



**The 15th Annual Meeting of the
Israel Spine Society**

14th -17th May 2014

Wednesday-Saturday

The Royal Beach Hotel, Eilat

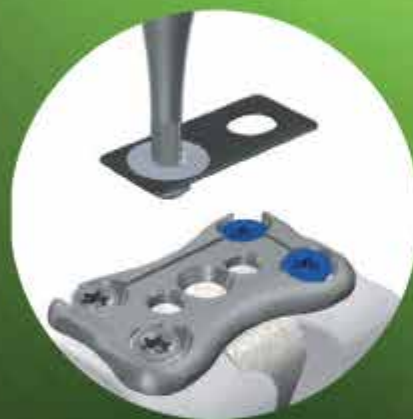
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פלטה צווארית בעלת הכרופיל
הנמוך ביותר רק 1.9 מ"מ



General Information

The 14th annual meeting of the Israel Spine Society will be held on Wednesday-Saturday, 01-04 May, 2013 "Royal Beach" Hotel in Eilat.

Acting Committee

Yizhar Floman, MD - President
Nachshon Knoller, MD - Secretary
Yoram Anekshtein, MD - Treasurer
Gad J. Velan, MD - Educational Committee

International Guests

LUK Dip Kei, Keith, MD - Chief of Division of Spine Surgery, Department of Orthopaedics & Traumatology, Univestity of Hong Kong since July 2000
Daniel Rosenthal, MD - Head of Spine Surgery. Hochtaunus Clinic, Bad Homburg, Germany. Formal President of German Spine Society
Sajan K. Hegde, MD - Consultant Spine Surgeon Apollo Hospitals, Chennai

Local Guests

Omri Assenheim, MD - Senior Correspondent Uvda
Sayed Kashua, MD - Novelist, columnist for the Hebrew daily Ha'aretz and tv-sitcom writer
Kobi Mor, paramedic and insructor of mental preparedness for emergency

Conference secretary

Mrs. Shanit Twito

Official language

The official language will be English

Certificate of attendance will be provided upon request. Throughout the duration of the meeting, exhibits stands will display spine surgery systems, pharmaceutical and medical products

Dress code

Casual

Dear colleagues and guests,

On behalf of the Israel Spine Society it is my pleasure to welcome you all, distinguished keynote lecturers, members of the society and operating room personnel, to our 14th annual meeting.

This year we are privileged to welcome our three invited guest speakers: Dr. Keith Luk from Hong Kong China, Dr. Sajan Hegde from Chennai India and Dr. Daniel Rosenthal from Bud Homburg Germany. We are grateful for their participation in our annual meeting and we look forward to their lectures and to the exchange of knowledge and ideas with our guests.

Our common goal is to have an official Israeli board certification in spinal surgery. Despite the continued efforts of our acting committee our goal has not been realized yet. I can assure you that we will continue our efforts to achieve this goal.

On the social front we have a rich program of musical entertainment and general, non-spinal, lectures. I hope you will all enjoy it!

I wish you all a stimulating scientific meeting and a pleasant stay in Eilat.

Yizhar Floman MD
President, Israel Spine Society

חברות וחברים,

ברוכים הבאים לכנס השנתי ה-14.

השנה אנו מקדמים בברכה את שלושת המרצים האורחים, דר. לוק מהונג קונג, דר. הגדה מהודו ודר. רוזנטל מגרמניה.

המאבק להכרה במקצוענו כהתמחות על עדיין בעיצומו ולא הרמנו ידיים. בהעדר שיתוף פעולה של חלק מעמיתנו מאירופה לא הצלחנו להרשם למדולות של קורס הדיפלומה האירופי. אנו בוחנים אופציות נוספות לפעולה.

זו השנה האחרונה לכהונתי. כדי להבטיח רצף פעולה והחלפת ידיים חלקה, נקיים השנה בחירות ל"נשיא נבחר" שיחל לכהן החל מסוף הכנס השנתי ב-2014.

גם השנה יש לנו תוכנית "תרבותית-בידורית" עשירה. מקווה שכולם יהנו.
כנס פורה ומהנה,

יזהר פלומן
נשיא האיגוד הישראלי לעמוד שדרה

Dear members, Guests and friends of the Israeli Spine Society,

On behalf of the organizing committee I welcome you to the 13th meeting of the Israeli Spine Society.

This year's program will feature several distinguished speakers from the Asia & Europe on subjects as minimal invasive surgery and deformity correction, as well as a scientific program that represents the varied and wide interests of our members and guests, reflecting the dynamic and evolving nature of the field we chose to practice in.

A rich social program will provide interest to accompanying persons as well as post meeting relaxation to you all.

I would like to thank our partners and exhibitors for their on going support of the annual meeting, and urge you to visit the exhibitors hall.

I wish us all a fruitful and enjoyable time in the wonderful resort city of Eilat.

Gad J. Velan MD
Scientific committee

Scientific Program

Scientific Program

Wednesday, May 01, 2013

19.30 - 21.30 **Welcome reception**

Thursday, May 02, 2013

07.30 - 08.30 **Registration**

08.30 - 08.35 **Welcome address**
Y. Floman, ISS Chairman

■ Session 1: Cervical Spine

■ Chairmen: A. Bruskin, M. Millgram

08.35 - 08.43 **Collar after an ACDF – a comparison study between two policies: with and without a collar after surgery**
L. Merom, A. Keren, A. Hanani

08.43 - 08.51 **Adjacent level destabilization after instrumentation. A myth or reality and how to deal with it**
E. Ashkenazi

08.51 - 08.55 **Discussion**

08.55 - 08.57 **Presentation of keynote lecturer**
Y. Floman

08.57 - 09.17 **Cervical Myelopathy – Rationale for anterior decompression and reconstruction**
S. Hegde

09.17 - 09.21 **Discussion**

09.21 - 09.41 **Debate: Dynamic plating in anterior cervical reconstruction**
Pro – R. Harel
Con – M. Kremer

09.41 - 09.45 **Discussion**

09.45 - 10.15 **Coffee break**

■ Session 2: Lumbar Spine

■ Chairmen: M. Tanzman, A. Geftler

10.15 - 10.23 **Single versus multilevel fusion, for single level degenerative spondylolisthesis and multilevel lumbar stenosis. Four-year results of the spine patient outcomes research trial (SPORT)**
Y. Smorgick, D.K. Park, K.C. Baker, J.D. Lurie, T.D. Tosteson, W. Zhao, H. Herkowitz, J.S. Fischgrund, J.N. Weinstein

10.23 - 10.31 **Nucleoplasty versus endoscopic assisted discectomy in the treatment of contained disc herniations – A comparison study of outcome**
A. Keren, R. Novak, L. Merom

10.31 - 10.39 **A posterior arthroplasty system for lumbar spinal stenosis: Clinical results 5 years after Implantation**
Y. Smorgick, Y. Anekstein, Y. Mirovsky, Y. Floman

10.39 - 10.44 **Discussion**

10.44 - 10.52 **Randomised clinical and radiological trial comparing PEEK with titanium-coated PEEK-cages for PLIF surgery**
K.J. Schnake, S. Weil, A. Langheinrich, C.H. Hoffmann, A. Pingel, M. Scholz, W. Dube, F. Kandziora

10.52 - 11.00 **Short posterior segmental fixation for thoraco-lumbar burst fractures augmented with open vertebroplasty: Initial results**
P. Ben-Galim, S. Sagiv

11.00 - 11.04 **Discussion**

11.04 - 11.07 **Presentation of keynote lecturer**
A. Friedlander

11.07 - 11.27 **Keynote lecture: Vertical instability in degenerative spondylolisthesis**
K. DK Luk

11.27 - 11.31 **Discussion**

11.31 - 11.51 **Keynote lecture: High grade spondylolisthesis in the young**
S. Hegde

