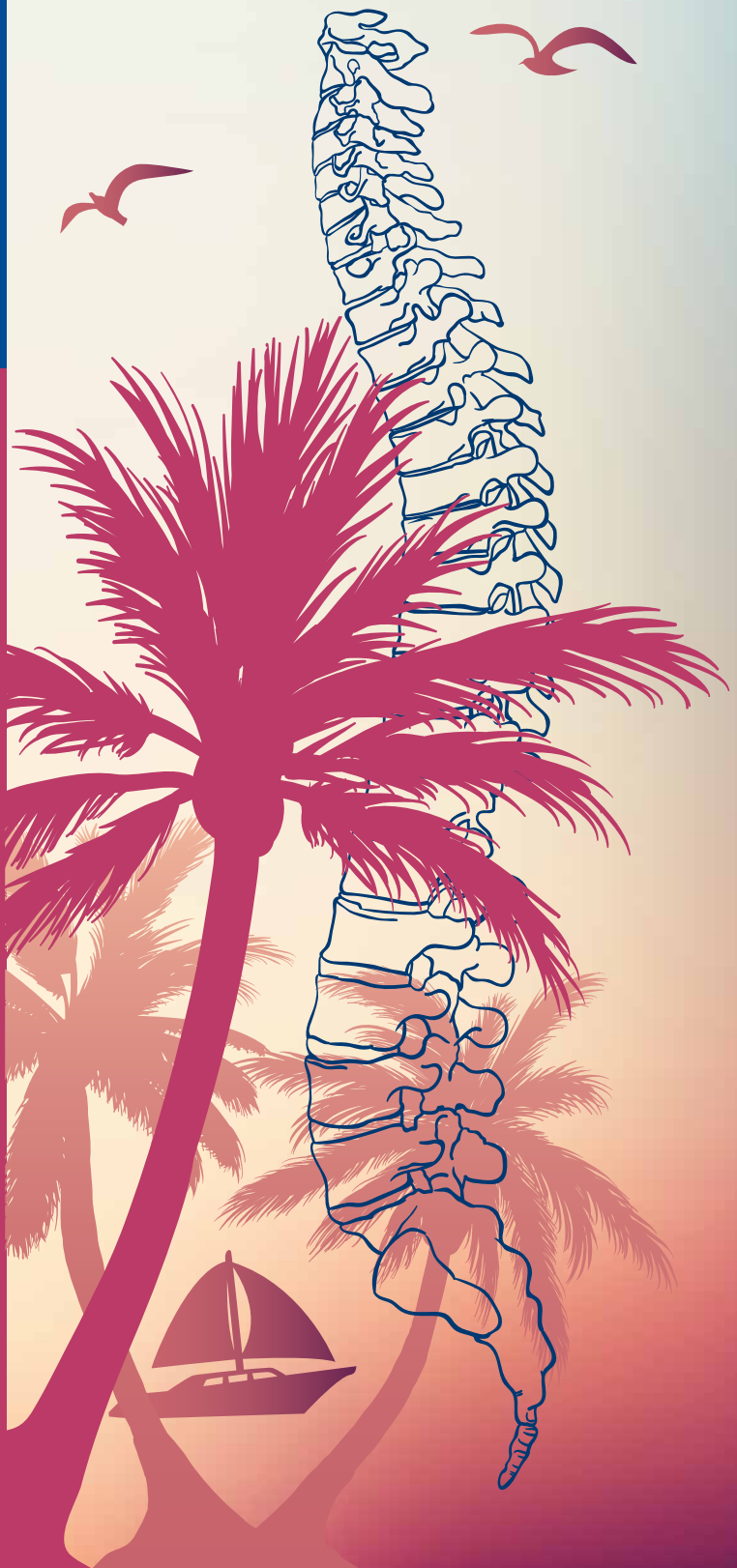
THE 19TH ANNUAL MEETING OF THE ISRAEL SPINE SOCIETY

25-28 April 2018

Wednesday-Saturday
The Royal Beach Hotel
Eilat - Israel.



General Information

The 19th annual meeting of the Israel Spine Society will be held on Wednesday-Saturday, 25th - 28th April, 2018 "Royal Beach" Hotel in Eilat.

Acting Committee

Nachshon Knoller M.D
Chairman

Yoram Anekstein M.D
Secretary

Eyal Itshayek M.D
Treasurer

Israel Caspi M.D
Educational Committee

Ran Harel M.D
Committee Member

Gad J. Velan M.D
Committee Member

International Keynote Speakers

Isador Lieberman M.D.
USA

Mike Hisey M.D.
USA

John Peloza M.D.
USA

Honored Guest Lecturer

Ami Ayalon
Israel

Ben Caspit
Israel

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 friends and distinguished guest speakers,

Spring is arriving and we meet again in our yearly meeting, scientific and social event that integrate professional excellence in friendly atmosphere.

The main scope of the meeting is Minimal Invasive spine surgery but it includes all aspects of our profession- tumors, scoliosis, innovations, pain, education and much more.

I would like to welcome our keynote speakers – **Izzy (Isador) Lieberman, Michael (Mike) Hisey and John Peloza,** all three of them from Dallas, Texas, USA. They are distinguished opinion leaders in the world of spine surgery that are coming to enrich us with their experience and knowledge.

It is an honor for me to host 2 distinguished guest lecturers - my friend and ex commander **Major General (res.) Ami Ayalon** that served as a parlament member, minister and was previously head of Israel's secret service, and commander-in-chief of the Navy, and **Ben Caspit** – publicist, senior columnist, political analyst and a writer.

I am happy to inform that last October we were accepted as full members in **EuroSpine** and **EuSSAB - the European Spine Societies Advisory Board.** It was established to provide a common umbrella and communication platform where national societies can meet and connect on a regular basis as equal partners—defining common goals, identifying challenges and developing strategies to address them. I believe that this partnership can help us to step further on and progress.

