



BritSpine 2025 Abstract Book

Presented Poster Abstracts



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Comparative Study of MIS TLIF Using Expandable vs Static Cages in the Surgical Treatment of Lumbar Degenerative Disc Disease (2016-2022)

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Abstract

This study compared 200 cases of Minimally Invasive Surgery Transforaminal Lumbar Interbody Fusion (MIS TLIF) performed between 2016 and 2022, analyzing the use of expandable and static cages in the surgical treatment of **lumbar degenerative disc disease**, focusing on clinical outcomes and overall cost.

Clinical Outcomes:

The study found that clinical outcomes, such as pain relief, functional improvement, and patient recovery, were **comparable** between both cage types. There was no significant improvement in patient outcomes or fusion rates with expandable cages, suggesting that they do not offer a notable clinical advantage over static cages.

Surgical Advantages:

Expandable cages provided some **surgical benefits**, including easier insertion into narrowed disc spaces and the ability to **contour** the cage to fit the available space. These features could be helpful in complex cases but did not lead to improved clinical outcomes.

Cost Analysis:

The use of expandable cages resulted in a **significantly higher cost** compared to static cages. Despite the surgical advantages, the added expense of expandable cages was not justified by any substantial clinical benefit.

In conclusion, while expandable cages offer certain conveniences for surgeons, they do not provide superior clinical outcomes and come with a higher overall cost, making static cages the more cost-effective choice for MIS TLIF in most cases.



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Orthopaedic Assessment Unit: modernisation of the CES pathway in a District General Hospital

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Abstract

Introduction

In 2021, the T&O department at a district general hospital (population 370,000) underwent reconfiguration as part of the Major Trauma Network redesign. To manage emergency suspected CES referrals an Orthopaedic Assessment Unit (OAU) was established to streamline care pathways.

Methods

The OAU scheduled emergency GP referrals, diverting attendances away from ED and preventing admission. A modernised CES pathway was implemented to facilitate timely diagnosis. Clinical assessment and management were undertaken by an APP or an orthopaedic registrar. Data was collected to evaluate the impact of the OAU in the management of CES caused by degenerative disc disease of age > 18 years (1,122 patients).

Results

The crude incidence of CES in Scotland is 2.7 per 100,000 per year (Woodfield et al, 2022) which is supported by the results of our study. 5.3% of attendances to OAU had radiological confirmation of CES and underwent decompression.

Only 3.7% of suspected CES were admitted to an Orthopaedic in-patient ward. This pathway, including the use of an electronic referral system to neurosurgery, has resulted in a mean time of 32.5 minutes for feedback (97% improvement).

Discussion

The findings indicate that the OAU provided a safe and efficient service for managing CES referrals within a trauma unit. This modernised pathway not only enhanced patient care but also optimised resource allocation, aligning with contemporary healthcare demands.

Conclusion

Implementation of the OAU has provided earlier, definitive management of CES whilst avoiding hospital admission. The APP role was instrumental in maintaining the high standards of patient care.



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Characterisation of Spinal Lesions in a Large Cohort with Neurofibromatosis Type 1

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Abstract

Introduction: Spinal lesions are a known manifestation of neurofibromatosis type 1 (NF1). The aim of this retrospective review is as to analyse the prevalence of spinal lesions in a large NF1 cohort.

Method: The data was collected from a period of 62 months from a cohort of 514 patients. Data was collected from multidisciplinary team meeting reports that included radiological reports of each patient, investigating 20 distinct variables. The prevalence of each of these lesions was calculated and any statistically significant associations were investigated using the Chi-squared test.

Results: 447 patients had classic NF1, and 67 patients had spinal NF1. Many of the patients had spinal abnormalities; 25.7% of these patients were found to have dural ectasia, while 44.9% of patients had a spinal deformity. A statistically significant association between dural ectasia and spinal neurofibromatosis was established ($p < 0.05$). An additional statically significant association was established between dural ectasia and spinal deformity ($p < 0.00001$). The patients with spinal nerve root tumours were identified, and it was found that 49.8% of patients possessed tumours.

Conclusion: The most common region affected was the cervical spine, with C2 being the most prevalent spinal level. This high prevalence may be due to genetic predisposition and repeated microtraumas leading to tumour formation. This is the largest such study in the current literature, and it underscores the importance of monitoring spinal lesions closely. Early detection is crucial to prevent permanent complications, such as spinal cord compression.



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Lost in translation? The provision of Outpatient Musculoskeletal therapy for patients with limited English language proficiency.

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Abstract

Introduction

It is an NHS priority to tackle health inequalities which impact on lifespan and years lived without disability. The 2021 census showed that the United Kingdom is becoming increasingly linguistically diverse. Certain groups, such as those with limited English proficiency (LEP), experience barriers to accessing services they need.

This work investigated the experience of MSK OP therapists treating patients with LEP.

Methods

A mixed methods study was designed following a scoping review -

Phase 1 – A questionnaire sent to 150 therapists in MSK Outpatients

Phase 2 – A focus group of 6 therapists

An audit of face-to-face interpreter bookings in 2023

Results

The audit showed there were 276 interpreter bookings involving 26 different languages. 15% of bookings were cancelled due to interpreters not being available.

Four main themes emerged from the data –

1. Interpreter related - Therapists preferred face-to-face interpreters but the majority reported frequently being unable to use them. 86% reported being unaware if interpreters had any training in medical terminology..
2. Patient interactions - Respondents reported more difficulty establishing a therapeutic relationship and clarifying "red flags".
3. Systems processes - Written and verbal communication is only available in English.
4. Clinician's experience - Increased time demands, frustration with technical issues and variability of interactions via interpreters..

Discussion

The study demonstrated several barriers in providing therapy for people with LEP including interpreter availability, problematic technological options and communication systems only being available in English.

Conclusions

Equitable provision of healthcare for people with LEP requires addressing these barriers through training and resource availability.



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An Audit of Surgical Complications in a Spinal Trauma Centre

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Abstract

Introduction:

Complications following spinal surgery can lead to patient morbidity, prolonged inpatient stay and increased cost. We undertook a review of complications within our department.

Method

We performed an audit of all spinal operations over a 12 month period in a single centre. This included elective and emergency cases.

Results:

Overall, 790 patients were included. Post-op infection occurred in 13 patients (1.6%). Significant associations included older age of patients ($P=0.01$), longer procedure time ($p=0.02$) and a particular theatre ($P=0.04$). There was no association with type of cleaning prep used (chlorhexidine alone vs dual cleaning with betadine and chlorhexidine), use of post-operative antibiotics, revision vs primary procedure or whether an implant was used. A durotomy occurred in 78 patients (10%) with a post-operative CSF leak occurring in 4 (0.5%). There was no association between type of repair used for the durotomy and risk of CSF leak. Other complications included disc recurrence (1.6%), post-op haematoma (1.6%), re-operation for residual neural compression (0.6%), cage retropulsion (0.4%), PE (0.4%) and vocal cord paralysis (0.3%). Mortality occurred in 1.3%.

Conclusion:

Overall the risk of infection in this cohort was comparable to the literature. A high risk group was identified as older patients undergoing long procedures. There was no advantage to using dual cleaning prep, and we propose chlorhexidine alone should be used in keeping with NICE guidance. One of our theatres was identified as higher risk for infections. The incidence of durotomy and subsequent CSF leak was slightly higher than reported in the literature.



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Proximal facet joint violations and breaches in 311 lumbar spine pedicle screws inserted percutaneously using the pedicle axis fluoroscopic view

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Abstract

Introduction:

Violation of non-fused proximal facet joints (PFJ) above spinal instrumentation may contribute to accelerated arthritis and adjacent-segment disease. Standard anteroposterior (AP) and lateral fluoroscopic views are inadequate for reliably detecting PFJ violations and have been linked to high rates of this complication. The present study aims to analyze and share our results as many surgeons continue to use fluoroscopy for lumbar spine instrumentation.

Materials and Methods:

We reviewed a consecutive series of cases involving percutaneous lumbar pedicle screw insertions using the PAV. Various measurements were made on postoperative CT scans (e.g., PFJ angles). The position of the pedicle screw was classified as "Good," "Acceptable," or "Poor," based on the clinical significance of the breaches.

Results:

A total of 311 screws were inserted using the PAV. PFJ violation occurred in 3.7% of cases (n=6). Higher PFJ angles were found to be associated with an increased risk, with an odds ratio of 1.21 (95% CI: 1.03–1.43). The overall incidence of poor screw placement leading to any breach (aside from PFJ violation) was 1.9%. Of these, only one screw (0.3%) was medially displaced, and no screws were inferiorly misplaced. None of the breaches resulted in new symptoms or required revision surgery.

Conclusions:

The use of the pedicle axis fluoroscopic view for percutaneous lumbar pedicle screw placement resulted in low rates both of PFJ violation and significant breaches. PFJ violation was more common with higher PFJ angles. Importantly, none of the breaches had clinical significance.



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Radiological evaluation of expandable versus non-expandable cervical corpectomy cages: A single centre retrospective cohort observational study

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Abstract

Objectives

Evaluate radiological differences between expandable corpectomy cages (EC) and non-expandable cages (NEC) in cervical spine.

Methods

Retrospective observational study at a tertiary spinal centre. Cases from December 2016 till April 2023 included and categorised in two cohorts – EC and NEC. Pre-operative, immediate post-operative and final follow-up imaging studied to assess:

1. Sagittal alignment: C2-C7 lordosis angle, focal lordosis angle and C2-C7 sagittal vertebral alignment (SVA)
2. Anterior and posterior disc heights (ADH and PDH)
3. Cage subsidence at final follow-up

Results

Twenty-five patients treated with EC (n=15, mean age 58.1 years [43-70], M:F=11:5) or NEC (n=10, mean age 59.6 years [38-84], M:F=8:2) were included with a mean follow-up of 13.8 months (5-36) for NEC vs 7 months (2-31) for EC. Main indications were degenerative (n=6 each) or tumour (n=8 EC, n=2 NEC).

NEC provided better restoration of PDH with a mean improvement of 27.4mm vs 21.7mm (p-value<0.05). Mean SVA improvement with NEC is 15.5mm v/s 7.6mm (p-value>0.05).

EC provides a mean C2-C7 lordotic angle improvement of 1.97° vs 0.03°, p value>.05 and a mean improvement of focal lordosis by 5.8° vs 1.78°, p-value>0.05. NEC has increased subsidence of >3mm (relative risk of 2.25, 95% CI [0.522, 9.697], p-value>.05).

At final follow-up all patients maintained their neurological status.