11.51 - 11.55 **Discussion**

11.55 - 11.58 **Presentation of keynote lecturer**
A. Geftler

11.58 - 12.18 **Keynote lecture: Myths & Facts of thoracic disc herniations. A 20 years experience**
D. Rosenthal

12.18 - 12.22 **Discussion**

12.22 - 12.42 **Debate: Lateral DLIF in the treatment of lumbar disc pathology**
Pro: G. Regev
Con: N. Rahamimov

12.42 - 12.45 **Discussion**

12.45 - 13.45 **Lunch break**

■ Session 3: Tumors

■ Chairmen: A. Friedlander, R. Lotan

13.45 - 13.53 **Spine Radiosurgery: Treatment of selected intradural and extradural benign spinal tumors**
R. Harel

13.53 - 14.01 **Total en bloc spondylectomy for spinal tumors – our experience at the Tel Aviv Sourasky Medical Center**
Z. Lidar, G. Regev, O. Keynan, K. Salame

14.01 - 14.09 **Are they too old? Surgical treatment of metastatic epidural spinal cord compression in patients older than 65 years old**
O. Or, J.E. Cohen, A. Hasharoni, Y. Barzilay, L. Kaplan, J. Schroeder, S. Fraifeld, E. Itzhayek

14.09 - 14.14 **Discussion**

■ **Session 4: Deformity**

■ **Chairmen: L. Kaplan, I. Engel**

14.14 - 14.22 **Adolescent idiopathic scoliosis and pregnancy an unsolved paradigm**
T. Michaeli, J. Schroeder, M. Luria, Y. Barzilay, A. Hashroni, E. Itzhaezek, L. Kaplan

14.22 - 14.30 **Spinal cord position in adolescent idiopathic scoliosis**
Y. Smorgick, J.J. Settecerci, K.C. Baker, H. Herkowitz, J.S. Fischgrund, I. Zaltz

14.30 - 14.50 **Keynote lecture: The fulcrum bending radiograph and its applications in scoliosis management**
K. DK Luk

14.50 - 15.10 **Keynote lecture: Where anterior surgery scores over posterior surgery in AIS**
S. Hegde

15.10 - 15.20 **Discussion**

15.20 - 15.50 **Coffee break**

■ **Session 5: Surgical Techniques**

■ **Chairmen: S. Sagiv, I. Caspi**

15.50 - 15.58 **Intra-operative spine ultrasound: a helpful tool or a cumbersome nuisance?**
R. Harel, N. Knoller

15.58 - 16.06 **Dreal: Inside-out decompression using a new curved bone removal tool - presenting initial clinical trials**
E. Ashkenazi, Y. Weitzman, E. Miller

16.06 - 16.14 **Accuracy of the Medtronic O-arm® surgical imaging system and Stealth Station surgical navigation system in bone model of spine and soft fixation of navigation antenna in different conditions**
R.A. Lozi, D.A. Geftler, I. Preissl, D. Rosenthal

16.14 - 16.20 **Thoracoscopic repair of chest wall deformities and pectus excavatum**
B. Zuckermann, J. Naftali, Y. Mirovsky, G. Lotan, M. Papiashvili

16.20 - 16.28 **Multicenter evaluation of the actual therapy of inpatients with osteoporotic vertebral fractures in Germany**
K. J. Schnake, T. Blattert, O. Gonschorek, P. Hahn, B. Ullrich

16.28 - 16.36 **Traumatic spine findings in post mortem virtual autopsy**
N. Berkovitz, K. Zaitsev, S. Tal

16.36 - 16.41 **Discussion**

16.41 - 17.01 **Keynote lecture: Navigation around the screw. Other indications for intraoperative real time imaging**
D. Rosenthal

17.01 - 17.10 **Discussion**
Adjurn

Friday, May 03, 2013

■ **Session 6: Miscellaneous**

■ **Chairmen: S. Shabat, Y. Barzily**

08.15 - 08.23 **Regeneration of human annulus fibrosus with platelet rich plasma**
K. Kotov, J.E. Schroeder, I. Schwartz, A. Hasharoni, Y. Barzilay, E. Itzhaik, L. Kaplan, M. Dvir-ginzberg

08.23 - 08.43 **Keynote lecture: Intervertebral disc transplantation: from the laboratory to the bedside**
K. DK Luk

08.43 - 08.47 **Discussion**

08.47 - 08.55 **Spinal epidural abscess now more frequent and aggressive: Changing characteristics epidemiology and virulence**
P. Rosinsky, S. Sagiv, P. Ben-Galim

08.55 - 09.03 **In-patient functional restoration in low back pain disability**
A. Catz, S. Yoseph, E. Aidinoff, I. Gelernter, V. Bluvshstein

09.03 - 09.11 **Pain reduction in in-patients with in low back pain disability**
E. Aidinoff, S. Yoseph, I. Gelernter, V. Bluvshstein, A. Catz

09.11 - 09.15 **Discussion**

09.15 - 10.00 **Writing in stepmother tongue**
S. Kashua

10.00 - 10.45 **“A Moment of Truth” – Behind the scenes of an investigative correspondent’s work**
O. Assenheim

10.45 - 11.30 **Decision making under stress and uncertainty**
J. More

11.30 - 11.50 **Coffee break**

11.50 - 13.20 **Business meeting**
Adjurn

Collar after an ACDF - a comparison study between two policies: with and without a collar after surgery

L. Merom^{1,2}, A. Keren², A. Hanani^{1,2}

1. Spine Surgery Unit, Rambam Health Care Campus, Haifa

2. Orthopaedic Division, Rambam Health Care Campus, Haifa

Background: An ACDF surgery is the most common C-spine surgery.

There are mainly two treating policies used by spine surgeons after an ACDF surgery:

Group 1: treating the patients without using any cervical collar.

Group 2: treating the patients with collar for a certain period.

Both, advise their patients to start physiotherapy to enhance and improve the cervical range of motion, some period after surgery.

Objective: To study the end stage cervical range of motion depending on each policy.

Methods: 43 patients unrolled to this study from 2009 to 2012. The patients had C5-6 or C6-7 single level ACDF treating randomizing with or without a soft collar.

A pre-op range of motion was recorded in flexion/extension, lateral bending, and rotation in all patients.

Group 1 had no collar.

Group 2 used the collar for 3 weeks after surgery.

Group 3 used the collar for 6 weeks after surgery.

A post-op range of motion was recorded in 3 and 6 weeks post surgery in flexion/extension, lateral bending, and rotation in all groups.

Starting self range of motion training for 3 weeks was advised to all patients after surgery depends on the policy.

Results:

Group 1: No significant difference in ROM was found between pre and post operative.

Group 2: 20% less ROM in post-op compare to pre-op ROM.

Group 3: 32% less ROM in post-op compare to pre-op ROM.

The group, who was treated with 6 weeks collar period, presented the most significant decrease ROM between pre and post measures.

Conclusions: We conclude that the group who had the cervical collar for 6 weeks had the most significant decrease in the cervical range of motion in all parameters, compare to the group who did not use the collar.

We presume that the Psychological "fear effect" of moving the neck after surgery for patients who use the collar, and the duration of neck immobilization act a significant role in decreasing the cervical range of motion after a ACDF single level surgery.

Further study is required to establish the necessity of using a collar after ACDF.

Adjacent level destabilization after instrumentation. A myth or reality and how to deal with it

E. Ashkenazi

Israel Spine Center, Assuta Hospital, Tel Aviv

Is Adjacent segmental disc disease (ASD) a reality or just a myth? Many long term studies gives some answers to this questions.

The following will try to summarize some of those studies and to answer this questions.

The conclusion is:

ASD is most probably based on the natural history of disc degeneration.

Patients suffering of degenerative disc disease will suffer from ASD more then people that do not have DDD.

TDR or ACDF do not change the risk of suffering from ASD

To avoid or reduce the chance of having a second surgery due to ASD one should probably address all degenerated discs at the index surgery.