This meeting is also the time to pass the leadership of the Israeli Spine Society to my friend and colleague **Dr. Gad Velan.** I am sure that with his rich experience, knowledge and originality he will step us forward.

I would like to thank all the committee members that help me to run the society, Shanit the eternal and efficient secretary and all the members of the Israeli Spine Society for your confidence and the involvement.

I wish us all a fruitful meeting and a pleasant stay in Eilat among friends and colleagues.

Nachshon Knoller M.D.
President, Israel Spine Society

חברי האיגוד ואורחים נכבדים, ברוכים הבאים

עברה שנה אביב הגיע ושוב אנחנו נפגשים באילת בכנס השנתי ה-19 שלנו, כנס שהפך למסורת של מצוינות מדעית באווירה חברית.

השנה הכנס יהיה בדגש על ניתוחים זעיר פולשניים, אך יעסוק, כמובן, גם באספקטים אחרים של מקצוענו - גידולים, סקוליוזיס, חידושים טכנולוגים, כאב, חינוך ועוד.

ברצוני לברך את המרצים האורחים - **ד"ר איזי ליברמן, ד"ר מייק היסי וד"ר ג'ון פלוזה,** שלושתם מדאלאס טקסס בארה"ב. תודתנו נתונה על כך שהקדישו מזמנם להגיע ולהשתתף בכנס השנתי שלנו ולהעשיר אותנו בניסיונם ובידע הקליני שלהם.

כבוד הוא לי לארח את מפקדי וחברי **אלוף (מיל') עמי איילון** - שכיהן כמפקד חיל הים, ראש השב"כ העשירי, חבר כנסת ושר בממשלת ישראל, ואת **מר בן כספית** -עיתונאי, פרשן ופובליציסט, שידברו על נושאים הרחוקים מעולמנו המקצועי אך כה משפיעים על חיינו.

אני שמח לבשר כי בשנה האחרונה האיגוד הישראלי לעמוד שדרה התקבל כחבר באיגוד האירופאי לעמוד שדרה (EuroSpine) ובוועדה המייעצת לאיגודי עמוד שדרה האירופאים (EuSSAB). מספר שנים ניסינו ללא הצלחה מסיבות שונות, פוליטיות ברובן, אך השנה התגייסו מספר חברים בולטים - מקס אייבי משוויץ, רוברט גינצברג ומארק שפאלצקי מבלגיה וחברי האיגוד הגרמני ונוצרה ההזדמנות לקבלתנו כחברים מלאים באיגוד האירופאי.

אני רואה בכך חשיבות מרובה בשל ההזדמנות ליצור מקומות להשתלמות עמיתים, להשתתף בקורסים של האיגוד, להיכנס בדלת הראשית לפרויקט איסוף הנתונים (Spine Tango), להצטרף לאתר ההסבר למנותחים ומשפחותיהם ונושאים רבים אחרים הנמצאים בלב עיסוקנו.

בשנתיים האחרונות ביצעו מספר רופאים השתלמות עמיתים (Fellowship) ביחידות ומחלקות בארץ, מיעוטם נצמדו לתוכנית המוכרת על ידי המועצה המדעית. האיגוד בראשותי מעודד את ביצוע ההשתלמויות ביחידות המוכרות לכך בישראל, אך אני חוזר ומזכיר לכולנו - בעמל רב זכינו, כפרטים וכאיגוד, בהכרה ביכולות המקצועיות שלנו, אל לנו להתפשר על הרמה המקצועית משיקולי כח אדם ועבודת היום יום.

בכנס השנה אני מסיים את תפקידי כיו"ר האיגוד ומעביר את המושכות **לד"ר גד ולן,** עמית וחבר זה שנים רבות. אני משוכנע כי גד, מנתח עמוד שדרה ותיק ועתיר רעיונות, יצעיד את האיגוד קדימה, ואני תקוה שבתקופת כהונתו גם נצליח לשבור את תקרת הזכוכית והמקצוע שלנו - ניתוחי עמוד שדרה - יוכר להתמחות על. **בהצלחה.**

בהזדמנות זו אני רוצה להודות לחברי הועד לדורותיהם שסייעו לי בשנותי כיו"ר האיגוד, תודה מיוחדת לשנית המזכירה העמלנית והנצחית, וכמובן לכל חברי האיגוד על מעורבותכם, דעתנותכם והאמון שנתתם בי.

אני מאחל לכולנו כנס פורה ושהייה נעימה באילת בין חברים ועמיתים.

דר. נחשון קנולר
נשיא האיגוד הישראלי לעמוד השידרה

חברים ועמיתים

ברוך בואכם לכנס השנתי והבין לאומי של האיגוד הישראלי לעמוד השידרה. גם השנה נערך הכנס בעיר אילת המקסימה. השנה בולטת השתתפותם של אורחים רבים ומכובדים מעבר לימים ולאוקיינוסים. מתוך אוסף רב של אבסטרקטים נבחרו כשלושים עבודות אשר תוצגנה בפני המשתתפים. זו גם השנה האחרונה של הוועד הנוכחי והזדמנות טובה להודות לכל חברי האיגוד על תרומתם להצלחתו. עוד רבה העבודה העומדת בפנינו לבנית איגוד מקצועי עצמאי ואיכותי.