Conclusions

EC provides similar radiological results when compared to NEC with a reduced short term incidence of cage subsidence and a better restoration of cervical lordosis. Though, with maintained neurological status for both groups, the excess costs of EC are not justified.



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Evaluating The Accuracy of Automated and Semi-Automated Anonymisation Tools for Unstructured Health Records

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Abstract

Introduction

Unstructured clinical text contains a vast amount of easily accessible data that can be utilised in research. However, this is limited by the presence of protected health information (PHIs) within the text. To maintain patient privacy, PHIs must be de-identified. The use of anonymisation tools such as Microsoft Presidio and Philter has been recognised as a potential solution to the challenges of manual de-identification. The primary objective of this study is to evaluate the accuracy and feasibility of using Microsoft Presidio and Philter in de-identifying unstructured clinical text.

Methods

A sample of 200 neurosurgical documents, temporally distributed across 10 years, was extracted. The data were processed by Microsoft Presidio and Philter. Each document was manually screened for the ground truth which was used as a comparator to evaluate the accuracy of each tool. Data analysis was conducted using Python.

Results

A median of 8 PHIs were manually de-identified per document. Each tool was capable of de-identifying a median of 6 PHIs per document. With a median of 150 words per document, each tool de-identified PHIs with an accuracy of 96%. The error rate of missing PHIs per 150 words was 4% for each tool.

Conclusion

The performance of each tool supports their use in anonymising unstructured clinical text. Formatting variations between text limited the performance of both tools. To conclude, further research is required to optimise the tools' output and assess the reliability in de-identifying diverse clinical text, thus allowing the use of unstructured clinical text in medical research.



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Appropriateness of referrals to Spinal Orthopaedics from Community Spinal Interface Services: How good is our conversion to intervention rate?

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Abstract

Introduction

Our Spinal Interface Service is the 'gatekeeper' for referrals to Spinal Orthopaedics, assessing over 7.000 patients a year. A high rate of conversion to intervention for patients referred to Spinal Orthopaedics is a proxy of appropriateness of referrals and an indication of efficient utilisation of expensive secondary care resources. Our objective was to evaluate the appropriateness of referrals to Spinal Orthopaedics from the Spinal Interface Service.

Methods

Retrospective review of 452 referrals to Orthopaedics and outcome of the spinal orthopaedic consultation. Clinician's reason for referral and expectation of intervention was collected from the clinical letters.

Results

Clinicians expected intervention to be offered to 339 patients. Review of the orthopaedic letters showed 36 of those 339 improved at the time of their surgical consultation, 12 did not attend their appointment, 51 were not offered intervention. Excluding those patients who improved or did not attend, the conversion rate to intervention was 82.5% (240/291). For the remaining 113 patients, the referrer had low expectation of intervention being offered but was seeking a second opinion. Within this group, 35 patients (33%) were offered treatment.

Conclusion

Conversion rate to intervention for our referrals to Spinal Orthopaedics is high, indicating the appropriateness of the referrals and the prudent utilisation of secondary care services. Considering our current waiting times for patients to see a spinal orthopaedic surgeon average 12 months, it is important that they are receiving appropriate referrals to positively impact waiting times for patients with spinal pain.



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Actual versus predicted life expectancy (LE) according to the oncology team and the Revised Tokuhashi score (RTS) in patients with Metastatic Spinal Cord Compression (MSCC)

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Abstract

Background

MSCC occurs in 2.5-5% of patients with cancer. Its incidence in England and Wales is around 4000 annually. we predict life expectancy (LE) using the Revised Tokuhashi score (RTS) along with estimates by the oncology team. We aim to compare the actual LE with the given estimates.

Methods A retrospective study between Jan 2019 to Dec 2020 for all MSCC referrals to our tertiary spinal unit. All data was collected from electronic medical records.

Results 184/544 patients had complete medical data. The mean age was 68. 58% were males. 22.3% had prostate cancer and 19% had breast cancer. 25.5% were operated. The Actual survival percentage calculated was at follows, 0-6 m was 53 %, 6-12 m was 14% and >12 m was 33 %. On comparing actual survival against the predicted LE by oncology, overall accuracy was 42%: 27% in the 0-6 m, 42% in the 6-12 m and 68% in the more than 12 m group. Whilst the accuracy of RTS was 62%: 76% in 0-6m, 65% in 6-12 m and 38% in the more than 12 m group. The Karnofoski score was significantly associated with actual survival ($P < 0.001$), and 53% of patients operated survived >12 months whilst 65% of those not operated died <6 m.

Conclusion The RTS remains a moderately good tool to estimate the actual LE (62%). Predicted LE provided by oncology is far less accurate 42%. RTS was a good tool to identify patients with a poor prognosis, but oncologists estimates >12 m was more accurate.



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Coalition Cage Versus Traditional Cage-and-Plate Constructs in ACDF: Evaluating Biomechanical Stability, Fusion Success, and Surgical Outcomes

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Abstract

Background: Anterior cervical decompression and fusion (ACDF) is a common surgical procedure for treating cervical spine disorders, including degenerative disc disease, cervical radiculopathy, and myelopathy. Traditionally, ACDF involves a cage-and-plate construct, combining an interbody cage to restore disc height with an anterior plate to enhance stability and facilitate fusion. Recently, standalone devices like the Coalition cage have been introduced as alternatives that eliminate the need for an anterior plate, potentially simplifying the procedure and reducing complications.

Methods: A systematic review was conducted using data from PubMed, Embase, and Medline, evaluates the biomechanical stability, fusion rates, surgical outcomes, complication rates, subsidence risk, long-term efficacy, and cost-effectiveness of standalone devices compared to traditional cage-and-plate constructs in ACDF procedures.

Results: Evidence suggests that standalone devices provide notable advantages in single-level ACDF, such as reduced operative time and lower rates of dysphagia. However, concerns persist regarding their use in multilevel fusions and patients with compromised bone quality, where traditional cage-and-plate constructs demonstrate superior stability and fusion success. Additionally, long-term data on the performance of standalone devices across diverse patient populations are limited. The impact of bone quality on outcomes with standalone devices also remains underexplored.

Conclusion: While standalone devices offer significant benefits in specific scenarios, traditional cage-and-plate constructs remain the preferred option for complex or multilevel procedures. Further research, particularly long-term studies across varied clinical settings, is essential to clarify the role of standalone devices in ACDF and optimize their application.



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Beyond Short-Term Gains: A Review of Long-Term Functional and Quality of Life Outcomes in Minimally Invasive Spine Surgery

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Abstract

Background: Minimally invasive spine surgery (MISS) has gained prominence as an innovative approach in spinal care, offering advantages such as shorter recovery times, reduced postoperative pain, and fewer complications compared to traditional open techniques. Despite these benefits, the long-term impacts of MISS on functional outcomes and quality of life (QoL) remain poorly understood, particularly across diverse patient populations.

Methods: A systematic review was conducted using data from PubMed, Embase, and Medline, critically examines current literature on MISS, with a focus on gaps in understanding its long-term effects. Key factors analyzed include sustainability of benefits, QoL outcomes, and the influence of demographic, socioeconomic, and mental health variables on recovery.

Results: Studies consistently highlight the short-term benefits of MISS, but significant gaps exist in research on its long-term impact, particularly concerning patient-centered outcomes. Factors such as mental health, socioeconomic stability, and demographic diversity remain underexplored, limiting comprehensive assessment of the procedure's effectiveness over time. Emerging tools, including wearable health technologies, show promise for enhancing data collection and monitoring recovery trajectories.

Conclusion: While MISS demonstrates clear short-term advantages, addressing gaps in long-term research is crucial for optimizing its effectiveness. Future studies should incorporate longitudinal designs and advanced data tracking methods to evaluate patient-centered outcomes comprehensively. A holistic, data-driven approach that integrates mental health and socioeconomic factors will support personalized care, improve clinical decision-making, and ensure equitable and effective long-term outcomes for patients undergoing MISS.



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Optimizing Surgical Timing in Early-Onset Scoliosis: Balancing Growth Preservation and Deformity Correction

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Abstract

Background: Early-onset scoliosis (EOS) is a spinal deformity occurring before the age of 10, presenting unique challenges due to its effects on both spinal and thoracic growth. Severe progression of EOS can result in thoracic insufficiency syndrome (TIS), where respiratory function is compromised. Surgical timing is a critical factor influencing spinal deformity correction and growth potential in these patients.

Methods: A systematic review was conducted using data from PubMed, Embase, and Medline, evaluates the impact of surgical timing on growth and respiratory outcomes in EOS patients, focusing on growth-preserving techniques such as growing rods, vertical expandable prosthetic titanium ribs (VEPTR), and the Shilla growth guidance system.

Results: Evidence indicates that early intervention with growth-sparing techniques can effectively prevent curve progression and improve pulmonary function, particularly in children with TIS. However, initiating surgery too early may lead to hardware complications and frequent revisions, while delaying intervention increases the risk of severe deformity progression and long-term respiratory issues. Studies suggest that non-fusion techniques performed between ages 5 and 8 achieve an optimal balance, allowing for both deformity correction and continued growth.

Conclusion: Individualized surgical timing is essential in EOS management to optimize growth and health outcomes. Tailoring intervention to patient-specific factors such as age, curve severity, and respiratory function ensures a balanced approach that addresses both deformity correction and thoracic development. Future research should explore long-term outcomes to refine timing strategies and improve personalized care for EOS patients.



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Cost Comparison of Anterior vs Posterior Scoliosis Spinal Fusion: A Financial Analysis

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Abstract

Introduction: Spinal deformity surgery is a resource-intensive procedure, often associated with high costs. This study aims to assist surgeons in planning and executing scoliosis surgery by analyzing the cost differences between two common surgical approaches: anterior spinal fusion (ASF) and posterior spinal fusion (PSF).

Methods: The study of 72 patients who underwent scoliosis surgery at a single centre in UK between January and August 2024. Patients were divided into two groups: anterior or posterior spinal fusion. Hospital billing data and parts lists for each surgical approach were analyzed. The cost per procedure was divided by the number of levels fused to calculate the average cost per level for each group.

Results: In the anterior group (9 patients), the average cost was £2276.22 for the first level fused, then £795 for each additional level, with a mean of 3.33 levels fused. In the posterior group (63 patients), the cost was £2556.06 for the first level and £934 for each additional level, with a mean of 10.97 levels fused. There was a significant cost difference: anterior fusion was £275.84 cheaper for the first level and £139 cheaper for each additional level. Overall, ASF cost an average of £5,994.51 per case, while PSF cost £14,561.28, a difference of £8,566.77 per case.

Conclusion: Our cost analysis demonstrates that anterior spinal fusion is a more cost-effective option compared to posterior spinal fusion in scoliosis cases where anterior fusion is applicable. This study provides concrete evidence of the cost-effectiveness of ASF over PSF in scoliosis treatment.