Key words: Neck pain, kinematics, virtual reality.

Ethics approval: The study was approved by the Institutional Review Boards of the University of Haifa and the Rambam Medical Center.

Single versus multilevel fusion, for single level degenerative spondylolisthesis and multilevel lumbar stenosis. Four-year results of the spine patient outcomes research trial (SPORT)

Y. Smorgick, D.K. Park, K.C. Baker, J.D. Lurie, T.D. Tosteson, W. Zhao, H. Herkowitz, J.S. Fischgrund, J.N. Weinstein

From the Departments of Orthopedic Surgery and Orthopedic Research, Departments of William Beaumont Hospital, Royal Oak, MI; Orthopaedics; The Dartmouth Institute for Health Policy and Clinical Practice, and Community and Family Medicine, Dartmouth Medical School, Hanover, NH

Abstract: Study design. A subanalysis study.

Objective: To compare surgical outcomes and complications of multi-level decompression and single level fusion to multi-level decompression and multi-level fusion for patients with multi-level lumbar stenosis and single level degenerative spondylolisthesis.

Summary of Background Data. In patients with degenerative spondylolisthesis who are treated surgically, decompression and fusion provides a better clinical outcome than decompression alone. Surgical treatment for multi-level lumbar stenosis and degenerative spondylolisthesis typically includes decompression and fusion of the spondylolisthesis segment and decompression with or without fusion for the other stenotic segments.

To date, no study has compared the results of these two surgical options for single level degenerative spondylolisthesis with multi-level stenosis.

Methods: The results from a multicenter randomized and observational study, the Spine Patient Outcomes Research Trial (SPORT) comparing multi-level decompression and single level fusion and multi-level decompression and multi-level fusion for spinal stenosis with spondylolisthesis, were analyzed. The primary outcomes measures were the Bodily Pain and Physical Function scales of the Medical Outcomes Study 36-item Short-Form General Health Survey (SF-36) and the modified Oswestry Disability Index at 1, 2, 3 and 4 years postoperatively. Secondary analysis consisted of stenosis bothersomeness index, low back pain bothersomeness, leg pain, patient satisfaction, and self-rated progress.

Results: Overall 207 patients were enrolled to the study, 130 had multi-level decompression with one level fusion and 77 patients had multi-level decompression and multi-level fusion. For all primary and secondary outcome measures, there were no statistically significant differences in surgical outcomes between the two surgical techniques. However, operative time and intraoperative blood loss were significantly higher in the multi-level fusion group.

Conclusion: Decompression and single level fusion and decompression and multi-level fusion provide similar outcomes in patients with multi-level lumbar stenosis and single level degenerative spondylolisthesis.

Key words: degenerative spondylolisthesis, multi-level spinal stenosis, lumbar decompression, fusion.

Nucleoplasty versus endoscopic assisted discectomy in the treatment of contained disc herniations – A comparison study of outcome

A.Keren, R. Novak, L. Merom
Assuta Hospital, Haifa

Introduction: Nucleoplasty and Endoscopic assisted discectomy are two minimal invasive surgical methods for treating contained or small non contained disc herniations in patients with radicular pain without neurological deficits.

Nucleoplasty is a technology based on radiofrequency energy that causes disc shrinkage. It performed by inserting probe to the intradiscal space under x ray guidance, no thermal or surgical damage to near structures is cause.

Endoscopic assisted discectomy uses an endoscopic camera guide with a small pituitary rongeur to remove disc material. Both use minimal surgical exposure in order to approach and treat the bulged disc.

The surgical damage to near structures is minimal.

Objective: The study was design to compare the efficiency of these two minimal invasive methods in treating contained disc herniation.

Methods: From January 2011 to December 2012 we performed 23 discs Nucleoplasty by "Arthrocare" and 19 endoscopic assisted discectomy (EAD) by "Disc-f-x".

All patients had low back and radicular pain. Inclusion criteria were contained protruded disc at L4-L5, L5-S1 diagnosed by MRI, the patients had no neurological deficiency, All patient exhausted conservative treatment.

The average age of the Nucleoplasty group was 47.8 years (33-70), and of the EAD group was 42.6 years (17-63).

All patients were asked to fill the Visual Analogue Scale (VAS) and Oswestry Disability Index (ODI) questionnaires regarding the pain and disability prior and after the procedure.

Results: Average ODI score at the Nucleoplasty group prior and after the procedure was 65.9 and 33.9 respectively.

ODI score at the EAD group prior and after the procedure was 71.33 and 27.7 respectively.

Average VAS score at the Nucleoplasty prior and after the procedure was 8.6 and 4.6 respectively, and at the EAD group 8.6, 3.4 respectively.

The average time period past until maximal pain relive at the Nucleoplasty group was about 4 weeks, and at the EAD group was about 10 weeks.

The need for another intervention for the same complains at the Nucleoplasty group: one patient undergone L5-S1 fusion 23 months after Nucleoplasty, one patient needed series of epidural block injections.

At the EAD group: one patient undergone L4-5 open disectomy 8 months after EAD, two patients needed series of epidural block injections.

No complications were reported.

Patients "overall satisfaction rate" (1 to 10) was statistically more significant in the EAD group.

Conclusion: Our study reveals that both groups had substantial relive in low back and radicular pain, but the EAD enjoyed more substantial and earlier relive.

Since these two procedures are minimal invasive and have very low complication rate, in well selected patients it can be very beneficial in symptoms relive, much less destruction to bony structures, and scar formation is dramatically reduced. Those are of great importance if open surgical procedure will be required in the future.

A posterior arthroplasty system for lumbar spinal stenosis: Clinical results 5 years after Implantation

Y. Smorgick, Y. Anekstein, Y. Mirovsky, Y. Floman
Spine Unit, Assaf Harofeh Hospital Zrifin Israel and Israel Spine Center at
Assuta Hospital Tel Aviv.

Summary of Background Data: A Posterior Arthroplasty System, comprised of a unitary mechanical device affixed to the spine with four pedicle screws, allows axial rotation, lateral bending, extension, and flexion while blocking excessive sagittal translation. The System was developed as an alternative to fusion surgery for patients with moderate to severe spinal stenosis and degenerative spondylolisthesis. The device enables a complete posterior surgical decompression by re-establishing stability and preservation of near normal physiological range of motion. The implant potentially protects adjacent levels and optimizes screw-bone interface (TOPS™ System, Premia Spine, Israel).

Methods: The following is a report of 10 consecutive patients who were operated in a single center as part of a prospective, single-arm study approved by the Ministry of Health. Patients were followed prospectively with a minimal 5 years follow up after surgery. Patients were 52 to 69 years of age at surgery, and split equally between male and female patients.

The devices were implanted at L4-5 segment. Patient follow-up included Oswestry Disability Index (ODI), visual analog scale (VAS) for back and leg pain, and analysis of radiographs and MRI.

Results: The mean preoperative ODI dropped from 56.0 to 27.6 at 6 weeks, to 16.7 at 2 years and stayed similar after at 5 years. The mean VAS dropped from 8.3 to 1.9 at 6 weeks, to 2.0 at 2 years and stayed similar at 5 years. Segmental and global motion was well maintained. Independent radiological analysis confirmed no signs of screw loosening. There was no evidence of change in disc height or progression of spondylolisthesis. There were no complications except for device malfunction in one patient.

Conclusion: Posterior Arthroplasty is a safe and efficient alternative to fusion in patients undergoing surgery for lumbar spinal stenosis and spondylolisthesis. A significant reduction in back and leg pain can be achieved quickly and maintained over time with a Posterior Arthroplasty System.