תודה לכולם,

דר. ישראל כספי
הוועדה המדעית

SCIENTIFIC PROGRAM

Wednesday, April 25, 2018

15.30 - 15.55
COFFEE BREAK

15.55 - 16.00
Opening Remarks
N. Knoller, ISS Chairman

Session 1: DEFORMITY
Chairmen: Y. MIROVSKY, Y. LEITNER

16.00 - 16.30
PANEL DISCUSSIONS:

Scoliosis Case discussion:
Y. Anekstein ,M. Milgram ,H. Arzi,
I. Caspi, A. Bruskin

Case presentation:
J. Shroeder, E. Behrbalk

16.31 - 16.39
(1) Neurological outcome following three column osteotomy in Spinal Deformity surgery
M. Kashan, M. Eldafrawi, M. Raad,
K. Kebaish

16.40 - 16.48
(2) Measurement properties of the scoliosis research society outcomes questionnaire in adolescent patients with spondylolisthesis
G. Gutman, J. Joncas, J.M. Mac-Thiong,
M. Beausejour, M. Roy-Beaudry, H. Labelle,
S. Parent

16.49 - 16.57
(3) Can we predict the height gain in scoliotic deformity correction?
O. Rabau, Y. Smorgick, E. Shalmon,
Y. Anekstien, Y. Mirovsky

16.58 - 17.06
(4) The effectiveness of the SpineCor brace for the conservative treatment of adolescent idiopathic scoliosis.
Comparison with the Boston brace
G. Gutman, M. Benoit, J. Joncas,
M. Beauséjour, S. Barchi, H. Labelle,
S. Parent, J.M. Mac-Thiong

17.07 - 17.12
Discussion

17.13 - 17.33
Keynote Lecture: Cost analysis of adolescent scoliosis surgery
H. Lieberman

17.34 - 17.54
Keynote Lecture: Use of Stem Cells in my spine practice
J. Peloza

17.55 - 18.00
Discussion

Thursday, April 26, 2018

07.00 - 08.00
REGISTRATION

Session 2: TRAUMA
Chairmen: N. OHANA, A. FRIEDLANDER

08.00 - 08.08
(1) Robotic assisted fixation of sacral fractures – initial experience
B. Qutteineh, J. Schroeder, M. Liebergall,
A. Khoury, R. Mosheiff, Y. Weil

08.09 - 08.17
(2) Hemodynamically unstable multi trauma patient with unstable pelvis and incomplete Spinal cord injury
B. Qutteineh, J. Schroeder, M. Liebergall,
A. Khoury, L. Kaplan, R. Mosheiff

08.18 - 08.26
(3) Outcome of surgical treatment of traumatic Vertbra fractures with spinal cord injury
B. Qutteineh, L. Kaplan, A. Hasharoni,
E. Itshayek, J. Schroeder

08.27 - 08.35
(4) Robotic assisted percutaneus screw fixation for spine fractures- is it safe?
S. Alexandra, H. Shear-Yashuv, L. Kaplan, J. Schroeder

08.36 - 08.44
(5) Percutaneus pedicle screw instrumentation for thoracolumbar fractures
G. Gutman, O. Hershkovich, A. Friedlander, M. Levinkopf, I. Caspi, H. Arzi

08:45 - 08.50
Discussion

Session 3: MISCELLANEUS
Chairmen: G. REGEV, S. SHABAT

08.51 - 09.11
Debate: Lumbar decompression surgery Laminectomy and Discectomy: Open Vs. MIS
Open: Y. Anekstein
MIS: M. Hisey

09.12 - 09.17
Discussion

09.18 - 09.26
(1) Minimally invasive transforaminal lumbar interbody fusion (MIS-TLIF): Single surgeon technique evolution
R. Harel, G. Kimchi, N. Knoller

09.27 - 09.35
(2) Transforaminal lumbar interbody fusion: advantages of the minimally invasive approach
G. Kimchi, N. Knoller, R. Harel

09:36 - 09:44
(3) Long-term outcomes minimally invasive unilateral approach for bilateral decompression of lumbar spinal stenosis
G. Regev

09.45 - 09.50
Discussion

09.51 - 10.11
Keynote Lecture: New techniques in MIS decompression
J. Peloza

10.12 - 10.15
Discussion

10.15 - 10.45
COFFEE BREAK

Session 4: DEGENERATIVE
Chairmen: N. RAHAMIMOV N. RAZ

10:46 - 10:54
(1) Eleven years follow-up for total lumbar facet joint replacement (TOPS) in the management of lumbar spinal stenosis and degenerative spondylolisthesis
Y. Smorgick, Y. Floman, N. Rand, M. Milgram, Y. Mirovsky, Y. Anekstein

10.55 - 11.03
(2) Cervical kyphosis correction via the Anterior Cervical Approach- Outcome and Complications
M. Nulman, N. Knoller, R. Harel

11.04 - 11.12
(3) Posterior instrumentation of the spine utilizing O-arm imaging with computer-assisted navigation: technique and preliminary result
O. Rabau, N. Knoller, R. Harel

11.13 - 11.15
Discussion

11.16 - 11.36
Debate: Cervical Myelopathy with OPLL: Anterior Vs. Posterior approach
Ant: A. Hasharoni
Post: E. Engel

11.37 - 11.40
Discussion

11.41 - 11.49
(4) Our Initial Experience with ALIF Cases – Clinical and Radiological Outcome
R. Masarwa, G. Gutman, O. Galili, K. Zeev-Vladimir, U. Ofir, L. Haimovich, Y. Folman, E. Behrbalk

11.50 - 11.58
(5) Lumbar disc herniation in adolescents
A. Sliman, A. Puhov, V. Alexamdrovsky, B. Zilberstein, B. Bernfeld, A. Bruskin

11.59 - 12.03
Discussion

Session 5: REHABILITION
Chairmen: G.J. VELAN, D. HENDEL

12.04 - 12.24
Keynote Lecture: Use of gait analysis in the assessment of spinal pathology
H. Lieberman