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The Use Of Intraoperative Neurophysiological Monitoring In Endoscopic Spine Surgery. A Single Spine Center Data Review.

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Abstract

The development of neurological deficit following spinal surgery is a devastating complication. Some of these complications are known to occur without any recognizable adverse event during surgery. Multimodality intraoperative neurophysiological monitoring (IONM), including somatosensory-evoked potentials, motor-evoked potentials, and electromyography has been proven effective for preventing neurological injury during spinal surgery. Recent studies describe that signal improvement during surgery can rule out intraoperative neural injury and neurological function can be expected to improve post-operatively. In the present study the authors retrospectively reviewed patients submitted to decompressive lumbar endoscopic surgery with the use of IONM.

Sixty-six endoscopic surgical and IONM reports were reviewed. Uni-portal Transforaminal was performed in 33,3%, Uni-portal Interlaminar in 37,9% and Biportal Interlaminar in 28,8%. The most frequent surgery was UIL L5-S1 decompression. One patient had a neurological complication with need for emergent open surgical revision after UIL approach. Three patients needed revision surgery weeks after for same level disk herniation. IONM improvement were recorded in 43,9% of surgeries. Surgeries performed for acute sciatic pain had the higher rate of IONM signal improvement (54,2%), high above surgeries performed for chronic sciatic pain (40%) or neurogenic claudication (33,3%). Timing of the improvement on IONM revealed that, on average, it occurs at 60% of total surgery time.

This study reveals that improvement on IONM signals are frequent on endoscopic surgeries and it can be helpful in preventing neurological injury. These signal improvements on IONM can be another intra-operative clue for surgery completeness which can lead to reduced surgical time.



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Lumbar Degenerative Spondylolisthesis: Assessing Instability and Imaging Controversies

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Abstract

Lumbar Degenerative spondylolisthesis (LDS) is characterized by the progressive slippage of one vertebra over another, which can result in segmental instability. However, instability is not always present in LDS, making clinical decision-making, particularly regarding lumbar fusion surgery, more complex. Diagnosing lumbar instability remains challenging due to the lack of well-defined clinical and radiological criteria and the limitations of current imaging techniques

Study Design:

This literature review explores the diagnostic utility and limitations of various imaging techniques for identifying lumbar instability in the context of LDS.

Methods:

A systematic literature review, guided by the PRISMA framework, was conducted to assess the diagnostic utility of various imaging modalities for lumbar instability in patients with degenerative lumbar spine disease (LDS). The review encompassed a comprehensive evaluation of X-rays, CT scans, MRI, dynamic MRI, radioisotope bone scans (RBS), and single-photon emission computed tomography (SPECT), delving into their respective effectiveness, limitations, and areas of ongoing debate..

Results:

Multiple imaging modalities, including X-rays, CT, MRI, dynamic MRI, RSA, and SPECT, can assess lumbar instability. Flexion-extension X-rays are commonly used but have limited diagnostic accuracy due to variability and difficulty distinguishing pathological instability from normal motion. Advanced techniques like positional and axial-loaded MRI offer better sensitivity but lack widespread validation and availability.

Conclusion:

Diagnosing lumbar instability in LDS remains challenging due to inconsistent imaging protocols and definitions, despite the availability of multiple modalities. While advanced imaging techniques show promise, they require further validation. Accurate diagnosis and effective treatment planning depend on integrating clinical evaluation with imaging findings.



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Single vs Extended Dose Antibiotic Prophylaxis in uncomplicated Lumbar Degenerative Decompression Surgery

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Abstract

Introduction: Perioperative antibiotic prophylaxis in spinal surgery is standard practice for mitigating surgical site infection (SSI) and reducing its associated morbidity and mortality. Increasingly, antibiotic stewardship has evolved to reduce harm and unnecessary prescribing. The North American Spine Society (NASS) recommend a single dose at induction, but the UK lacks standardised guidelines resulting in practice variation. This study compares SSI rates in patients receiving a single dose versus extended postoperative antibiotics in our unit.

Method: Retrospective review of all patients undergoing lumbar decompression and/or discectomy between 01/11/2022 and 30/06/2024. Exclusion criteria included instrumentation, non-degenerative pathology and intraoperative complication. Baseline demographics, SSI rates and length of stay (LOS) were compared using Student's T and Chi-squared tests respectively.

Results: 71 patients were assessed, 24 received one preoperative dose and 47 received extended prophylaxis. There was no significant difference in SSI rates ($X^2=0.15$, $p=0.70$). The single-dose group had one superficial infection, and the extended group had three infections, with one deep infection necessitating washout. There was no significant difference in LOS with the single-dose group staying for a shorter post-operative period (1.21 days vs. 3.00 days, $p=0.13$). The extended group was significantly older (51 vs. 42 years, $p=0.017$) but had no significant difference in rates of cardiovascular disease nor diabetes mellitus.

Conclusion: A single-dose antibiotic regimen is non-inferior to extended prophylaxis in preventing SSI for uncomplicated lumbar spine surgery. Supporting GIRFT principles, the clinical effectiveness of induction-only antibiotics needs to be re-evaluated nationally for this common spinal procedure.



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Title: An Evaluation of the Virtual Multi Disciplinary Team (VMDT) meeting to Improve the Management of Spinal Patients across the whole system.

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Abstract

Introduction : GIRFT further faster describes VMDT as a method to reduce the waiting list for tertiary spinal services. The model was adapted for use at one tertiary spinal centre in the northwest region (cohort 1), covering a population of 3.1 million from one integrated care system (ICS), along with referrals from outside the ICS. Thirteen musculoskeletal (MSK) interface services cover the ICS with an 11% population prevalence of back pain (17% severe).

Method: The VMDT was established following GIRFT recommendations, with regional terms of reference to improve equity for patients across the wider network. The VMDT includes spinal surgeons, consultant spinal physiotherapist and advanced practitioners from the MSK services.

Cases are presented, discussed and imaging reviewed, outcome documented.

Once established all MSK services were included to ensure coverage across the ICS. This paper retrospectively reviews the cases discussed.

Results: To date 620 cases have been reviewed with various spinal pathologies, 14% had undergone previous spinal surgery. Objective neurological abnormalities were present in half of the cases. Imaging findings ranged from serious pathology such as AV fistula and spinal infection, to non-compressive pathologies including spondylosis and degenerative discs. Only 41% of cases went on to have a spinal surgical appointment, 28% of these deemed urgent. Prior to the VMDT all of these patients were referred to the tertiary spinal service.

Conclusion: The VMDT ensures timely review of patients' cases, allowing faster access to the most appropriate pathway of care. This can also help reduce the strain on tertiary spinal services.



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Use of Enabling technologies in spinal surgery: A learning curve analysis of robotic surgery comparing to conventional free hand technique in Paediatric scoliosis

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Abstract

Introduction/Background:

Robotic-assisted spinal deformity correction has shown some promise in scoliosis surgery; results improves with learning curve. There is paucity of literature on the learning curve and its comprehensive benefits in comparison with the conventional techniques, especially in paediatric deformity. This study aims to address these critical knowledge gaps by looking at our own learning curve.

METHODS: A retrospective analysis of patients undergoing spinal deformity correction using robotic-assisted (RA) technique was done comparing our early vs late cases and finally comparing it with the conventional free-hand (CFH) techniques within the Oxford University Hospitals between 1st January, 2023 and 15th Aug., 2024. Data was collected from hospital records and PACS imaging system. Excel analysis was used for statistical analysis.

RESULTS: 37 patients operated using the RA technique were included. 21 had AIS and were subdivided into three groups; early seven, mid-seven and late seven. They were compared with a randomly selected group of 21 AIS patients undergoing scoliosis surgery using CFH. Mean operative time and estimated blood loss decreased over time in the RA group (~415.6min to 338.1 min, and 905.2ml to 626.1 ml) and were comparable to the CFH group (324.4 min and 568.7 ml) in the late group. Intra-operative radiation exposure remained higher than CFH group.(494.6 to 270.8 cGycm² vs 80.99 cGycm²). There was no significant difference in complication rates and length of stay.

CONCLUSIONS:

Our study showed a learning curve of around 15 AIS patients in RA technique for scoliosis surgery albeit with increased radiation exposure.



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Understanding potential recruitment barriers in the FORENSIC Trial in a Community MSK setting

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Abstract

Introduction

The FORENSIC trial aims to test spinal fusion surgery as a treatment option for chronic low back pain (LBP) when conservative options are exhausted.

Recruitment may be challenging due to high variation in availability of conservative care, patient and staffing preferences. We aimed to review whether the National Low Back Pain and Radicular Pain Pathway (NLBPRPP) is working, gain staff perspectives on the feasibility of Best Conservative Care (BCC) pathways and understand whether staff are in equipoise on the trial.

Method

We conducted a mixed methods review using quantitative and qualitative methods on the feasibility of recruitment for the FORENSIC trial in Southampton. We evaluated the clinical pathway of patients with LBP attending specialist community spinal triage clinics. Received treatments and eligibility for the FORENSIC trial were recorded. A focus group with 12 specialist spinal practitioners to understand their perspectives on our findings and the feasibility of the trial itself. This was transcribed with NVivo software for key themes.

Results

We reviewed 184 patient records, producing 119 LBP patients with 70 (58.8%) of those with LBP having received core therapies. Three patients were eligible for the FORENSIC trial.

Key themes included lack of standardisation regarding the NLBPP, lack of patient engagement and the difficulties of providing BCC within the FORENSIC trial. The staff were generally in equipoise.

Conclusion

Recruitment is likely to require multiple strategies and engagement. Conservative care pathways may need optimising to ensure BCC is delivered. Generally, the trial is feasible.



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Variation and inconsistency in coding of cervical decompressions in the English Hospital Episodes Statistics dataset

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Abstract

Background:

Cervical decompression surgery may be undertaken for axial neck pain, radicular arm pain or cervical myelopathy. Previous studies have identified clinical coding inconsistencies within the Hospital Episode Statistics (HES) database for England. We aimed to explore the accuracy of clinical coding for cervical decompression procedures.

Methods:

This was a retrospective analysis. We analysed the HES dataset from April 2017 to March 2024, extracting anonymised data on all cervical decompression conducted in this period. Data were extracted for age, sex, frailty, deprivation, surgical procedure and diagnostic details. The primary outcome of interest was use of neither a myelopathy nor radiculopathy or other appropriate clinical code in the diagnostic record.