Randomised clinical and radiological trial comparing PEEK with titanium-coated PEEK-cages for PLIF surgery

K.J. Schnake, S. Weil, A. Langheinrich, C.H. Hoffmann, A. Pingel, M. Scholz, W. Dube, F. Kandziora

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Introduction: PLIF surgery commonly involves usage of PEEK or titanium cages for interbody fusion. In comparison to titanium cages, PEEK cages have a preferably lower elasticity module and enhance radiographic evaluation of bony fusion. On the other hand, titanium cages provide higher primary stability and their rough surface structure enables excellent in-growth of bony structures. Common fusion rates range from 77 to 100% for both materials. However, comparative trials examining the bony incorporation of these materials have not been published yet. The aim of this study was to compare fusion rates and clinical results of a pure PEEK cage with a titanium-coated PEEK cage.

Methods: We randomised twenty consecutive patients with lumbar degenerative disease into group A (titanium-coated PEEK cage) or group B (non-coated PEEK cage). Patients with osteoporosis or systemic disease were excluded from the study. PLIF surgery included pedicle screw fixation and 2 cages per level. Three independent examiners evaluated plain x-ray and thin-sliced CT scans using various scores. Clinical results were evaluated using the Oswestry and Visual Analogue Scores. Follow-up time was 12 months.

Results: All patients were examined after 3, 6 and 12 months. The study population consisted of 12 women and 8 men (median age 51 years, range 31 – 70 years). Demographic data in both groups did not differ statistically. Five patients were treated with two-level fusion. The following segments were operated: L3/4 (2 times), L4/5 (11 times) and L5/S1 (12 times) (group A: 11 segments, group B: 14 segments). Perioperative and intraoperative data did not differ significantly between the two groups. Titanium-coated cages were indistinguishable from PEEK cages in radiographic studies. At 12 months follow-up there was neither migration, nor dislocation, nor sintering of the cages. Fusion was present in CT scans as follows: a) evident bone-cage contact in >50% of CT slices (A: 63.6%, B: 71.5%); b) bone growth through cage pores (A: 100%, B: 100%), and c) bone growth outside the cages (A: 100%, B: 100%). Both groups equally took benefit from surgery: Oswestry-score preoperatively (A: 21, B: 19), postoperatively (A: 15, B: 10); VAS low back pain preoperatively (A: 6.1, B: 4.4) and postoperatively (A: 2.9, B: 1.7); VAS leg pain preoperatively (A: 3.7, B: 2.4) and postoperatively (A: 0.6, B: 0.6). No complications were observed. No statistically significant difference was noted for the clinical results of the two groups.

Conclusion: Pure PEEK and titanium-coated PEEK cages for PLIF produce equally favourable clinical and radiological results 12 months post surgery. The fusion rate was 100% in both groups.

Short posterior segmental fixation for thoraco-lumbar burst fractures augmented with open vertebroplasty: Initial results

P. Ben-Galim, S. Sagiv

Department of Orthopaedic Surgery, Kaplan Medical Center, Rehovot, Israel

Scientific background: Unstable thoracolumbar burst fractures treated with short-segment posterior spinal instrumentation without anterior column reconstruction are associated with a high rate of screw breakage and progressive loss of reduction. The purpose of this study is to evaluate the functional, neurologic, and radiographic results following transpedicular pedicle screw assisted open fracture reduction with anterior column reconstruction via open vertebroplasty combined with short-segment posterior instrumentation.

Methods: A consecutive series of thirteen patients with an unstable thoracolumbar burst fracture with or without neurologic deficit were managed with transpedicular, pedicle screw fracture reduction with anterior column reconstruction via open vertebroplasty and short-segment posterior spinal instrumentation from 2011 to 2012. Demographic data, neurologic function, segmental kyphosis, canal compromise, VAS scores, and treatment-related complications were evaluated prospectively.

Results: All neurologically intact patients demonstrated significant clinical improvement and were ambulating at time of discharge. One patients with incomplete neurologic deficits exhibited neurologic improvement of one Frankel grade. The mean kyphotic angulation improved from 27 degrees preoperatively to 7 degrees at the time of the latest follow-up, and the loss of vertebral body height improved from a mean of 42% preoperatively to 10% at the time of the latest follow-up. There were no treatment-related complications, no instrumentation failure or loss of correction.

Discussion: Initial results demonstrate that excellent reduction of unstable thoracolumbar burst fractures can be achieved and maintained with use of short-segment instrumentation and pedicle screw assisted open fracture reduction augmented with anterior column vertebroplasty reconstruction performed through a single posterior approach. The resultant circumferential stabilization combined with a decompressive laminectomy in selected cases is safe and efficiently achieved and maintained sagittal alignment with satisfactory clinical results. Long term follow up studies are recommended.

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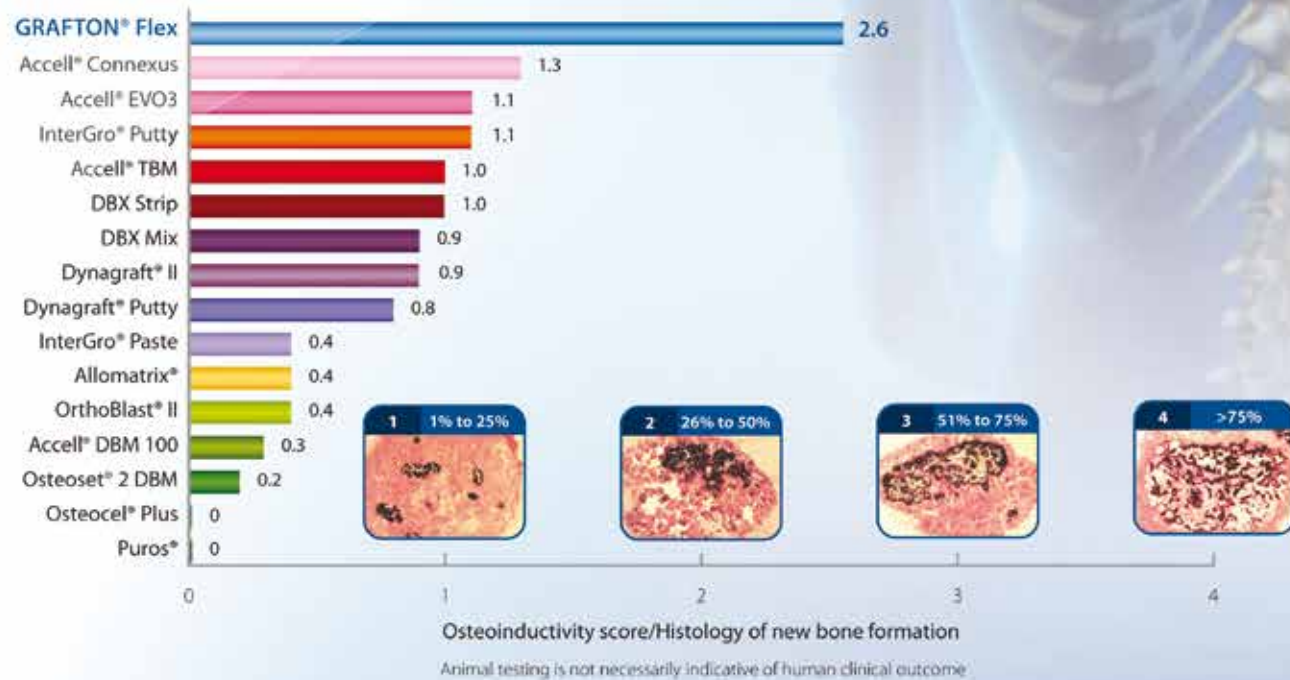
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Peer-reviewed studies on spine, neurosurgery, orthopedic trauma and reconstruction surgery and craniomaxillofacial surgery

Fiber technology proven to be osteoconductive in a preclinical outcomes study³

Most demineralized bone products on the market are made with particles, created by grinding the bone into a powder and then demineralizing it. Bone fibers are created by a unique milling technique, and they produce a greater osteoconductive structure.