12.25 - 12.28
Discussion

12.29 - 12.37
(1) The Israeli Spinal Cord Injury Rehabilitation Registry (ISCIR) - a new perspective on continuum of care of patients with spinal cord injury
E. Engel-Haber, S. Noy, G. Zeilig

12.38 - 12.46
(2) Severe sleep-related breathing disorders are rare in patients with spinal cord injury
V. Bluvshtein, D. Michaeli, T. Polak, M. Abu Rois, V. Goizman, A. Oksenberg, R.G. Pollack, E. Aidinoff, K. Elkayam, A. Catz

12.47 - 12.55
(3) Ability realization after SCI or cauda-equina lesion and its improvement during rehabilitation
A. Catz, R.G. Pollack, L. Yamini, V. Bluvshtein, D. Michaeli, K. Elkayam, E. Aidinoff

12.56 - 13.00
Discussion

13:00 - 14.00
LUNCH BREAK

Session 6: DEGENERATIVE (2)
Chairmen: R. LOTAN, E. ITSHAYEK

14:00 - 14.20
Keynote Lecture: Is Cervical arthroplasty the gold standard for cervical radiculopathy and myeloradiculopathy?
M.S. Hisey

14.25 - 14.33
(1) IV Dexamethasone for the Treatment of Acute Low Back Pain with or without Sciatica. A Prospective Randomized Controlled Trial
O. Berger, G. Gutman, U. Ofir, A. Yassin, L. Haimovich, Y. Floman, E. Behrbalk

14.34 - 14.42
(2) Soft tissue balancing. an innovative technique for the conservative treatment of low back pain. a prospective cohort study
R. Masarwa, G. Gutman, G. Peled, U. Ofir, L. Haimovich, Y. Folman, E. Behrbalk

14.43 - 14.51
(3) The Efficacy of dilute Povidone-iodine Slution Irrigation before wound closure in the prevention of postoperative infection of spinal surgery
S. Menachem, A. Shtewee, I. Caspi, M. Levinkopf, A. Friedlander

14.52 - 14.56
Discussion

14:57 - 15:17
The Chairman's Address:
What is the future for spinal surgery?
N. Knoller

15.18 - 15.39
COFFEE BREAK

15.40 - 16.40
GUEST LECTURE:
Israel's victory against terrorism
A. Ayalon (lecture will be held in Hebrew)
ניצחון במאבקה של ישראל בטרור, עמי איילון

Friday, April 27, 2018

Session 7: DEFORMITY (2) & TUMORS
Chairmen: L. KAPLAN, M. RAICHEL

08:30 - 08.38
(1) Risk of rod fracture in adult spinal deformity (ASD) patients undergoing long posterior spinal fusion and three column osteotomy (3CO)
M.H. El Dafrawy, M. Khashan, M. Raad, M. Abou Areda, K. Kebaish

08.39 - 08.47
(2) Normal sagittal parameters of global spinal balance in children and adolescents:a prospective study of 646 asymptomatic subjects
G. Gutman, H. Labelle, S. Barchi, P. Roussouly, E. Berthonnaud, J.M. Mac-Thiong

08.48 - 08.56
(3) The use of polyester sublaminar bands in complex and revision spinal deformity surgery: operative technique and exemplary cases
S. Tahboub, Y. Barzilay, J. Weinstone, A. Hamed, H. Arzi

08.57 - 09.05
(4) The Effect of Intrathecal Baclofen Infusion on the Progression of Scoliosis in Patients with Cerebral Palsy: a Multicenter Prospective Analysis
Z. Zibly, G. Kimchi, R. Harel, I. Caspi

09.06 - 09.11
Discussion

09.12 - 09.32
Debate: MIS tumor resection reduces complications True or False
MIS: R. Harel
Open: Z. Lidar

09.33 - 09.41
(5) Local control rate for RCC Spinal metastasis treated with Spinal radiosurgery [SRS]
R. Harel, L. Zach

09.42 - 09.47
Discussion

09.48 - 10.08
Keynote Lecture: Who needs robotics?
I. Lieberman

10.09 - 10.12
Discussion

10.12 - 11.30
GUEST LECTURE:
The Bibliography of Netanyau
B. Caspit (lecture will be held in Hebrew)
נתניהו/ביוגרפיה: סודות המנהיגות של בנימין נתניהו, בן כספית

11.30 - 12.00
COFFEE BREAK

12.00 - 12.45
PROFESSIONAL MEETING

ENJOYABLE WEEKEND AND SEE U ALL NEXT YEAR.

Neurological outcome following three column osteotomy in spinal deformity surgery

M. Khashan, M. Eldafrawi, M. Raad, K. Kebaish

Design:
Retrospective.

Introduction:

Three column osteotomies (3CO) are effective techniques for correcting of rigid spinal deformity, however, they may be associated with high complication rate. Neurological motor deficit can be the main driver to patients' disability and dissatisfaction. This study aims at evaluating neurological outcome adult spinal deformity (ASD) patients undergoing 3CO. We also evaluated the prognosis of these neurological complications.

Methods:

A prospective database of ASD patients undergoing surgery was retrospectively queried for patients with thoracic, lumbar or sacral vertebral column resection (VCR) or pedicle subtracting osteotomy (PSO) that were performed between July 2004 to December 2014. All surgeries were performed by a single surgeon at a single center. We included patients above the age 18 with at least one year follow up. The primary outcome measure was the change in American Spinal Injury Association (ASIA) Lower Extremity Motor Scores (LEMS) obtained preoperatively, within 2 weeks postoperatively, at 6 months and 12 months postoperatively. We divided the patients into two groups based on their preoperative LEMS: INTACT group (LEMS=50) and WEAK group (LEMS<50).