Results:

Data were available for 44,623 patients (54% males, n=24,030) over the seven-year period. The mean age was 57.7 years (SD 36.6 years). Most included patients had a diagnosis of myelopathy (n=20,540; 46%), however almost a quarter of all patients (n=10,038; 22%) were assigned ICD-10 codes that were neither myelopathy, radiculopathy or another appropriate code. Age at all levels, undergoing elective surgery (OR 0.3; 95% CI 0.3 to 0.3), and those with less deprivation (quintile 3)(OR 0.9, 95% CI 0.8 to 1.0) reduced the odds of a non-appropriate diagnostic clinical code associated with their episode.

Conclusions:

No appropriate diagnostic information was recorded for almost a quarter of all cervical decompression surgery in the HES patient record. HES data inform healthcare planning and resource allocation in England. Greater clinical coding accuracy will support informed decision making.



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Biomechanics of Spondylolysis: Optimising Conservative Rehabilitation via Computational Analysis

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Abstract

Introduction: Isthmic spondylolysis, a fracture of the pars interarticularis in the lumbar vertebrae, affects 47% of adolescent athletes. Early intervention and conservative treatment are favourable approaches to surgical techniques in preserving patient's quality of life. However, currently there is uncertainty regarding the timing of sports resumption, rehabilitation duration, and recommended rest periods, highlighting the need for clearer treatment guidelines. To address these uncertainties, a finite element model has been developed to biomechanically analyse the L5 vertebra for the phases of spondylolysis fracture recovery, aiming to improve rehabilitation strategies and enhance clinical outcomes.

Methods: Patient-specific finite element models of the L4-S1 spine were created for intact and spondylolytic phases, simulating fracture healing phases from granulation to mature bone. The models included detailed intervertebral disc geometries, facet joints, and ligaments, analysed under activity-specific loading combining compressive preloads and six degrees of freedom.

Results: During early healing, stress peaked at 26.94, 28.88, and 23.8 MPa under flexion, ipsilateral lateral bending, and contralateral axial rotation, respectively, localised in the posterior lamina, right pedicle, and contralateral pars cortical bone. As healing progressed, stress distribution became more balanced, with increased stress in the lysis region and decreased maximum cortical stress across the vertebra.

Conclusion: This study highlights the importance of fracture specific rehabilitation in spondylolysis, particularly during the granulation phase. These findings emphasise the need for clearer, evidence-based rehabilitation guidelines and further research to refine treatment strategies and enhance clinical outcomes for young athletes.



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Biomechanical analysis of causation, propagation, and mechanisms underlying Spondylolysis: A systematic review

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Abstract

Introduction: Isthmic spondylolysis, affects 47% of adolescent athletes and are believed to result from fatigue fractures in anatomically weak structures such as the pars interarticularis. This systematic review provided an evaluation of the current understanding of biomechanics of spondylolysis through both experimental and computational model analysis. By evaluating existing spinal model complexities and limitations, we aim to provide direction for future biomechanical research, to inform tailored patient care of spondylolysis.

Methods: Following PRISMA guidelines, databases including ScienceDirect, PubMed, and Scopus were searched. Inclusion criteria focused on studies analysing spondylolysis biomechanics pre- and post-fracture through experimental and computational methods in human and animal models. Surgical biomechanics studies were excluded.

Results: Twenty studies were identified, emphasising range of motion, shear force, and stress analysis as key biomechanical themes. Experimental models assessed loading conditions, including compression and the six degrees of spinal motion, through isolated mechanical tests and kinematic studies. Computational models provided detailed insights into stress responses and fracture initiation. However, simplified fracture geometry, limited consideration of fracture progression, and minimal analysis of factors such as age, gender, or spinal conditions reduced the applicability of findings. Quality and bias assessments ranged from 75–100% for experimental models and 48.7–89.2% for computational studies.

Conclusion: This review reveals critical gaps in biomechanical research on spondylolysis, particularly in modelling fracture progression and population-specific factors. Combining experimental and computational approaches and advancing model complexity could enhance understanding and improve patient-specific care.



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Incidental durotomies: Patch? Stitch? Clip? or Seal?

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Abstract

Introduction

Incidental durotomies (ID) occur in 1%-17% of lumbar surgeries. Inadequate closure of the tear can cause CSF leakage leading to complications. Despite its prevalence, no national guidelines exist for managing ID, and outcomes vary based on repair methods.

Method

Retrospective study analysed data from 2103 lumbar spine surgeries conducted at a tertiary Spinal Centre between January(2013) and January(2023).

Results

139 ID cases were identified, representing 6.6% of total lumbar surgeries. The mean patient age was 59 ± 15.4 years. Revision surgeries (n=31) had a higher incidence and complication rate compared to primary surgeries (n=108). Secondary lumbar decompression procedures had highest ID incidence at 52%

Complications post repair occurred in 29 patients, headaches were most common (n=12), followed by hematoma (n=7). Three patients required additional surgery due to a CSF leak, and four developed a pseudomeningocele. Primary repairs had a complication rate of 18%, while secondary repairs had a 32% complication rate.

Among dural repair techniques, primary closure with sealant had the lowest complication rate (7%). Primary closure alone and sealant + patch graft had the highest complication rates (29%). The 70–79 age group contributed the most to the ID incidence, while the 20–29 age group had the highest complication rate. Sealant alone had the lowest average bed rest days post-surgery (=1.29d), while primary closure + sealant + patch/graft had the highest (=3d).

Conclusions

The ID incidence was 6.6%, revision surgeries were associated with higher ID rates. Primary closure with sealant emerged as the most successful repair technique.



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A Comparison of Lumbar Foraminal Stenosis Measurements on MRI versus CT Imaging

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Abstract

Introduction

Lumbar foraminal stenosis (LFS) is a significant cause for chronic back pain, radiculopathy, and functional impairment. Accurate identification of symptomatic pathological levels through imaging is fundamental for guiding targeted treatment. MRI remains the primary imaging modality for LFS whilst the diagnostic utility of CT continues to be controversial. This study assessed the additional diagnostic utility of CT in LFS.

Methods

Retrospective analysis of 17 patients with LFS, who underwent a paramedian decompression and far lateral foraminotomy via the Wiltse approach was conducted. Measurements of the height and area of the affected foramen were compared to a consecutive unaffected adjacent level, between imaging modalities in each patient. Percentage reduction in foraminal height and area were calculated

Results

Average height and area loss at the affected level on CT were 40.9% and 42.9% respectively, compared to the adjacent unaffected level. Average height and area loss at the same affected level on MRI were 37.5% and 30.7% respectively, compared to the adjacent unaffected level. Variations in the measured foraminal height and area between the imaging modalities were significant, with MRI imaging tending to under evaluate the magnitude of foraminal stenosis when compared to CT. Statistical analysis using a paired t-test yielded significant results ($p < 0.05$).

Conclusion

Comparison of LFS between CT and MRI imaging identifies a tendency to relatively under evaluate foraminal stenosis on MRI. This study supports the consideration of the inclusion of CT as adjuvant imaging in the pre-operative assessment of LFS.



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Driving advice for patients with spinal pathologies: Is it really needed?

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Abstract

Introduction:

Driving is a complex, rapidly repeating cycle involving various mental and physical faculties. There is a major lack of consensus regarding driving related advice being provided to patients with spinal pathologies across the UK.

Methods:

We reviewed driving related advice being provided to patients via the electronic referral system and electronic records of patients admitted to Salford Royal NHS foundation across a period of 17 days.

The first 209 of 1000 referrals were included in a chronological manner after filtering them through exclusion criteria. We also included 118 patients discharged from an inpatient setting during the same time period.

Results:

Spinal fractures and low back pain or sciatica formed 59% of the spinal pathologies. Neurosurgical pathologies were more evenly spread with the majority split across intracranial tumours and a variety of intracranial bleeding.

58% of neurosurgery inpatients received some form of driving related advice upon discharge as compared to 22% of spinal surgery inpatients. Only 2% of referrals prompted the referrer to warn patients regarding DVLA guidelines for cranial neurosurgery referrals as compared to 0% of spinal surgery referrals as no such guidelines exist.

Discussion:

Testing patients' abilities prior to return to driving comes with increased costs, staff recruitment and appointment wait lists. Implementing any such system also negatively affects patients' daily lives, sources of income, employment and the economy in the broader sense. Further studies as required to investigate need for informal advice or DVLA regulations for the same given the highly litigious environment of medical practice today.



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Progressive Curve Straightening And Overcorrection Occur In Skeletally Immature Patients After Anterior Instrumented Fusion For Thoracic Scoliosis - Is This 'The Ultimate Tether'?

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Abstract

Introduction

Progressive, continued curve corrections have been observed after thoracoscopic instrumented fusions for adolescent idiopathic scoliosis (AIS), contrary to earlier beliefs of immediate growth cessation post surgery. We aim to investigate its incidence, the influence of skeletal immaturity, and other factors.

Method

We retrospectively reviewed AIS Lenke 1 thoracoscopic single-rod anterior fusions performed between 2000-2013 in females aged 11-20 years with minimum 5-years follow-up. Patients with screw pullouts were excluded. Risser 0-3 patients (Group1) at time of surgery were compared to Risser 4-5 patients (Group2) for curve and rod angle changes over time, complications and re-operations.

Results

Group1 (n=19) and Group2 (n=20) had similar preoperative coronal and sagittal radiological parameters. Preoperative main thoracic curves were $48.6 \pm 13.2^\circ$ (Group1), and $45.3 \pm 7.9^\circ$ (Group2)($p=0.338$). Instrumented main thoracic curves post correction were $10.7 \pm 4.5^\circ$ (Group1), and $10.2 \pm 5.4^\circ$ (Group2)($p=0.745$).

19 (15 from Group1, 4 from Group2) of the 39 patients had rod straightening ($>5^\circ$)($p<0.001$) over the mean follow-up of 96.0 months.

At last follow-up, Group1 showed $6.9 \pm 2.7^\circ$ mean rod straightening compared to $4.0 \pm 2.1^\circ$ in Group2 ($p<0.001$), and $5.3 \pm 2.2^\circ$ Cobbs angle improvement versus $3.0 \pm 2.6^\circ$ in Group2 ($p=0.006$). Instrumented curve straightening continued post-operatively up to 5 years in Group1, and 1 year in Group2. 7 patients (6 from Group1, 1 from Group2) had mild overcorrection.

Complications (adding-on, correction loss, implant breakage) and re-operation rates were similar.

Conclusion

Post-operative curve straightening and mild overcorrections can occur in skeletally immature patients in AIS anterior single-rod fusions without increased adverse outcomes.