Particle-based DBM



Fiber-based DBM

Deformity Solutions

MASTERING COMPLEXITY THROUGH EXPERTISE



Pediatric spinal deformity affects individuals with varying levels of complexity, making each patient unique. We can help you to address and master these cases with a comprehensive portfolio of solutions. For over 29 years, we have built the experience and expertise that delivers the innovation that these patients require – total accuracy from every angle – a true 360° vision for patient care.

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Spine Radiosurgery: Treatment of selected intradural and extradural benign spinal tumors

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Spine Radiosurgery (SRS) is a relatively new modality for the treatment of spine tumors. Multiple studies demonstrated the safety and efficiency of this modality, however many questions are still unanswered. The standard treatment for benign extra-medullary spinal tumors is surgical removal. Publications reporting good results treating spinal benign lesions with radiosurgery, allows for treatment of patients not eligible for surgery due to medical conditions, recurring tumors or surgically challenging tumors.

A Novalis system (BrainLab) was recently installed in Sheba Medical Center and in Assuta medical center and the Spine Radiosurgery (SRS) programs were initiated. Selected cases will be presented and discussed regarding the indication for treatment, treatment method and dose, and possible complications. The response to treatment will be discussed with reference to the literature.

SRS is non-invasive treatment of spine tumors. Although SRS is not the selected treatment modality, it is a viable alternative for benign tumors in medically or surgically challenging patients and in recurring tumors.

Total en bloc spondylectomy for spinal tumors – our experience at the Tel Aviv Sourasky Medical Center

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Total en block spondylectomy (TES) is a radical modality reserved for the treatment of primary malignant tumors of the spine, solitary spinal metastatic disease with long life expectancy and aggressive primary spinal osseous benign tumors.

During the last two years we have performed TES on 10 patients with malignant and benign spine tumors.

There were 4 females and 6 males aged 10 – 78 years.

In two cases the tumor was located at the cervical segment, 4 at the thoracic segment and 4 at the lumbar area.

Three patients were operated by posterior only approach and 7 by combined anterior and posterior approach.

5 patients had primary osseous spinal tumors while the other 5 suffered from metastatic tumors.

Intraoperative complication occurred in only one patient.

There were no early post-op complications.

Late complication occurred in one patient and was related to hardware failure.

Neurological deterioration did not occurred except for those related to nerve root scarification which was performed purposefully as part of the procedure of enbloc spondylectomy.

Our short experience shows that TES is variable and safe technique for the management of primary malignant tumors of the spine, solitary spinal metastatic disease with long life expectancy and aggressive primary spinal osseous benign tumors.

Are they too old? Surgical treatment of metastatic epidural spinal cord compression in patients older than 65 years old

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Introduction: Surgery with adjuvant radiation therapy represents the optimal treatment for metastatic epidural spinal cord compression (MESCC); however, the value of surgery in patients over age 65 was recently questioned. We aimed to study duration of ambulation after surgery in patients over 65 with MESCC.

Methods: We retrospectively reviewed the demographic characteristics, pre- and postoperative neurological status (American Spinal Injury Association [ASIA] Impairment Scale [AIC]), pre- and postoperative ambulatory status, duration of ambulation, and survival time in patients presenting with MESCC from 2009–2012. Patients over 65 who underwent surgical decompression due to MESCC were included in this study.

Results: 21 patients met inclusion criteria (mean age 73, range 65–87). Six patients (28.6%) were unable to walk before surgery; after surgery all were ambulatory. There was no surgical mortality. Two patients experienced significant perioperative blood loss requiring multiple transfusions; four required revision surgery due to wound infection. Preoperative AIC scores were E in four patients, D in 13, and C in four. AIC improved from D–E in eight patients, from C–D in four, and remained stable at D or E in five and four patients, respectively. As of end December 2012, 10 patients were alive (47.6%) with mean survival of 428 days (range 165–780); 11 patients had died (52.4%) at a mean 182 days (range 18–495). Mean time of ambulation from surgery until death, de-ambulation, or end of 2012 was 265 days (range 18–730). Of 11 patients who died, seven were ambulatory until days before death. Mean duration of ambulation was 397 days for patients aged 65–70, 230 days for those aged 71–80, and 164 days for three patients over 80.

Conclusion: Decompression surgery for MESCC in patients older than 65 years old may restore and preserve ambulation and neurological function.

Adolescent idiopathic scoliosis and pregnancy an unsolved paradigm

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Introduction: Adolescent idiopathic scoliosis (AIS) is a structural deformity of the spine that is found in healthy children. In curves that reach severity that is mandating surgery, most of the patients are females. Despite the fact that most of these females go on and have children, little is known on the effect of the long fusion on the pregnancy and if there are any long term effects of the pregnancy on the lumbar spine adjacent to the scoliosis.

Material and Methods: Women 18-40, who underwent surgical correction of scoliosis deformity for AIS with a pedicular screw system, were interviewed regarding pregnancies, child delivery, method of pain control during delivery and any long term outcome after delivery. Patients were assessed for sexual function via the validated Female Sexual distress scale- revised (FSDS) questioner and a depression questioner a SRS24 questioner was used for evaluation of the current state of the women. Data was compared to healthy controls and to women who did not have children.

Results: 39 pregnancies were documented in 17 women who underwent scoliosis correction. Average age was 31. Time from surgery to first pregnancy was 7.3 years (range 3-12 years). The Cobb angle correction in the surgery was 55 degrees (range 40-70). Average fixation length was T4-L2, with L4 being the lowest fixed vertebrae. Average FSDS score was 4.02 in the scoliosis group and 4.6 in the healthy group (NS). Depression rates were similar in both groups. 3 patients had difficulty getting pregnant (17%) (vs 10-20% in the general population) and needed to undergo fertility treatments. 6 of the women had severe back pain during pregnancy (35%) mandating home treatment or hospitalization. 4 women delivered via cesarean section, the rest vaginally. 12 women were refused epidurals by anesthesiologists (70%), most claiming that there is no access port. 13 women complained of sustained back pain after child delivery (76%) that impacted their life. SRS24 scores were 72% (88/120) with a low score in the pain domains (3.69/5) P=0.0048 and satisfaction with surgery (3.76/5) P=0.0047. Recent X-rays showed solid fusion, with degeneration of the adjacent segment to the fixation.

Discussion: Female patients, who underwent surgical correction of scoliosis due to AIS, do not have difficulty getting pregnant, however, the rate of back pain requiring care during pregnancy is higher than the general population (17%). The reason to why anesthesiologists are avoiding provide epidural analgesia to the patients isn't clear. It is possible that Knowledge amongst anesthesiologists is lacking regarding the ability to do so in this group of patients.

In addition, these patients suffer from high rate of back pain after delivery that does not resolve over time, this causes significant pain and a decreased satisfaction with surgery.

In conclusion, we present here points two main issues that should be addressed on a larger scale study. The first, increasing the knowledge amongst anesthesiologists regarding the ability to provide epidurals to women who underwent scoliosis correction. The second, an evaluation of the post partum back pain, that lasts for years to come.

Spinal cord position in adolescent idiopathic scoliosis

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Background: The use of thoracic pedicle screws in deformity surgery provides a stable fixation system. The concept of acceptably positioned screws includes a worrisome subset of screws that perforate the medial pedicle cortex and may result in some compromise of the spinal canal. A significant higher incidence of cortical wall penetration on the concave side compared to the convex was previously found. While several authors assumed that the spinal cord hugs the concave pedicles when the spinal deformity is scoliosis, the position of spinal cord in adolescent idiopathic scoliosis (AIS) has not been studied in depth.

Methods: We reviewed 45 patients who were candidate for operative treatment for AIS between August 2007 and October 2010 in our institution. Posteroanterior and lateral three-foot standing preoperative radiographs of the spine were reviewed in order to determine: Cobb-angle of the thoracic curves, apex-vertebra of the curves and end-vertebras of the curves. Magnetic resonance images were retrospectively reviewed. The lateral cord space (LCS) ratio, which reflects the relative position of the spinal cord in the spinal canal, was calculated for each level with a thoracic curve.