Results:

199 consecutive patients met the inclusion criteria. Main baseline patient and surgical characteristics are summarized in table1. The average LEMS of the two group at the three postoperative assessments is presented in table 2. Overall 15% and 10% of the patients showed improved and declined LEMS, respectively, at the first postoperative assessment. However, at 12 months 17% showed improvement and 5% showed decline in LEMS compared to baseline. The detailed comparison of changes in LEMS between the groups is demonstrated in Table 3

Conclusion:

Although decline in LEMS occurred in 10% of the patients following 3COs, at 12 months postoperatively only 5% of the patient will remained with a motor deficit. Our results also show that the majority of patient with preoperative neurological deficits improved within a year after surgery.

Measurement properties of the scoliosis research society outcomes questionnaire in adolescent patients with spondylolisthesis

G. Gutman[1,2], J. Joncas[4], J.M. Mac-Thiong[3,4,5], M. Beausejour[4], M. Roy-Beaudry[4], H. Labelle[3,4], S. Parent[3,4]

1. The Center for Spinal Studies and Surgery - Hillel Yaffe Medical Center, Hadera, Israel.
2. Rappaport Faculty of Medicine, Technion University, Haifa, Israel
3. University of Montreal, Faculty of Medicine, department of surgery, Montreal, Quebec, Canada
4. CHU Sainte-Justine, Department of Surgery, Pediatric Orthopaedics, Montreal, Quebec, Canada
5. Hopital du Sacre-Cœur de Montreal, department of surgery, Orthopaedics, Montreal, Quebec, Canada.

Study Design:

Prospective validation of the Scoliosis Research Society Outcomes Questionnaire French-Canadian version (SRS-22fv) in adolescent patients with spondylolisthesis.

Objective:

To determine the measurement properties of the SRS-22fv.

Summary of background data:

The SRS-22 is widely used for the assessment of health-related quality of life in adolescent idiopathic scoliosis (AIS) and other spinal deformities. Spondylolisthesis has an important effect on quality of life. The instrument was previously used in this population, although its measurement properties remained unknown. We aim to determine its reliability, factorial, concurrent validity, and its discriminant capacity in an adolescent spondylolisthesis population.

Methods:

The SRS-22fv was tested in 479 subjects (272 patients with spondylolisthesis, 143 with AIS, and 64 controls) at a single institution. Its reliability was measured using the coefficient of internal consistency, concurrent validity by the short form-12 (SF-12v2 French version) and discriminant validity using multivariate analysis of variance, analysis of covariance, and multivariate linear regression.

Results:

The SRS-22fv showed a good global internal consistency (spondylolisthesis: Cronbach =0.91, AIS: 0.86, and controls: 0.78) in all its domains for spondylolisthesis patients. It showed a factorial structure consistent with the original questionnaire, with 60% of explained variance under four factors. Moderate to high correlation coefficients were found for specifically corresponding domains between SRS-22fv and SF-12v2. Boys had higher scores than do girls, scores worsened with increasing age and body mass index. Analysis of covariance showed statistically significant differences between patients with spondylolisthesis, patients with AIS, and controls when controlling for age, sex, body mass index, pain, function, and self-image scores. In the spondylolisthesis group, scores on all domains and mean total scores were significantly lower in surgical candidates and in patients with high-grade spondylolisthesis. Low to moderate ceiling effects were shown in function (1.1%), self-image (10.7%), and pain (13.6%).

Conclusion:

The SRS-22fv can discriminate between healthy and spondylolisthesis subjects. It can be used in spondylolisthesis patients to assess health-related quality of life.

Can we predict the height gain in scoliotic deformity correction?

O. Rabau, Y. Smorgick, E. Shalmon, Y. Anekstien, Y. Mirovsky

Spine Surgery Unit, Department of Orthopedic, Assaf Harofe Medical Center, Zerifin, Israel.

Introduction:

A spine of a given length will have lesser vertical height when curved, hence scoliosis is associated with height loss. While attempts have been made to define the height lost with progression of scoliosis, less information is available to define the height that is gained as a result of surgical correction of the curve. The purpose of this study was to evaluate the correlation between curve corrections and increased in height by corrective surgery for scoliosis.

Methods:

We prospectively evaluated all patients who underwent surgery for curve correction in our institution between October 2017 to April 2018. Patient's clinical and radiological data including curve type, curve flexibility and curve correction were recorded. Patients height before and after the surgery was measured in a standing position.

Results:

The Study included 20 consecutive patients who underwent posterior spinal instrumentation and fusion for the treatment of scoliosis. There were 15 females and 5 males. The mean age was 15.3.

The mean preoperative Cobb angle of the main thoracic curve was 62.3 degree and it was corrected to mean Cobb angle of 20 degree, the mean height gain due to surgery was 37.1 mm.

Conclusion:

Gaining Height after posterior spinal instrumentation and fusion for scoliotic patients is highly correlated to the correction of the Cobb angle and to the number of curved that are instrumented.

The effectiveness of the SpineCor brace for the conservative treatment of adolescent idiopathic scoliosis. Comparison with the Boston brace

1. G. Gutman[1,2], M. Benoit[3], J. Joncas[4], M. Beauséjour[4], S. Barchi[4], H. Labelle[3,4], S. Parent[3,4], J.M. Mac-Thiong[3,4,5]

1. The Center for Spinal Studies and Surgery - Hillel Yaffe Medical Center, Hadera, Israel.
2. Rappaport Faculty of Medicine, Technion University, Haifa, Israel.
3. University of Montreal, Faculty of Medicine, department of surgery, Montreal, Quebec, Canada.
4. CHU Sainte-Justine, Department of Surgery, Pediatric Orthopaedics, Hopital du Sacre-Cœur de Montreal, department of surgery, Orthopaedics, Montreal, Quebec, Canada.

