSA) after the respective compressions was used as the metric for SLL gain. To determine the DSA, the angle between the lines connecting the midpoint of the pedicle screws at the two ends was measured.

Paired t-test was used to compare the change in DSA between the 2 compressions.

RESULTS

On the model, the change between conventional technique and MS was 120% more effective using the MS.

The mean age was 55 years (range, 32–80; 2 females). The operated levels were: L2/3 (n = 1), L3/4 (n = 3), L4/5 (n = 4), and L5/S1 (n = 1). The mean DSA after cage insertion and prior to compressions was 10.9° (range, -1° to 21°). The change in DSA after MS compression (mean, 7.42°; SD, 3.47°) was significantly higher ($p < 0.001$, n = 9) compared to conventional compression (mean, 1.95°; SD, 1.71°).

CONCLUSION

MS compression produced substantially greater lordosis compared to conventional compression. Although promising, further data is required to assess reproducibility, short and long-term effects.

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