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Cervical Fixation After Posterior Decompression- A 14 Year Retrospective Observational Study

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Abstract

Introduction

Posterior cervical decompression is most commonly performed for degenerative cervical myelopathy (DCM). In DCM patients commonly present with progressive neurological deficits, such as clumsiness and reduced dexterity, gait disturbance, falls and urinary incontinence. Other indications for posterior cervical decompression include trauma, tumours of the spine and infection. In the UK, the two main posterior options are laminectomy alone and laminectomy and instrumented fusion. Currently surgeons are divided as to whether decompression alone or decompression plus instrumented fusion is best practice.

In this study, we look at our neurosurgical centre's 14-year management and outcome of cervical decompression. Our primary aim was to investigate the percentage of patients that underwent a primary cervical decompression that then went on to have a cervical fixation. Our secondary aim was to investigate the preferred practice of surgeons undertaking cervical decompression.

Method

A retrospective review was undertaken of all patients that underwent a cervical procedure between January 2007- October 2021

Results

92 patients underwent a posterior cervical decompression between 2007 and 2021, excluding trauma. 27 patients underwent a laminectomy and fixation and 65 patients underwent a laminectomy alone.

The most common indication for cervical laminectomy with or without fixation was DCM. Only one patient in the laminectomy alone group went on to have a fixation.

Conclusion

DCM is the most common indication for posterior cervical decompression. Posterior cervical decompression alone is a safe option for DCM. This is true for single or multilevel decompression too.



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Delay to discharge after elective spinal surgery. Can we identify, modify and optimise our post-operative pathways?

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Abstract

Introduction:

The Model Health System (MHS) benchmarks individual surgeons and UK spinal units for length of stay (LOS) after routine elective spinal operations. Identifying and modifying redundant post-operative steps in standardised pathways can optimise discharge without detrimentally affecting clinical outcome. MHS benchmarks LOS for ACDF and lumbar decompression at 1-day and lumbar fusion at 2-days. This study assessed causative factors delaying discharge for spinal procedures in our unit compared to the MHS benchmarks.

Methods:

All patients admitted for an elective spinal procedure between July-September 2024 were included. Baseline demographics, ASA, admitting consultant, day and time of surgery, time to clinical and therapy review, LOS, discharge date and reason for discharge delay were recorded. Discharge delay was defined as ≥ 1 day beyond the MHS benchmark.

Results:

213 consecutive patients (139F:74M) with a mean age of 62.6(20-92) years were analysed, including 64 open procedures (10 ACDFs, 32 decompressions and 19 fusions) and 149 injections. Mean time post operatively to 'day 1' review was 21 hours for both clinical and therapy teams. 33 (15%) patients experienced a discharge delay compared to the MHS benchmarks. Most were multifactorial, with discharge delays due to antibiotics (4), imaging (8), medical review (14), therapy input (18), nursing (7) and patient factors (16). No correlation was identified between day of admission, time of surgery and admitting consultant.

Conclusion:

Delay to discharge remains commonplace and multifactorial. Extended antibiotic prophylaxis for uncomplicated lumbar decompression surgery, delay to post-operative imaging and delay in clinical/therapy reviews are all causative and modifiable.



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Antero-posterior radiograph view in isolated atlanto-axial cervical spine Fractures: A Redundant Step in Follow-Up Imaging?

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Abstract

Introduction

Erect cervical spine radiographs are commonly performed for the assessment of conservatively managed atlanto-axial (AA) (C1/2) spine fractures. Lateral and open-mouth views provide the most clinically useful information in the ongoing assessment and conservative management of these injuries. This study evaluates the diagnostic utility of the follow-up antero-posterior (AP) cervical radiographs in isolated C1/2 fractures.

Methods:

A retrospective review of 59 cervical radiographs was conducted in patients with an isolated C1/2 fracture. Data collected included, clinical rationale for imaging, imaging views requested and actual images completed. Five fellowship trained spinal surgical consultants assessed a randomised sample of 10 AP radiographs to qualitatively assess the diagnostic utility of the AP view in isolated AA C1/2 fractures.

Results:

The clinical rationale for open-mouth view was correctly requested in 33(56%) of cases. AP and open-mouth cervical radiographs were performed in 46(78%) and 43(73%) of cases respectively, all cases had a lateral radiograph. AP views were performed in 36(61%) of cases without a documented request and in 25(42%) of cases where the request did not specify an AP view. Open-mouth views were omitted in 9(15%) cases when specifically requested. All spine consultants concluded that excluding the AP view would not compromise the diagnostic utility of the follow-up radiographs.

Conclusion:

This study confirmed the requirement for the standardisation of follow-up imaging in isolated C1/2 fractures. Lateral and open-mouth views for C1/C2 fractures, with the exclusion of the AP view, may be clinically adequate for follow-up of these injuries.



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Measuring intervertebral motion using real-time MRI in a standard 3T horizontal bore scanner: a proof-of-concept study

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Abstract

Introduction

Magnetic resonance Imaging (MRI) provides excellent static detail of bone and soft tissue anatomy. Technological advances mean that MRI is now capable of acquiring fast speed images allowing dynamic movement to be captured (kinetic MRI). This study will investigate whether this can be applied to lumbar spine motion, which can already be achieved by other methods such as quantitative fluoroscopy, but MRI does not use ionising radiation.

Method

Ten healthy participants (five male & five female, 18-51 years, BMI < 30) will be imaged using a 60cm bore Siemens Magnetom Prisma 3T scanner whilst flexing and extending their lumbar spine. We aim to assess how much movement can be achieved in the confined space of the scanner and whether good quality images can be obtained that are suitable for the application of motion tracking algorithms. As this could be an awkward or uncomfortable process, we will also evaluate participants' experience.

Results

To date (11.12.24) three out of 10 participants have been imaged in both active and passive motion, with promising results from HASTE sequences. Recruitment will end 31st Jan. The next step will be the application of image tracking algorithms and the determination of reliability. These results will be presented for the first time the BritSpine conference

Conclusion

Motion sequences of the lumbar spine can be captured using MRI. These could provide valuable information for assessment of spinal movement, indicating possible causes of damage and/or pain. This proof-of-concept study may be the foundation for further studies in a clinical population.



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“Cauda Equina Syndrome – Commonest Diagnosis for Referral to a Tertiary Spinal Centre”

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Abstract

Introduction

Cauda equina syndrome (CES) is a rare but critical surgical emergency, with a global incidence of 1–3 cases per 100,000 annually. Despite its rarity, CES has paradoxically emerged as one of the most common referral diagnoses to tertiary spinal centres. This discrepancy between referral rates and the actual prevalence of CES raises concerns about potential over-referral and inefficiencies in clinical pathways.

This study aimed to investigate whether CES referrals were disproportionate to confirmed diagnoses and to identify areas for improvement in clinical practice to reduce resource strain and ensure timely, effective care for patients with true CES.

Methods

A retrospective review was conducted on all referrals to a major UK tertiary spinal centre over 15 weeks. Data was collected from an electronic referral system. Cases reported as potential CES were extracted from the total referrals and reviewed to assess the proportion of confirmed CES diagnoses.

Results

During the study period, 353 referrals were received from six hospitals. 49% were female, with a mean age of 38 years. Suspected CES accounted for 102 referrals (29%), yet only 48% had undergone MRI prior to referral. Confirmed CES was identified in just 15 cases (4.2% of total referrals; 15% of CES referrals). Common alternative spinal diagnoses included lumbar spinal stenosis, lumbar disc prolapse, and degenerative back pain.

Conclusion

Only 15% of CES referrals were confirmed, highlighting unnecessary strain on tertiary centres. Implementing guideline-compliant practices, including pre-referral MRIs, can reduce inappropriate referrals, streamline resource use, and prioritize care for true CES patients.



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Cost-effectiveness of Lumbar Fusion Surgery Versus Non-surgical Management for Non-Specific Chronic Low Back Pain: A Systematic Review

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Abstract

Background: Chronic low back pain (LBP) is a leading global cause of disability, significantly impacting healthcare systems and economies. Lumbar fusion surgery is often recommended for severe cases when conservative treatments fail, but its cost-effectiveness compared to non-surgical management remains contentious.

Methods: A systematic review was performed using PubMed, Embase, and Medline to identify randomized controlled trials (RCTs) evaluating the cost-effectiveness of lumbar fusion surgery versus non-surgical management for non-specific chronic LBP. Outcomes assessed included direct medical costs and patient-centred measures, such as quality-adjusted life years (QALYs) and improvements in disability.

Results: Evidence from available studies is inconclusive regarding the cost-effectiveness of lumbar fusion surgery for non-specific chronic LBP. Non-surgical approaches, including structured rehabilitation and conservative care, have demonstrated similar clinical outcomes to surgical interventions at potentially lower costs. However, findings are inconsistent due to variations in study design, patient populations, and assessment methods. The ongoing FORENSIC trial in the UK is designed to address these gaps, providing critical data on both the economic and clinical outcomes of surgical and non-surgical management for non-specific chronic LBP.

Conclusion: The current evidence does not support a definitive conclusion regarding the cost-effectiveness of lumbar fusion surgery for non-specific chronic LBP. Non-surgical options appear promising in many scenarios, but robust comparative evidence is lacking.

Keywords:

Lumbar fusion, cost effectiveness, low back pain, quality of life, quality adjusted life years



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Hirayama Disease and Its Management: Experience of a Tertiary Care Center in Eastern India

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Abstract

Introduction

Hirayama disease (HD) is a unique, benign, and self-limiting cause of compressive myelopathy. Treatment of HD is controversial. Traditionally conservative management is advocated, while recently, surgical management has been preferred in refractory cases. We present our experience in the management of HD using different modalities

Method

Data of patients with HD from 2016 to 2022 were collected by observation of multiple clinical and radiological (dynamic magnetic resonance imaging [MRI]) parameters. A total of 17 patients were identified, out of which 14 were managed conservatively and three surgically. The patient outcomes were analyzed at the final follow-up.

Functional assessment was carried out using the Jebsen–Taylor Hand Function test (JTHFT)

Results

All patients were males with a mean age of 25 years. Seven had bilateral and ten had unilateral upper limb symptoms. The most common clinical findings were weakness and wasting of distal hand muscles (100%) followed by forearm weakness (59%). MRI findings observed were abnormal cervical curvature followed by enhancement in the epidural component (71%). At follow-up, 10 out of 14 patients given conservative management had successful treatment outcomes (5 improved; 5 plateaued). In four patients with failed conservative treatment, the JTHFT score worsened. All three who underwent surgery had improved outcomes

Conclusion

HD is a rare condition warranting a high index of suspicion for diagnosis, especially in patients of atypical age groups. Reasonable outcomes are seen with conservative management in mild cases with gradual progression. Surgery is useful in patients with severe weakness and rapid deterioration of symptoms



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Facet Joint Septic Arthritis - Features, Management, and Outcomes: A Systematic Review of 199 cases.