Backgroud Context:

The Boston brace (Bb) is the most widely used brace design to treat adolescent idiopathic scoliosis (AIS). The dynamic SpineCor (SC) brace is prescribed in several scoliosis clinics worldwide, but its effectiveness remains controversial.

Purpose:

The study aimed to compare the treatment effectiveness of SC in patients with AIS treated by the developers of the brace with that of the Bb at a single institution.

Study Design/ Setting:

This is a retrospective comparison between a cohort of AIS patients treated using the SC brace and a cohort treated using the Bb.

PATIENT SAMPLE:

We assessed 243 patients treated with either Bb or SC brace to prevent the progression of AIS.

Outcome Measures:

The primary outcome was the progression in main Cobb angle when reaching one of the following end point criteria: (1) progression in Cobb angle of 6°, (2) main Cobb angle of 45°, (3) surgery undertaken, or (4) reaching skeletal maturity (Risser sign of 5 or growth of <1 cm in the previous 6 months).

Methods:

Patients were identified at a single institution between 2000 and 2012 following the Scoliosis Research Society criteria for brace treatment: (1) diagnosis of AIS, (2) Risser sign of 2, (3) curve magnitude between 25° and 40°, and (4) age 10 years. A total of 97 patients treated with SC by the developers of the brace and 146 patients treated with Bb were identified. Data collection and radiograph measurements were performed by a single experienced nurse not involved in the decision-making for brace treatment or in the data analysis. Age and Risser sign at onset of treatment, initialmain Cobb angle, curve type, and duration of follow-up were similar in both cohorts. Statistical analysis was done using chi-square and logistic regression models, with a level of significance of .05.

Results:

The average progression was 14.7°±11.9° in the SC cohort compared with 9.6°±13.7° in the Bb cohort (p=.003). The average Cobb angle at the end point of the study reached 47°±13° in the SC cohort and 41.7°±14.2° in the Bb cohort (p=.005), whereas at the onset of bracing it was 32.2°±4.9° and 32.2°±4.4°, respectively, for the SC and Bb cohorts. The percentage of patients with a progression of 6° was 76% in the SC cohort and 55% in the Bb cohort (p=.001). The proportion of patients reaching 45° in the SC and Bb cohorts was, respectively, 51% and 37% (p=.03), whereas the proportion of patients referred to surgery was 39% and 30%, respectively, for the SC and Bb cohorts (p=.2). The odds of progressing 6° and of reaching 45° were 2.67 and 2.07 times greater, respectively, when using the SC brace.

Conclusions::

The SC brace did not prevent curve progression as effectively as the Bb. Although it has the potential benefit of increasing mobility during brace wear, the SC brace was associated with increased curve progression in comparison with the Bb. There is also a trend for increased risk of requiring surgery when the SC brace is worn.

Robotic assisted fixation of sacral fractures – initial experience

B. Qutteineh, J. Schroeder, M. Liebergall, A. Khoury, R. Mosheiff, Y. Weil

Hadassah Hebrew University Hospital, Jerusalem, Israel

Abstract:

Unstable sacral fractures are challenging for orthopaedic trauma surgeons. In most cases percutaneous fixation techniques are utilized after reduction. However, these techniuqes are not risk free mainly due to anatomical considerations. Screw misplacement is quite common and concerning. As spine surgery evolved, a miniature robotic guidance system was successfully utilized in pedicular screw insertion. The aim of the study was to demonstrate the use of the miniature robot in the fixation of unstable sacral fracutres.

Patients and Methods:

10 patients with unstable sacral fracutres without significant displacement were eligible for percutaneous fixation. These included 8 traumatic fractures and 2 pathological fractures. Nine fixation constructs were planned using a preoperative CT scans and one case was done with an intraoperative CT. The patients were placed prone and the robot was mounted on a Dynamic Reference Bridge (DRB), in cases of the preoperative CT- 2 verification fluoroscopic images were taken in the case of the intraoperative imaging a 3D scan was performed intraoperative after fracture reduction. The robot was mounted on the DRB and was sent by the robotic computer to the desired screw(s) trajectory. The guide wires were inserted through stab wounds and screws were placed subsequently. CT scans were made postoperatively and fluoroscopic and operative time were recorded intraoperatively.

Results:

Mean patient age was 29 (17-63) number of screws ranged 1-8 (average 2.5). Mean operative time was 50 min (range 15-90), and average fluoroscopic time was 18 sec (7-42). None was the screws was misplaced.

Conclusion:

Robotic assisted fixation of sacral fracture is promising. In displaced fractures intra operative reduction and fixation can be used as well.

Hemodynamically unstable multi trauma patient with unstable pelvis and incomplete Spinal cord injury

B. Qutteineh, J. Schroeder, M. Liebergall, A. Khoury, L. Kaplan, R. Mosheiff

Hadassah Medical Organization, Hadassah University Hospital

A 47 year old male, was brought to the trauma bay after a motorcycle accident. The patient presented with severe back pain and couldn't move his legs (Incomplete Spinal cord injury-ASIA B). The patient presented with level three shock, unstable BPs, and a dropping Hb levels.

The patient had a normal Chest x-ray and negative FAST were identified. On his pelvis X-ray, a pelvic fracture was noted (Young and Burgess Classification APC type 2).

Due to shock, a massive transfusion protocol was started (the patient received a total of 24 units of blood), and a pelvic binder was applied. With the persistence of hypotension; he was intubated and ventilated, received inotropics and underwent an embolization of lateral sacral artery. When stabilized a total body CT was performed, diagnosing a unstable T10 vertebra fracture with cord compression.

The patient underwent a urgent decompression and fusion from T8-T12. With motor return.

A week later, he underwent anterior plating of the pelvis fracture and percutaneous posterior sacroiliac screws with guidance of intraoperative CT.

Normal operative courses.