Results: The average LCS for thoracic curves of more than 50 degree was 2.123. The average LCS for thoracic curves of less than 50 degree was 1.551 ($P=0.002$). The LCS for the apex vertebra was 1.699. The LCS for the upper end vertebra and lower end vertebra were 1.212, 1.225 respectively ($P<0.001$). There was a statistically significant difference between right thoracic curves and left thoracic curve regarding the LCS. In right thoracic curve the LCS was 1.487 (1.487+0.45) while in left thoracic curve it was 0.761 (0.761+0.17) meaning that in both curves the spinal cord moved to the concave side of the curve.

Conclusion: Our study confirms that spinal cord in adolescent idiopathic scoliosis tend to follow the appearance of the curve with its being tethered on the concave side. The spinal cord is close to the pedicle around the apex area.

Intra-operative spine ultrasound: a helpful tool or a cumbersome nuisance?

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Intra-operative Spine ultrasound (US) has been described in multiple papers but has not transformed into a routinely used tool in spinal surgery. The use of US has been described in spinal tumor resection, mainly of the intradural compartment, degenerative lesions and chiari malformation surgery.

Since 2011 the authors began to routinely use the Aloka Prosound alpha 7 US in Sheba medical center for neurosurgical spinal tumor resection, thoracic disc herniation and chiari malformation. We retrospectively evaluated the volume of usage and the extent of intraoperative modification caused by the US. Data was retrospectively collected from medical patients' medical files and imaging data of patients operated on 2011-2012.

During 2011-2012 there were 80 cases eligible for the study (tumor resection surgery, thoracic disc surgery, or chiari malformation surgery). In 41 cases (51.2%) US was used, 37.5% on 2011 and 65% on 2012. In 25 cases of intradural extramedullary tumor the US was used, 7 intramedullary tumors, 4 extradural tumors, 4 thoracic discs and 1 chiari malformation. The pathologies included 12 meningiomas, 8 nerve sheath tumors, 4 metastases, 4 ependymomas, 4 thoracic herniated discs, 2 paragangliomas, 1 ganglioglioma, 1 cavernoma, 1 chiari, 1 arachnoid cyst and 2 non-specific inflammatory changes. US was routinely performed after exposure of the dura and repeated with surgeon's request. In 18 cases the US verified that laminectomy was adequate for full tumor exposure and had no effect on surgical decisions. In 10 cases laminectomy was extended cranially or caudally to include full access to the tumor. In 11 cases extent of resection was verified with the US, and extended if needed. In 1 case the US was used to locate the vertebral artery between C1 and the occiput and in a chiari case the US was used to evaluate sufficient decompression. Over all in 56% of the cases the US changed the course of surgery. No complication related to the US were noted and the use of intraoperative US does not exceed few minutes even if used repeatedly.

Intraoperative US is safe and easy to use after a short learning curve. When used in indicated cases, it can replace cumbersome fluoroscopy, reduce the incision size and laminectomy levels and illustrate the extent of decompression.

Dreal: Inside-out decompression using a new curved bone removal tool - presenting initial clinical trials

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Lumbar and Cervical spinal stenosis is a debilitating condition affecting over 1.2 million patients a year in the U.S. alone. We would like to suggest an option that provides an improved treatment for rapid and safe relief from spinal stenosis.

We would like to present a new curved drill we had developed. This is a 3 mm diameter curved drill that is able to remove from inside out portions of the ligaments & bone reducing the pressure on the nerves through a low-risk approach.

The safety and preservation of the surrounding tissue of the Dreal procedure will allow for shorter in-patient therapy and recovery time reducing instability caused by "morbid" bone removal.

The device received CE mark on the beginning of 2013 and we would like to present some clinical cases done by now.

Accuracy of the Medtronic O-arm® surgical imaging system and Stealth Station surgical navigation system in bone model of spine and soft fixation of navigation antenna in different conditions

R. Al Lozi, D.A. Geftler, I. Preissl, D. Rosenthal

Problem: Navigation system interfaces gracefully with intraoperative imaging systems such as iMRI, iCT, C-arms and Medtronic's versatile 3D imaging and 2D fluoroscopy O-arm® system. There is no data published about accuracy of navigation system in combination with O-arm system. There are some factors the effect of which is still not clear: the distance between "antenna" and surgical tools, soft tissues and breathing.

Methods: Skeleton bone model is placed on "Allen Spine Table" and fixed tightly with plaster. Maxillofacial screws are placed in vertebral bodies in lumbar and thoracic spine. Antenna is fixed on one of the three mentioned areas: iliac bone, transverse process and rib.

On the second step antenna is fixed with stitches on the soft padding at the same areas. The Medtronic O-arm® surgical imaging system and StealthStation surgical navigation system are tested for correct data while navigation tool is placed on screws in the vertebral bodies. We check the actual and given by the StealthStation surgical navigation system distance between tip of navigation tool and screw.

Results: We fixed antenna on iliac bone and screws - in vertebral bodies, 10 - 30 cm from antenna. No deviation in measurements between real placement of navigation tool on skeleton model and Medtronics navigation system presentation. Even in case of soft pad 2 cm thin no difference measured. The accurate data was presented while measuring real and navigation system location on navigation tool in pedical antenna bone and stitches with soft pad with 10-35 cm. In rib antenna fixation difference in measurements comes to 1.4 - 2.2 mm only if tool is far than 25 cm from antenna placement.

Conclusion: Medtronics navigation system and O-arm system are accurate while using soft stitches and bone fixation even if navigation tool placed 35 cm from navigation antenna. Our result demonstrated that system can be used with high accuracy in spine surgery.

Thoracoscopic repair of chest wall deformities and pectus excavatum

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Scientific background: Pectus Excavatum (PE) is the most common chest wall deformity, with an incidence of 0.1-0.8 per 100 persons. The pathogenesis of PE is not well understood, although today's leading hypothesis favors a defective metabolism in the sternocostal cartilage, resulting in a biomechanical weakness and an overgrowth of the sternocostal cartilage. The goal of this article is to report our initial experience in the surgical management and outcomes in the Thoracoscopic repair of Pectus Excavatum. The classical Ravitch open repair approach with subperichondrial resection of all deformed costal cartilages, xiphoid resection and sternal osteotomy with anterior fixation of the sternum using mostly multiple bar implantation is no longer acceptable.

Methods and Results: We performed several cases of the Nuss procedure or minimally invasive repair of Pectus Excavatum (MIRPE). This method consists of the elevation of the sternum using a retrosternal bar without resection or division of the costal cartilages. The procedure is performed by placing a convex steel bar under the sternum and anterior to the heart through small bilateral thoracic incisions, and under the guidance of a Thoracoscope.

Discussion: Although PE in most instances has little or no influence on the function of the inner organs, the cosmetic appearance of the patients leads to psychological impairment which requires therapy. The most established treatment option is the surgical intervention. Intraoperatively, the surgeon should keep the plane of dissection underneath the sternum at all times, in order to avoid the rare but severe complication of perforating the heart. The MIRPE is used worldwide with good results. Overall, this operation is considered a safe procedure.

Conclusion: The Nuss procedure is based on the flexibility of the thorax in young subjects, making effective correction possible using a minimally invasive technique. We started gaining experience in that procedure in our department with good results. We believe that there should be no age limit, and it can be performed safely and successfully even in older patients.

Multicenter evaluation of the actual therapy of inpatients with osteoporotic vertebral fractures in Germany

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Introduction: The number of inpatients with osteoporotic vertebral fractures has increased over the last few years. Patients present either with non-traumatic or traumatic fractures. Before choosing surgical treatment, patient's comorbidities have to be considered. So far, no epidemiological data regarding comorbidities and treatment of this population in Germany exist. The aim of this study was to record clinical and radiological data of patients with osteoporotic vertebral fractures and to obtain an overview about the actual treatment strategies.