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Abstract

Introduction:

Facet joint septic arthritis (FJSA) is an infection of the facet joints, a pair of intervertebral synovial joints located at the posterolateral aspect of the spine - with the exception of the high cervical vertebrae. The condition is rare, with a low occurrence rate of around 1.1%, and is often accompanied by the formation of epidural and paraspinal abscesses (1). The aim of this study is to systematically review the literature and characterise the prevalent features of FJSA and review how the condition is managed.

Method:

A search of the PubMed database and Google Scholar was conducted in accordance with PRISMA guidelines (2). The presentations, comorbidities, laboratory data, imaging used, treatment, and the overall outcome of the patients were recorded. A total of 89 studies were reviewed, with 199 patients identified.

Findings:

The mean age was 57.3 years. Men were most commonly affected, with the lumbar spine being the most affected site. Presenting symptoms were most commonly reported as back/neck pain (91.1%), fever (75.5%), and radicular pain (31.8%). Staphylococcus aureus was the most commonly identified organism. Diabetes mellitus was the most common comorbidity. The mean antibiotic therapy duration was 58.8 days with surgery used in 27% of the cases. A total of 37 cases reported lasting clinical sequelae, with an estimated mortality of 4.5%.

Conclusion:

This paper finds significant gaps in research regarding the long-term outcome following FJSA, and further research is necessary to establish a true one-year mortality.



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Patient outcomes and Survivorship after surgical treatment of metastatic spinal disease including cord compression presenting with instability or neurological deficit at regional centre.

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Abstract

Background: Metastatic spinal compression is a significant disease process that can be life threatening. While survival after surgery is dependent on type of cancer and extent of metastases¹ There is no consensus on life expectancy after surgery. Surgery still remains crucial for symptom control and improved quality of life².

Objective: Review patient reported outcome measures (EQ5D/VAS) and survivorship after surgery for metastatic spinal disease including cord compression.

Study Design: Retrospective case analysis of prospective data collected for 49 patients treated surgically for metastatic spinal disease including cord compression at a UK regional centre by a single surgeon between June 2018-June 2024.

Methods: Analysis of online clinical case notes, PACS imaging, and the British Spine Registry. All patients underwent surgery. Primary outcome: survival duration post-surgery; secondary outcome: quality of life (EQ5D/VAS). Data on surgical type, cancer demographics, and complications were recorded.

Results: Our study showed mean survival after surgery of 2.6y. Patients had a SINS score range of 8-17.

33 out of the 49 patients completed EQ5D/VAS questionnaire.

Average pre- and post-op index scores were 0.13 and 0.52 respectively.

Average pre- and post-op VAS scores were 45.2 and 67.2 respectively.

Conclusions: Improved EQ5D/VAS scores and a mean survival of 2.6 years highlight ongoing better care standards and the role of surgery as an adjunct in enhancing quality of life for these patients.



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Do 3D Printed Patient-Specific Drill Guides Result in Reduced Radiation Exposure to Patients Undergoing Deformity Correction Surgery Compared to Intra-operative Navigation?

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Abstract

Introduction:

Intra-operative navigation enhances pedicle screw accuracy in spinal deformity surgeries, thereby improving patient safety. Navigation relies on either pre-operative or intra-operative scans, which can contribute to significant radiation exposure. This exposure has been linked to long-term health risks, particularly cancer. The use of 3D-printed, patient-specific drill guides presents a promising alternative, reducing radiation while maintaining surgical precision and operational efficiency.

Methods:

We conducted a retrospective observational study of surgically treated spinal deformity patients between January 2023 and December 2024, identifying cases where patient-specific drill guides were used in our institute. We analysed the effective radiation dose and assessed screw placement accuracy.

Results:

A total of 18 patients were identified, with an average age of 16 years. In these cases, 367 pedicle screws were inserted using 3D-printed guides. No intra-operative complications related to screw placement occurred. The mean effective radiation dose was 5.02 mSv, which is notably lower than the average radiation exposure associated with intra-operative CT-guided navigation systems reported in the literature (8.18 mSv).

Conclusion:

3D-printed drill guides use low-dose CT protocols. The use of patient-specific 3D-printed drill guides for pedicle screw insertion in spinal deformity surgery appears to be a safe and effective method, with reduced radiation exposure compared to intra-operative navigation systems. This approach eliminates the need for intra-operative spins and additional navigation-related instrumentation, potentially reducing surgical time while maintaining screw placement accuracy. It offers a promising alternative for minimizing radiation-related risks in spinal surgery.



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The incidence and prevalence of degenerative cervical myelopathy in primary care records in England

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Abstract

Degenerative cervical myelopathy (DCM) is the leading cause of atraumatic spinal cord dysfunction. There is little data on the incidence and prevalence in primary care. In this study we aimed to calculate the incidence and prevalence in Clinical Practice Research Datalink (CPRD) data as a marker of UK primary care. Studies using hospital data in England have estimated peak incidence to be 0.3 per 1000 person-years.

Methods:

The UK CPRD Aurum dataset consists of data for nearly 16 million registered patients. The incidence and prevalence of DCM codes over a 10 year period (2013-2023) were estimated and compared across year of diagnosis and gender. We used STATA v 18.0 for all analyses.

Results:

A total of 9850 DCM cases were identified (average age 61.8 years; male gender (n=5384/9850, 55%). The total person-years for the sample was 292109.65, the mean incidence rate was 4.6 (95% CI 4.4, 4.9) per 1000 person-years. The incidence rate was higher in men [rate 5.3 (95% CI 4.9, 5.7)], than for women [rate 3.9 (95% CI 3.5, 4.2)] per 1000 person-years. Incidence rate per 1000 person years fluctuated across the ten year period with a maximum incidence rate of 6.8 (95% CI 5.6, 7.8) in 2013, and a minimum incidence rate of 2.2 (95%CI 1.6, 2.9) in 2022. Prevalence rates will be presented.

Conclusions:

This is the first study to estimate the incidence of DCM, which appears to be greater than previously estimated in England. Further understanding of contributing reasons for variations in estimates is needed.



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Management of Acute Thoracic Disc Herniation and Their Outcomes: A Single Tertiary-Centre Experience using the Posterior Approach

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Abstract

Introduction

Surgical management of acute thoracic disc herniations (ATDH) remains a subject of ongoing debate. The optimal surgical approach, timing of intervention, and use of adjunctive techniques are yet to be standardised. The choice of surgical strategy depends on herniation characteristics and surgeon expertise. This study evaluates management strategies and focuses on posterior decompressive techniques, and their outcomes, for ATDH cases treated at our institution.

Methods

A five-year retrospective review (2019–2024) of ATDH cases was performed. ATDH was defined as thoracic disc herniation presenting with rapid-onset or progressive neurological symptoms. Clinical, radiological, and intraoperative variables were analysed to evaluate management and outcomes.

Results

Thirteen patients (mean age 60; 6 females, 7 males) underwent surgical decompression for ATDH between 2019 and 2024. Herniations were located between T7 and L1; 46% were calcified, 54% were soft, and 54% were associated with spondylosis causing stenosis. One herniation was intradural.

All patients underwent posterior wide decompression, with or without fusion, using costotransversectomy or pediculectomy. Four patients required a planned, second-stage, anterolateral approach for calcified disc removal. There were no perioperative complications. Postoperative MRI confirmed complete cord decompression in 9 patients and improvement in 4. All patients showed neurological recovery, including improved Nurick grades.

Conclusion

This study highlights the effectiveness of posterior decompression for ATDH in the acute setting. Posterior decompression is effective as a standalone procedure for soft herniations or as part of a staged approach for calcified discs, achieving favourable neurological outcomes.



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Biomechanics of Facet Joints: Prediction of Facet Joint Properties through Computational Modelling of Specimen-Specific Human Lumbar Segments

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Abstract

Introduction: While computer modelling of spinal segments has focused on biomechanics of intervertebral discs, studies focusing on facet joint (FJ) biomechanics are limited and lack rigorous validation with experiments. This work aimed to develop a FJ model with direct comparison to experiments from the same functional spine units (FSUs).

Methods: Specimen-specific computational models (N=7) of cadaveric human lumbar FSUs were developed from high-resolution CT images (82 μm) (ethics: Yorkshire and Humber REC15/YH/0096). The FSUs underwent a mock lateral fusion with Polymethylmethacrylate cement. FJ contact was modelled as soft contact defined by facet clearance, contact pressure at zero clearance and a friction coefficient. The computational models replicated experimental conditions of the same FSUs with a posteriorly offset compressive load. The FJ contact parameters were calibrated to replicate applied experimental loads. The calibrated facet clearance was compared to initial compound thickness of the cartilage and FJ space, computed from magnetic resonance images (MRI) of the same FSUs.

Results: After calibration to a load error of 10%, the computational facet clearance (1.15 ± 0.10 mm), was lower than the compound thickness for the right (1.80 ± 0.49 mm) and left facet (2.25 ± 0.4 mm). Additionally, computed mean facet displacement was lower (1.82 mm) compared to the experiment (2.33 mm).

Conclusions: This study showed that a soft contact modelling approach can provide a reasonable estimation of load sustained by a fused FSU. The computational facet clearance corresponded well to the total cartilage thickness (with facet joint space reported between 0.4 and 0.7 mm). Further validation is ongoing.



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‘Waiting well’ for spinal surgery: A service evaluation to help improve the wait for lumbar stenosis surgery

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Abstract

Background

Lumbar Spinal Stenosis (LSS) is a degenerative condition leading to surgical intervention. A tertiary centre noted average wait time for LSS surgery (August 2021–August 2023) was 235 days. Despite GIRFT guidelines recommending prehabilitation for elective surgical patients, this is not currently common practice. This project aims to co-develop a user-friendly, patient-centred care plan, to help patients ‘wait well’ for surgery.

Methods

Objective-1: Previous LSS surgical patients contacted (from 2021–2023) and invited to form a focus group. 4 patients responded. From a telephone interview, components for a pre-operative care plan were identified.

Objective-2: Patients awaiting LSS surgery from Spinal-Practitioner MDT were offered this care plan.

A mixed-methods approach was used to collate data at 6-week intervals until surgery. Surveys distributed included questions regarding acceptability and usability of the care plan. Oswestry Disability Index, VAS pain score, EQ-5D-5L and health utilisation was collected.

Results

Objective-1: 3 patients felt their function deteriorated whilst waiting for surgery. 2 patients requested more information regarding the surgery with all requesting exercises. 2 patients benefitted with self-funded braces.