After 1 month he was discharged to rehabilitation. At 5 months follow up, he can walk on his both legs without assisted devices with improved to a ASIA D status.

Outcome of surgical treatment of traumatic vertebra fractures with spinal cord injury

B. Qutteineh, L. Kaplan, A. Hasharoni, E. Itshayek, J. Schroeder

Spine unit – Hadassah Hospital

Background:

Trauma patients can sustain Vertebra fractures. Acute spinal cord injuries can occur as a result of these fractures which can have a profound impact on the patient, family, and society. They can occur due to high-energy trauma (mainly in young patients), including motor vehicle accident and falls from a heights (with high percentage of associated injuries) or due to innocent falls in the geriatric population. The aim of this study is to review and evaluate the outcome of patients that were admitted to our trauma unit with vertebra fractures, acute spinal cord injury and have been treated surgically within 48 hours of admission.

Materials and methods:

From 01/2006 to 02/2017, we included patients who were admitted to our trauma unit with vertebra fractures that have been treated surgically within 48 hours of admission. Patients' medical records were retrospectively reviewed for location of vertebra fracture, presence of acute spinal cord injury, mechanism of injury, associated injuries, time before surgery (group A): less than 12 hours, group B :12 -24 hours, group C: 24-48 hours), length of hospital stay, ASIA impairment scale before surgery, after surgery, and at long term follow up.

Results:

42 patients (29 males: 13 females) with traumatic acute spinal cord injury were admitted between 01/2006 to 02/2017 and have been treated surgically within 48 hours of admission. Mean age at admission was 36 years (range 15-79 years).

The mean follow up was 30 months (range 2-110 months). 50 % had vertebra fractures due to motor vehicle accident while 48% due to falls.

27% had cervical vertebra fractures, 52% had thoracic vertebra fractures and 21% had lumbar vertebra fractures.

57% had associated injuries.

At long term follow up after surgery, 55% of patients with acute spinal cord injury had been improved in their ASIA scale.

After Surgery, in group A 64% of patients were improved in their ASIA score (50% had 2 grade improvement in their ASIA scores), in group B 44% of patients were improved in their ASIA score (50% had 2 grade improvement in their ASIA scores), while in group C 40% of patients have improvement in their ASIA score (none of them had 2 grade improvement in their ASIA scores).

Conclusion:

Early surgical intervention should be advised for patients with vertebra fractures and acute spinal cord injury, as it is associated with improved outcome.

Robotic Assisted Percutaneus Screw fixation for Spine Fractures- is it safe?

S. Alexandra, H. Shear-Yashuv, L. Kaplan, J. Schroeder

Methods:

A retrospective study of patients who underwent percutaneous pedicle screw fixation for thoracolumbar spine fractures using Mazor robotic system (Renaissance, Mazor Robotics Ltd.Israel) between August 2014 to January 2018. Demographic data, accuracy rates, procedure time, post-operative alignment and radiation exposure were measured.

Results:

57 patients underwent robotic assisted percutaneous pedicle screw fixation during the study period. Of these, 7 cases were excluded due to missing data of end time and total fluoro exposure. All procedures were conducted with a single chief surgeon present in the operating theatre. A total of 305 pedicular screws were executed, with accuracy rate of 0.9404 (289 accurate and 16 deviated). An average of 6.09 screws were conducted per case, with average of 3.35 levels per case. Average length of procedure was 59 minutes, with average time per screw of 3.36 minutes. Average exposure per screw was evaluated as 7.25 seconds with exclusion of scan and plan. 2 cases were switched to free-hand insertion.

Discussion:

Robotic assisted percutaneous pedicular screws insertion is found to be safe and efficient in surgery time, radiation exposure and soft tissue damage over the past years. Its safety in use on traumatic and unstable spine was unclear. In our cumulative experience during the study period we have found this surgical method safe. An improvement in average screw insertion time and accuracy rates over time imply there is an additional learning curve, requiring further study.

Conclusion:

the use of robotic assisted percutaneous pedicular screw insertion in traumatic thoracolumbar fractures safe, faster and with less fluoro exposure comparing with the traditional open surgery. Further study is required to investigate the learning curve for this procedure and compare it with other navigation techniques.

Percutaneus pedicle screw instrumentation for thoracolumbar fractures

G. Gutman, O. Hershkovich, A. Friedlander, M. Levinkopf, I. Caspi, H. Arzi

Department of Orthopedic Surgery, Chaim Sheba Medical Center

Study Design:

A retrospective study of 18 cases with minimum 1 year follow up which underwent percutaneous pedicle screw instrumentation for the treatment of thoracolumbar fractures.

Objective:

To evaluate periopertive and short-term complications of thoracolumbar fractures

(TLF) treated with minimally invasive percutaneus pedicle screw fixation.

Summary of Background Data:

Minimally invasive surgery including percutaneous pedicle screw instrumentation (PPSI) is gaining popularity as a simple surgical alternative for the treatment of TLF without associated neurological injury or significant canal compromise. There are few studies available in the literature regarding PPSI for the management of thoracolumbar fractures. PPSI treatment of AO/Magerl type A and B TLF, is reported to be a safe procedure that provides good short and long term results.

Methods:

Retrospective review patient data of 18 adult patients (13 males, 5 females; average age 50±21 years; range 19-87) who had a thoracolumbar AO/Magerl type A or B fracture underwent application of percutaneous pedicle screw fixation system. Radiologic parameters including kyphotic angle and or clinical data was assessed before and after surgery at a minimum 1 year follow up.