Methods: Prospective multicenter (16 hospitals) study with data collection over 6 months. Inclusion criteria were: acute vertebral thoracolumbar fractures and osteoporosis (T-score $< -2,5$).

Results: Data of 707 consecutive patients could be collected (519 women, 188 men). Fracture sites were located from T2 to L5. According to the AO-Magerl classification the following fracture types were diagnosed: A1: 368; A2: 17; A3: 302; B/C: 18. The subgroups A1.1 and A3.1 were most frequent (31% each). 3% of patients presented with acute neurological deficits. 53% had severe osteoporosis, defined as T-score < -3 . 34% of patients had signs of sintering of the fractured vertebrae over time. Despite analgetic medication (WHO level II), 82% of patients still suffered from severe pain (VAS ≥ 4) and 37% of patients could not be mobilised out of the bed. Important comorbidities were present in 38% of patients: ASA-score >3 (12%), dementia (13%), dependence (13%), inhibited clotting (15%). Conservative treatment was chosen in 18% of patients. 54% underwent kypho- or vertebroplasty, and 28% were surgically stabilised (open or percutaneous). The most often chosen stabilisation technique was a combination of cement augmented pedicle screws together with kyphoplasty (42%).

Conclusion: Inpatients with osteoporotic vertebral fractures typically present with either type A1.1 or type A3.1 fractures. Ongoing sintering of the fractured vertebra is common. Despite analgetic medication, one third of patients remain bedridden. Surgically important comorbidities are frequent and only 20% of patients can be treated sufficiently with the WHO pain medication scheme (level II). In the participating hospitals, 82% of patients received surgery. Kyphoplasty with or without additional cement augmented stabilisation is the most frequent surgical therapy.

Traumatic spine findings in post mortem virtual autopsy

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Purpose: Examine spinal traumatic findings in post mortem Virtual Autopsy (Virtopsy).

Materials and Methods: During 2011-2012, in conjuncture with the National Centre for Forensic Medicine, 200 post mortem Virtual Autopsy examinations were performed. These cases are involved in a pilot program examining the utility of Virtual Autopsy in Israel. The examinations included trauma and non trauma related deaths. All underwent full body Forensic Protocol CT. All cases with traumatic spinal findings were collected and analyzed.

Results: 34 cases of traumatic spine injury were found (17%). Of those 33 showed spinal fractures and 1 case showed suspected cord injury without fracture. There were 12 (35%) cases of transected cord and 3 (9%) cases of suspected cord damage without transaction. Of those, 17(50%), 24(71%), 14(41%), 7 (21%), showed cervical, thorax, lumbar and sacral findings respectively. Twelve (12) cases (35%) showed cord transection with another 3 (9%) cases of only suspected cord damage. Examining the number of regions involved, 11 (32%) cases showed one region, while 17(50%), 3 (9%), and 2 (6%) cases showed two, three and four regions involved respectively. In descending order of frequency of cases, we found vertebral body, transverse process, spinous process, laminae and crush fractures with a frequency of 26 (76%), 17 (50%), 16 (47%), 13 (38%) and 10 (29%) respectively.

Conclusion: Virtopsy is a useful tool for imaging of post mortem spine fracture and injury.

Regeneration of human annulus fibrosus with platelet rich plasma

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Backgroundd: Over the years, the Annulus Fibrosus (AF) degenerates, defects are created and disc herniations may occur. It is considered that increased extra cellular matrix (ECM) production and cell proliferation are needed to repair the AF tissue. Platelet rich plasma (PRP) is a useful delivery system containing growth factors. In previous work we have shown that PRP increases metabolic activity and proliferation in the extra cellular matrix (ECM) in bovine tissue. In this study, the effects of PRP on human AF cells are examined.

Methods: During spine fusion cases, disks were extracted from patients. AF cells were harvested. Human blood aspirates from the same patient, were centrifuged producing PRP at 1/10 of the initial blood volume. AF cells were incubated in Dulbecco's Modified Eagle's Medium (DMEM) under the following different culture conditions: 0% PRP, 25% PRP and 50% PRP. After 48 hours, cell proliferation and gene expression were assessed.

Results: DMEM containing 25% and 50% PRP jelled, creating a 3D structure in which the AF harboured. Cell proliferation increased by 4 fold in 25% PRP ($P < 0.05$) and 10 fold in the 50% PRP (< 0.001). Quantitative gene expression profiles showed an anabolic effect of the PRP on the AF cells.

Discussion: In vitro Human AF cells proliferate and express enhanced ECM components in the presence of PRP; these results support that PRP might elicit AF regeneration in vivo.

Spinal epidural abscess now more frequent and aggressive: Changing characteristics epidemiology and virulence

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Scientific background: Spinal epidural abscess (SEA) is considered a rare condition with an estimated incidence rate of 0.2 to 2.8 cases per 10,000 per year. The peak incidence occurs in people who are in their 60s and 70s typically with pre-existing co-morbidities and immunocompromised states such as diabetes mellitus, alcoholism, cancer, and acquired immunodeficiency syndrome. An increase in the rate is currently being reported in Israel.

The purpose of this study is to demonstrate the substantial increase in incidence along with the changing characteristics, epidemiology and increased virulence of this now much more aggressive disease.

Methods: This prospectively collected retrospective chart review compared the incidence of SEA in the past 20 months with that of the prior 20 months at the Kaplan Medical center. Patient demographics, clinical characteristics response to appropriate IV antibiotic treatment and complications were reviewed.

Results: In the past 20 months eight patients presented with a spinal epidural abscess as compared with two patients in the prior 20 months and a mean of one per year in the prior decade at the Kaplan Medical Center. Seven of the eight patients had no prior co-morbidities nor were they immunocompromised. Three were healthy labor workers in their 50's with no predisposing factor. Despite common community acquired micro-organisms, seven of the eight presented with infections that were refractory to appropriate IV antibiotic treatment, deteriorated neurologically and required wide surgical decompression and debridement.

The aggressive nature of these infections is exemplified by the complications that occurred very rapidly while on appropriate IV antibiotic therapy and included, inferior vena cava septic thrombi, wide spread epidural free gas, multiple bilateral psoas abscesses, neurological deterioration despite appropriate IV antibiotics, and kyphotic segmental instability.

Seven of the patients exhibited a fulminant extremely aggressive clinical course requiring surgical debridement and long term antibiotics and rehabilitation.

Discussion: Though representing one hospital's experience this study demonstrates a substantial increase in the incidence and aggressive characteristics of SEA. Patients had no predisposing risk factors and included young healthy labor workers.

Despite seemingly common community acquired infectious micro-organisms the patients exhibited a fulminant and extremely aggressive clinical course that was typically refractory to appropriate IV antibiotic treatment. Severe complications were encountered while under IV antibiotics and required additional surgical treatment and long term antibiotics and rehabilitation.

Conclusion: The incidence of spinal epidural abscess seems to be on a rise with more virulent micro-organisms and aggressive clinical course and potentially life threatening complications. Increased vigilance for this condition and its misleading initial presentations is warranted as are further studies.

In-patient functional restoration in low back pain disability

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Scientific background: Various functional restoration programs are available for persons with chronic low back pain disability (CLBPD), most of them for outpatients.

Methods: The functional outcome of the Loewenstein inpatient CLBPD functional restoration program was evaluated retrospectively. One hundred CLBPD patients with primary ADL deficits (in ambulation, daily activities in sitting and standing positions, washing and dressing lower body), admitted for rehabilitation during 2000-2009, were included. Exclusion criteria were spinal surgery during the 6 months before admission to rehabilitation, neurological deficit with AIS grade A, B, or C, and non-spinal medical problems that may cause disability. Function was assessed using a modified SPIM scale (score range 0-82).