Following interviews, stakeholders agreed a care plan: (i) Spine school (online platform including resources and exercises); (ii) Lumbar brace (total=25); (iii) Single point-of-contact.

Objective-2: 9/11 patients are currently undertaking the care plan. Qualitative and quantitative data will provide preliminary feasibility data on the perception, acceptability and retention to a pre-operative care plan.

Conclusion

Data collection is ongoing. This limited project will provide an evaluation of the feasibility and acceptability of a co-developed pre-operative care plan.



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Analysis of risk factors for postoperative progressive segment degeneration at the decompression and non-decompression segments after minimally invasive lumbar decompression surgery: 5-year follow-up study

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Abstract

Background: This study aimed to investigate the risk factors for progressive segment degeneration (PSD) in patients who undergo decompression surgery for lumbar spinal stenosis with and without coexisting spondylolisthesis and scoliosis, focusing on decompression and non-decompression segments.

Methods: We reviewed the data of patients with > 5 years of postoperative follow-up. Radiographic PSD was defined as either the development of an antero- or retrolisthesis of > 3 mm or a decrease in disc height of > 3 mm during the 5-year follow-up. The association between PSD and other preoperative clinical findings was analyzed according to intervertebral segments.

Results: Eight hundred and forty lumbar segments (L1-2 to L5-S) in 168 patients, with a mean age of 69.5 ± 9.2 years, met the inclusion criteria. PSD was observed in 162 (19.3%) lumbar segments. A logistic regression model identified that Cobb angle $\geq 10^\circ$ (OR 2.53, 95% CI 1.50-4.24), spondylolisthesis ≥ 3 mm (OR 4.447, 95% CI 2.06-9.58), and level of segments were more likely to have PSD at the non-decompression level, and lateral listhesis ≥ 3 mm (OR 2.91, 95% CI 1.08-7.81) was more likely to have PSD in decompression segments. There was no significant difference in the clinical outcomes at baseline and the 5-year follow-up between patients with PSD.

Conclusions: Although PSD dose not correlated with worsening symptoms, our study confirms that higher degree of pre-existing disc degeneration portends a higher PSD in 5 years.



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Most digital back pain appointments are completed outside core clinic hours when traditional constraints are removed

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Abstract

Background: Digital healthcare may help to overcome structural barriers to traditional healthcare access, such as fixed appointment schedules, transportation challenges, and work or family responsibilities. Flok Health digital physiotherapy appointments are accessible instantly and at any time of day.

This study evaluated patient-selected appointment times to understand whether digital physiotherapy facilitates more equitable access to care for real patients with low back pain.

Methods: In a retrospective analysis, the first 500 physiotherapy appointments completed by patients from 24th July 2024 onwards were evaluated. Patients presented to Flok Health's digital service with low back pain (with or without sciatica), having either self-referred or been signposted by clerical or clinical staff in GP surgeries across NHS Lothian. The time of appointment completion was categorised either as weekend, weekday core hours (0900-1700) or weekday non-core hours (outside 0900-1700). The results were descriptively analysed.

Results: 241 (48.2%) appointments were completed during weekday core hours. Of the remaining 51.8% of appointments, 164 (32.8%) were completed during weekday non-core hours and 95 (19.0%) at the weekend.

Patients who reported being in employment were more likely to complete their appointments outside core hours (180 appointments; 58.6%) than during core hours (127 appointments; 41.4%).

Conclusions: Over half of digital appointments were completed outside typical physiotherapy clinic hours. This suggests that digital physiotherapy may offer more equitable care for patients who struggle to attend traditional appointments due to work or other daytime commitments. It could therefore also enable meaningful occupation to continue alongside rehabilitation with less disruption.



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MIS Anterior Thoracic Fusion for Scoliosis: Utilising a Novel Multi-level Stabilisation Screw

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Abstract

Introduction

Cephalad angled insertion allows through two vertebrae as fixation through the main mini open wound or a laparoscopic portal. Analysis consisted of a single centre cohort of Selective Anterior Thoracic Fusion (SATF) utilising a multi-level stabilisation screw (MLSS) for the Upper Instrumented Vertebrae (UIV) to minimize soft tissue dissection.

Methods:

A retrospective analysis between 2017-2024 of patients undergoing SATF was performed. Data was collected from British Spine Registry (BSR) and local records for a 1 year minimum follow-up. Cobb angles for standing and fulcrum bending radiographs (FBXR) pre-operatively and post-operatively.

Results:

20 consecutive patients undergoing SATF were included in the study. Mean age of 16.5 y, F:M ratio of 16:1. Preoperative cobb angle 51°. FBXR was 16°. The mean correction rate (CR) was 60% immediately post-surgery. Fulcrum bending correction index (FBCI) was 100% immediately post-surgery and 88% at 2-year follow-up.

SRS22 was 3.43 (pre-op), 3.77 (1-year postop) and 4.08 (2 years). Return to surgery within 30 days 5% (n=1) for screw adjustment. Reinsertion of chest drain 5% (n=1). There was a mean number of levels fused of 7.1 levels.

Change in thoracic kyphosis was found to be + 5.9° and maximum kyphosis was found to be +5.1°.

Mean blood loss 433 ml, operation length 360 minutes and length of stay 5.8 days. There were no revisions of the UIV Missile screw nor intraoperative monitoring events.

Conclusion:

MIS Selective Anterior Thoracic spinal fusion is found to be an effective and safe approach to the management of AIS.



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Minimally Invasive Anterior Spinal Fusion Comparing Thoracic versus Lumbar for Scoliosis

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Abstract

Introduction:

An analysis of minimally invasive (MIS) anterior fusion surgery was conducted to assess reliability and efficacy, with a focus on comparison between thoracic and lumbar scoliosis correction.

Methods:

A retrospective analysis between 2017-2024 of 42 patients undergoing selective anterior thoracic fusion (SATF) and selective anterior lumbar fusion (SALF) was performed (SATF: n=20); SALF: n=22). Data was collected from British Spine Registry (BSR) and local records. Cobb angles were assessed pre-operatively and post-operatively. SRS and radiographic parameters were collected pre-operatively, and post operatively up to 2 year follow up.

Results:

Mean age of 16.5y and a F:M ratio of 37:5. Pre-operative Cobb: SATF=51.7°; SALF=49.0°; $p>0.05$ and immediate post-operative Cobb was 17.0° (SATF=20.9°; SALF=13.7°) providing a mean immediate post-operative correction rate (CR) of 67.2% (SATF=60; SALF=73.0, $p=0.009$). Fulcrum bending correction index (FBCI) was 112.3% immediately post-surgery (SATF=99.8%; SALF=112.7% , $p>0.05$) and 108% at 2-year follow up (SATF=86.8%; SALF=121.2%, $p>0.05$).

SATF showed a change in thoracic kyphosis of -6.2°, SALF showed a change of +2.1° ($p=0.003$)

Return to surgery within 30 days 4.4% (n=2) for screw adjustment. Reinsertion of chest drain 2.2% (n=1). Overall mean blood loss was recorded at 412 mL (SATF=420ml; SALF=405 ml , $p>0.05$).

Conclusion:

MIS Anterior spinal fusion surgery is found to be an effective and safe approach to the management of AIS. Correction rate and FBCI was greater in the SALF group, greater improvement in SRS-22 scores at 2-year follow up and a greater preservation of sagittal balance.



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Topical local anaesthetic use in spinal injections: an option to try and avoid giving needle phobic (trypanophobic) patients 'the needle'.

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Abstract

Introduction

Needle phobia (aka trypanophobia), affecting an estimated 2-30% of people, can deter patients from opting for spinal injection, most commonly citing fear of a painful procedure. In light of the accepted use of topical local anaesthetic patches in the treatment of chronic low back pain, we undertook a study to evaluate the potential use of topical anaesthetic cream in trypanophobic patients, who would be otherwise suitable for diagnostic / therapeutic spinal dorsal branch/root blocks.

Methods

75 consecutive non scoliosis prone patients undergoing daycase intensifier guided spinal blocks had the distribution of 125 total needle placements recorded, relative to the palpated spinous process (midline) and iliac crest (L4/5 level) surface markings. A surface landmarks 'template' was thus created to facilitate the application of topical anaesthetic cream at the site of proposed skin injection site(s), suitable for >95% undergoing L4/5 or L5/S1 blocks. The template was used in prospective cohort of 30 patients to guide topical anaesthetic and occlusive dressing application at least 40 minutes prior to injection. Accuracy of needle placement within the templated anaesthetized skin and patient reported VAS skin injection pain was recorded.

Results

All 38 injection sites in the 30 patient cohort were within the applied template. Only 1 patient reported pain (VAS 2) at the skin injection site. No adverse/allergic reactions occurred due to the applied cream nor occlusive dressing adhesive.

Conclusion

This technique has potential for use in patients who express concern regarding their ability to tolerate the pain of spinal injection.



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A Comparison of the Efficacy and Fusion Levels Required between Anterior Fusion versus Posterior Spinal Fusion for the Treatment of Adolescent Idiopathic Scoliosis

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Abstract

Introduction

It is established that Anterior Spinal Fusion for scoliosis may result in shorter fusion levels. A comparative analysis of Selective Anterior Thoracic Fusion (SATF) and Selective Posterior Thoracic Fusion (SPTF) was conducted to assess reliability, efficacy and perioperative outcomes.

Methods:

A retrospective analysis between 2017-2024 of patients undergoing SATF and SPTF was performed. Data was collected from British Spine Registry (BSR) and local records for a 1 year minimum follow up. Cobb angles for standing radiographs (XR) were measured pre-operatively and post-operatively.

Results:

61 patients, (SATF: n=20; SPTF: n=41). Mean pre-operative Cobb was 53.6° (SATF) and 62.2° (SPTF) ($p = 0.04$), mean immediate post-operative Cobb was 17.7° (SATF) and 23.1° (SPTF) ($p > 0.05$) and Cobb angle at 2-year follow up was 26.5° (SATF) and 15.5° (SPTF) ($p > 0.05$). Mean correction rate (CR) was comparable immediately post-operatively (SATF=60.0, SPTF=60.4, $p>0.05$) and SATF was marginally better at 2-year follow up (SATF=48.2, SPTF=54.0, $p>0.05$). SATF had lower mean levels fused – 7.2 (SATF) vs 11.8 (SPTF) ($p<0.001$). SRS22 2-year follow up – 4.05 (SATF) and 4.13 (SPTF) ($p > 0.05$).

SATF had favourable perioperative outcomes with mean blood loss 431 mL (SATF) vs 560 mL (SPTF) ($p>0.05$), return to surgery 5% (SATF) vs 9.8% (SPTF), and occurrence of intra-operative adverse events 0% (SATF) vs 4.9% (SPTF).