Results: The mean value of functional status at admission was 59% of the maximum allowed by the SPIM scale (49/82). During the rehabilitation program the score improved by a maximum of 84% (41 points) and by 18.6% (9.07 points) on average. The improvement in function correlated positively with a length of stay in rehabilitation (LOS) of up to 60 days, and negatively with the admission SPIM score ($p < 0.001$). No significant correlation was found between SPIM gain and AIS grade, pain relief, use of narcotic drugs, and an open compensation claim.

Discussion: The restoration program achieved a significant functional improvement in many of the most difficult CLBPD patients. Patients with initial severe disability improved more than those whose initial functional condition was higher, and additional stay in rehabilitation, of up to 60 days, resulted in further improvement. Pain relief or external factors that may influence pain or motivation did not affect the functional restoration.

Conclusion: The Loewenstein inpatient CLBPD program is recommended for patients with LBP and a significant primary ADL deficit.

Pain reduction in-patients with in low back pain disability

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Scientific background: The main objective in the rehabilitation of persons with chronic low back pain disability (CLBPD) is improving function. An inpatient functional restoration program, however, can also include psychological, physical, and pharmacological pain relieving measures that can be instantly adapted to patient response.

Methods: Low back pain reduction during the Loewenstein inpatient CLBPD functional restoration program was evaluated retrospectively. One hundred CLBPD patients, admitted during 2000-2009, were included. Patients after spinal surgery during the 6 months before admission, with a significant neurological deficit, or with non-spinal medical problems that may cause disability were excluded. Pain change was assessed using a 7-point scale, 0 representing a worsening of pain and 6 representing complete pain relief.

Results: At discharge from rehabilitation, 60% of the inpatients reported some pain relief, but only 22% reported substantial or moderate improvement in pain. Pain relief was smaller ($p < 0.05$) in patients with neurological deficit (AIS grade D), and correlated weakly with use of narcotic drugs (Oxycontin or Tramadex) at discharge from rehabilitation ($r = 0.211$, $p < 0.05$). No significant correlation was found between the change in pain and admission age, gender, length of stay in rehabilitation, functional condition at admission, and the improvement in function during rehabilitation.

Discussion: The current inpatient functional restoration program achieved improvement in pain that was independent of most patient background data in many of the most difficult CLBPD patients. The ability to reduce pain was compromised by neurological damage. Narcotic drugs had only a slight contribution to pain relief, and the relief was prominent only in a relatively small portion of the patients.

Conclusion: Inpatient CLBPD rehabilitation program contributes to limited pain relief, which is not a precondition for successful functional restoration.

תואר	שם (משפחה/כרטי)	טל' נייד	בי"ח
ד"ר	אוחנה ניסים	050-8617101	בלינסון
ד"ר	אופירם אלישע	052-5911115	מרכז רפואי תלם
ד"ר	אלכסנדרוסקי ויטלי	052-6320305	כרמל
ד"ר	אנגל יצחק	054-4642629	מאיר
ד"ר	אנקשטיין יורם	057-7345403	אסף הרופא
ד"ר	אסלאן חאלד	050-6267208	בני ציון
ד"ר	ארזי הראל	052-6668257	תל השומר
ד"ר	אשכנזי אלי	054-6666008	אסותא
ד"ר	אשכנזי עוזי	052-2504922	השרון
ד"ר	בלום דנה	054-5071200	השרון
ד"ר	בן גלים פלג	050-6361236	קפלן
ד"ר	ברוסקין אלכסנדר	052-2617432	כרמל
ד"ר	ברונשטיין יגאל	050-4056625	וולפסון
ד"ר	ברזילי יאיר	050-8573279	הדסה עין כרם
ד"ר	גוטפריד יחיאל	052-3783936	בני ציון
ד"ר	גופמן אלכס	050-4554756	רמב"ם
ד"ר	גפטלר אלכס	052-5516893	סורוקה
פרופ'	גפשטיין ראובן	054-7443000	מאיר
ד"ר	ג'קסון סטיב	054-6230245	בילינסון
ד"ר	דוד רמי	054-4854158	מאיר
ד"ר	דז'ברוב רוסטם	050-4567357	ברזילי
ד"ר	הנדל דוד	050-8685670	שערי צדק
ד"ר	השרוני אמיר	050-7874846	הדסה עין כרם
ד"ר	וייסמן מרק	054-6558180	כרמל
ד"ר	וולד אורי	054-2291046	אסותא
ד"ר	ולן גד	054-4781425	סורוקה
ד"ר	זילברשטיין בוריס	054-5328404	כרמל
פרופ'	זערור מנשה	050-2062533	רמב"ם
ד"ר	חביב אללה גזי	050-6395243	מאיר
ד"ר	טנצמן מיכאל	052-2535817	העמק
ד"ר	יוסי סמורז'ק	050-5191572	אסף הרופא
ד"ר	יאסין נג'יד	052-6662771	רמב"ם
ד"ר	יצחאיק איל	050-8946921	עין כרם
ד"ר	כספי ישראל	050-5455774	תל השומר
פרופ'	כץ עמירם	054-4562708	בית לוינסטיין
ד"ר	לוטן רפי	052-2862448	וולפסון
ד"ר	לוינקופך משה	052-6666266	תל השומר

חברי האיגוד

תואר	שם (משפחה/פרטי)	טל' נייד	בי"ח
ד"ר	לידר צביקה	052-4266445	איכילוב
ד"ר	לייטנר יוסי	054-4433261	מאיר
ד"ר	מולא האני	050-7887963	נהריה
ד"ר	מלגרם מייק	054-6319458	אסותא
פרופ'	מירובסקי יגאל	057-7345437	אסף הרופא
ד"ר	מרום ליאור	054-4836022	רמב"ם
פרופ'	נרובאי יעקב	050-5640084	תל השומר
ד"ר	סבתו שבתאי	050-8685166	שע"צ
ד"ר	סגל ריקרדו	050-7874207	הדסה עין כרם
ד"ר	סוירי גיל	050-2063739	רמב"ם
פרופ'	סוסטיאל ז'אן פול	050-2063013	רמב"ם
ד"ר	סיגל צ'וני	050-5238896	אסותא
ד"ר	סלמה חליל	052-4266441	איכילוב
ד"ר	סנקי משה	054-4529699	הלל יפה/מאיר
ד"ר	עובדיה דרור	052-4266344	איכילוב
ד"ר	פולמן יורם	050-6246850	הלל-יפה
ד"ר	פיקרסקי איליה	054-4631076	מאיר
פרופ'	פלומן יזהר	054-4214369	אסותא
ד"ר	פרידלנדר אלון	054-4282644	תל השומר
ד"ר	פריימן שי	050-7887466	נהריה
ד"ר	קינן אורי	052-4266350	איכילוב
ד"ר	קליר ישראל	050-5286762	בילינסון
ד"ר	קנולר נחשון	052-6666295	תל השומר
ד"ר	קפלן לאון	050-7874217	הדסה עין כרם
ד"ר	קרמר מוטי	052-6769986	סורוקה
ד"ר	רגב גלעד	052-4262357	איכילוב
ד"ר	רחמימוב נמרוד	050-7887564	נהריה
ד"ר	רייכל מיכאל	052-2361162	העמק
ד"ר	רן הראל	054-2440677	תל השומר
ד"ר	רנד נחשון	052-3691697	אסותא
ד"ר	שבת שי	054-4584005	מאיר
ד"ר	שגיב שאול	052-2232651	קפלן
ד"ר	שייניס דימיטרי	050-7968778	בילינסון
ד"ר	שלמון אהוד	057-7345868	אסף הרופא
ד"ר	שרים המיד	052-3363090	וולפסון
ד"ר	ששון אברהם	050-5378269	סורוקה

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The 15th Annual Meeting of the Israel Spine Society
14th-17th May 2014, the Royal Beach Hotel, Eilat