Conclusion:

SATF is found to be an effective and safe approach to the management of AIS with superior correction rate and perioperative outcomes and was found to require 60% of fused vertebral levels of its counterpart SPTF.



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Comparison of Selective Anterior Fusion versus Vertebral Body Tethering for the Treatment of Adolescent Idiopathic Scoliosis

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Abstract

Introduction:

A comparative analysis of Selective Anterior Fusion (SAF) and Vertebral Body Tethering (VBT) was conducted to assess efficacy, impact on sagittal balance and perioperative outcomes.

Methods:

A retrospective analysis between 2014-2024 of patients with Adolescent Idiopathic Scoliosis (AIS) undergoing SAF and VBT was performed. Data was collected from British Spine Registry (BSR) and local records for a 1 year minimum follow up. Cobb angles for standing and bending radiographs (XR) were measured pre-operatively and post-operatively. 62 patients included (VBT = 20, SAF = 42).

Results:

Mean pre-operative Cobb was 50.3° (SAF) and 51.5° (VBT) ($p > 0.05$). Mean correction rate (CR) was greater for VBT immediately post-operatively: 67.0% (SAF) vs 71.9% (VBT) ($p > 0.05$) and at 2-year follow up: 61.0% (SAF) vs 72.5% (VBT) ($p > 0.05$). Mean Fulcrum Flexibility was higher in the SAF group: 67.3% (SAF) vs 53.4% (VBT). FBCI was greater in the VBT group: 115.6% (VBT) vs 99.5% (SAF).

Change of thoracic kyphosis angle was +1.5° (SAF) vs -2.6° (VBT). Change of maximum kyphosis angle was -1.1° (SAF) vs -5.0° (VBT). Mean estimated blood loss 396.0 mL (VBT) vs 431.2 mL (SAF). VBT had lower occurrence of intra-operative adverse events: 0% (VBT) vs 5% (SAF). VBT had shorter mean operation length: 188.9 minutes vs 350.3 minutes.

Conclusion:

VBT is shown to have a greater correction rate and FBCI than SAF, and is favourable for perioperative outcomes. SAF is shown to have a greater preservation of sagittal balance.



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Remote mentoring for surgical supervision in spinal surgery - A pre-clinical randomised controlled non-inferiority trial

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Abstract

Background

Surgical training traditionally requires close supervision and physical intervention of a physically present supervisor. Recent advances in remote mentoring technology have enabled remote supervision without the need for in-person supervision. The objective of this study was to assess if remote mentoring is non-inferior to in-person mentoring for spinal surgery.

Methods

Twelve ST1-2 neurosurgical trainees performed a high-fidelity simulated lumbar decompression, with in-erson or remote supervision. Surgical performance was assessed using validated scales (mOSATS) and operating speed. 5-point Likert scales were used to assess self-perceived trainee ability, and quality of supervision from both trainee and supervisor perspectives. Task-associated cognitive load was assessed using the NASA-TLX tool. Bootstrapping was used to construct the confidence intervals of the effect size and to conduct the non-inferiority hypothesis tests.

Results

Trainees performing simulated lumbar decompressions under remote supervision demonstrated significantly non-inferior surgical performance, as measured by mOSATS ($p=0.04$) and operating time ($p=0.03$). The improvement in trainee self-perceived ability and confidence following the simulation was non-inferior in the remote mentoring group ($p<0.0001$). The perceived quality of supervision varied, with trainers finding supervision non-inferior ($p=0.0001$), contrary to the trainees ($p=0.23$). The trainee cognitive load under remote supervision was not non-inferior ($p=0.14$).

Conclusions

This pre-clinical simulation study demonstrates that remote mentoring is non-inferior to standard surgical mentoring, lending support for the implementation of remote mentoring techniques as adjuncts to traditional face-to-face supervision, and for the careful clinical evaluation of these technologies.



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The Digital Divide in Patient Education, AI vs Expert: A Comparative Analysis of Quality and Readability

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Abstract

Introduction: Artificial intelligence (AI) is increasingly used to generate patient education materials (PEM), offering on-demand, tailored content. There are grounds for concern regarding the quality and reliability of AI-generated information. This study evaluates and compares the readability and quality of PEM on spinal fusion surgery sourced from society and professional institution websites and three generative AI models.

Methods: Patient information on lumbar and cervical spinal fusion surgery was sourced from the British Association of Spinal Surgeons (BASS), American Academy of Orthopaedic Surgeons (AAOS), Mayo Clinic, Cleveland Clinic and John Hopkins Medicine websites. PEM on matching surgical approaches was generated using Chat GPT, Gemini, and Co-Pilot using a standard and follow up prompt. Quality and readability of 30 PEM were assessed using the Patient Education Material Assessment Tool (PEMAT), JAMA benchmark criteria, the DISCERN-tool, the Flesch-Kincaid Grade level and Reading Ease score and Gunning Fog index.

Results: PEM on spinal fusion surgery sourced from the society and professional institution websites exhibited superior readability (mean FKGL: 8.01 +/- 1.167 vs. 10.319 +/- 0.96 p<0.001; FKRE: 58.70 +/- 6.67 vs. 42.39 +/- 3.115 p<0.001) and higher quality (PEMAT: 77.1% +/- 9.8% vs. 58.2% +/- 6.5% p<0.001; DISCERN: 59.67 +/- 9.68 vs. 49.125 +/- 4.745 p<0.006) compared to PEM generated by Chat GPT, CoPilot and Gemini.

Conclusion: Professional website sourced PEM on spinal fusion surgery remains superior in terms of readability, reliability, understandability and actionability compared to AI-generated content. AI sources fell short highlighting the need for further improvements in AI tools to ensure reliable and accessible health information for patients.



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Continued Scope for Surgical Instrumented Fixation in Spinal Infections: Manchester Experience

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Abstract

Introduction:

The role of instrumented surgical fixation in presence of spinal infection has been a subject of long-standing debate with few studies showing their effectiveness. We aim to study the efficacy of instrumented surgical fixation in spinal infection patients.

Method:

Retrospective analysis of patients with confirmed spinal infection referred to regional spinal unit from January 2022 to December 2023.

Results:

There were 140 patients with confirmed spinal infection. 10% of patients with confirmed spinal infection required surgical instrumented fixation. M:F ratio was 1:3 in our patient's group with median age of 62.5 years. Median Follow up for these patients was 15 months.

Microbiology yield revealed Staphylococcus aureus in 35% while 42% patients had negative culture and rest of 28% patients had positive culture for either E coli and Tuberculosis. In our study, 14% patients who had E coli positive culture showed worsening interval scan appearances suggestive of progressive spinal instability necessitating surgical fixation. Most of the underlying main pathology needing surgical fixation was spondylodiscitis 58% followed by osteomyelitis alone 21%, discitis 14% and epidural collection in 28%. The commonest surgical site was thoracic spine 42% followed by cervical and lumbar spine 28% each. In our study, 2 patients had post operative complication.

Conclusion:

Though majority of patients with spinal infection can be treated medically with appropriate antibiotics and brace or with surgical decompression alone, there is still a continuous role for surgical fixation in selected group of these patients which can be very effective and safe.



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Chronic Challenges: Epidemiological Insights into Spondylodiscitis Among 113 Patients over 4 years in Tertiary Spinal Unit in Southwest England.

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Abstract

Introduction:

Spondylodiscitis is an infection involving the intervertebral discs and adjacent vertebral bodies, with a notable mortality rate of up to 20%. Over the past 14 years, the United Kingdom has seen a 33% increase in hospital admissions for this condition, with the over 70s being the most affected. Significant risk factors include diabetes, intravenous drug use (IVDU), immunosuppression, and prior spinal surgery.

Method:

A four-year retrospective analysis (2020-2024) at a tertiary spinal institution reporting demographics, clinical presentation, radiological and microbiological findings, treatment regimens, and 100-day mortality rates for patients diagnosed with spondylodiscitis was performed.

Results:

From 2020 to 2024, 113 patients had a radiological diagnosis of spondylodiscitis. The mean age was 69, with a male predominance. Clinically, 85.7% reported new or worsening back pain, 30.1% reported fever, and 28% showed new neurological deficits. Elevated C-reactive protein was noted in 92% of cases, while only 45.9% exhibited leukocytosis. Diabetes was the most common comorbidity. A radiological diagnosis was made within one week of admission for 85% of patients. Methicillin-sensitive *Staphylococcus aureus* was the most prevalent organism. Culture-negative cases accounted for 30.1%. The vast majority (69%) were discharged on oral antibiotics. The overall mortality rate within 100 days was 13.4%.

Conclusion:

Although 82.3% of patients presented with symptoms justifying spondylodiscitis suspicion as per international guidelines, the presence of atypical cases underscores the need to review diagnostic and management strategies to enhance survival rates in this population. We recommend performing a spinal MRI within 72 hours for patients with atypical signs/ symptoms.



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Current concepts in Metastatic spinal cord compression secondary to breast cancer. An unexpected downturn in operative cases.

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Abstract

Introduction

In the 1990s, stage IV breast cancer had a 1-year survival of 80% and a 5-year survival of 30%. By 2020, survival rates improved to 95% at 1 year and 60% at 5 years, driven by advancements in immunotherapy, hormone therapy, and targeted therapies. Surgery remains crucial for patients with significant neurological impairment.

Methods

A retrospective review was conducted of prospective data from a spinal oncology MDT at a quaternary hospital between 2017-2023. Data collected included demographics, length of stay, Tokuehashi scores, Frankel scores, and non-surgical treatment for non-operative cases. Statistical analysis evaluated the impact of these factors on patient prognosis and outcomes.

Results

Of a total 2514 patients, 147 were breast cancer patients, 39 underwent surgery.

In the operative group the 30 day mortality was 2.6% (n=39). The mean age of surgery was 61.9. Pre-operatively, 25.6% had a Frankel 1 score, with 40% improving to Frankel 2 post-surgery. In contrast, 38.5% with Frankel 2 saw a 6.6% decline to Frankel 1 post-surgery. The mean Tokuehashi score was 8.85, and 12.8% required ICU care.

In the non-operative group (n=108), the 30-day mortality was 2.8%, with a mean Tokuehashi score of 5.95. Pre-MDT, 7.4% had Frankel 1 scores, and 1.8% had Frankel 2.

Conclusion

The number of operative cases only represented 25.6% of breast cases. whilst 30-day mortality was similar between groups, improved Frankel scores highlight the ongoing role of surgery. The insignificant difference of Tokuehashi scores amongst both groups has begun to broadcast the advancements in non-operative treatments.