Results:

Most fractures were AO/Magerl type A3.3 and underwent a 3 level vertebrae instrumentation. 6 patients were initially multitrauma. Mean operative time was 78±12.43 minutes and mean blood loss was 21±6.13 ml. One patient was treated with kyphoplasty augmentation. Complications were registered in 3 of 18 patients. 2 patients that were multitrauma suffered from deep wound infection and require revision surgery. 1 patient with osteoporosis suffered from instrumentation loosening. No statistical significant difference in segmental kyphosis was found between perioperative and at final follow up. (P=0.975).

Conclusions:

Percutaneous short pedicle instrumentation of thoracolumbar fractures can be perfomed with short operative time, minimal blood loss and good maintenance of reduction. The radiographical results at 1 year show a stable segmental kyphosis. Further large-scale studies are necessary to obtain more definite results.

Key words:

Minimally invasive surgery, Percutaneus pedicle screw instrumentation, Thoracic or Lumbar fracture.

Minimally invasive transforaminal lumbar interbody fusion (MIS-TLIF): Single surgeon technique evolution

R. Harel, G. Kimchi, N. Knoller

Spine Surgery Division, Department of Neurosurgery, Sheba Medical Center, Ramat-Gan, Israel

Introduction:

MIS-TLIF was first described on 2005. The conclusions in the first description claimed it was feasible procedure with potential advantages. Over the years the surgical technique has changed due to improved surgical tools and ability.

Methods:

We retrospectively reviewed our MIS-TLIF cases and describe the shift in surgery technique of a single surgeon over 6 years.

Results:

MIS-TLIF was initially performed with uniplanar fluoroscopic guidance and K-wires insertions followed by MIS facetectomy, discectomy and TLIF cage insertion. The final steps included screws and then rods insertion.

The introduction of O-arm imaging and navigation system allowed for a navigated K-wire insertion and navigated decompression and cage insertion. Utilization of a navigated drill-tap tool with certain advancement in the navigation software, allowed for a K-wireless screw insertion. The final evolution of our technique includes the utilization of curved drills for enhanced contralateral foraminotomies.

Conclusions:

Although MIS-TLIF was first described over 10 years ago, it is still evolving as surgical technology improves.

Transforaminal lumbar interbody fusion: advantages of the minimally invasive approach

G. Kimchi, N. Knoller, R. Harel

Department of Neurosurgery, Sheba Medical Center, Ramat-Gan, Israel

Background:

Since its introduction 15 years ago, minimally invasive transforaminal lumbar interbody fusion (MIS-TLIF) has been extensively studied in retrospective analyses. Among the benefits of this technique are reduced blood loss, lesser neural retraction, earlier post-operative ambulation, shorter post-operative hospitalizations, faster recoveries and diminished post-operative pain. The purpose of this study is to compare the outcomes and complication rates of minimally invasive vs. open TLIF.

Methods:

This is a retrospective analysis of all patients who were operated between 2012 and 2017 for both open and MIS TLIF at a single institute. Pre-operative data was acquired by reviewing records of admission files. Radiographic evaluation prior to operation was based on all available imaging. Patient records were compared for demographics, indication for surgery, pre-operative symptoms, surgical technique, estimated blood loss (EBL), number of levels, duration of post-operative hospitalization, post-operative complication rates and clinical outcomes - as measured during post-operative clinic visit.

Results:

Overall, 36 patients were included in the study; 13 in the MIS group and 23 in the open surgery group. Insignificant age, gender, comorbidities and ASIA Impairment Scale differences exist between the cohorts. Mean periods of follow up in the MIS and open-surgery groups were 4.9 and 6.14 months, respectively (P=0.63). In the MIS group, an average of 1.1 spinal levels were operated, compared to 2.08 in the open surgery group (P<0.001), indicating a significant difference between the groups. Adjacent level disease was more prevalent in the open-surgery group: 17% vs none in the MIS group (P=0.012). Mean EBL in the MIS and open-surgery groups was 138 CC and 1087 CC, respectively (P<0.001). The rate of dural tears was 15% in the MIS group and 30% in the open surgery group, yet no statistically significant difference was demonstrated (P=0.48). CSF leaks occurred exclusively in the open surgery group (26%, P=0.068), with subsequent meningitis in one case. Mean post-operative hospitalization duration was 3.6 days in the MIS group, compared with 8.4 days in the open surgery group (P=0.002). Only 1 case of infection occurred in the MIS group and 1 case in the open-surgery group. In the MIS group, minor complications rate was 15%, compared to 43% in the open surgery group. Major complications did not occur in the MIS group, yet occurred in 13% of the open surgery group. No significant difference was demonstrated between the groups. 76% of patients operated in a minimally invasive approach demonstrated neurological improvement in their follow up visits, compared to 50% in the open surgery group (P=0.258). Multivariate analysis did not reveal significant predictors for these outcomes.

Discussion:

This retrospective analysis demonstrates significantly favorable outcomes in the MIS-TLIF group compared to the open-TLIF group in terms of EBL and length of post-operative hospitalization. These findings are consistent with previous reporting in numerous publications that portray the advantages of MIS-TLIF over open-TLIF. However, when reviewing the results one should be aware of the differences in patient selection between the groups, as cases involving single level disease are more prevalent in the MIS group and may confound the favorable outcomes observed in that group.

Long-term outcomes minimally invasive unilateral approach for bilateral decompression of lumbar spinal stenosis

G. Regev

Study Design:

A retrospective review of prospectively collected databases.

AIM:

To evaluate the long-term outcome and the risk of repeated surgeries following MIS decompression of lumbar spinal stenosis.

Summary of Background Data:

Prior studies have documented good short-term clinical results and a low complication rate following minimally invasive spinal (MIS) decompression, but longer-term data are less clear.

Methods:

Consecutive patients who underwent MIS lumbar decompression between 2009 and 2013 at our institute were reviewed. Outcome assessment was performed via a telephone survey. Outcomes measures included: current visual analog scale (VAS) for back and leg pain, current pain management treatment , self-rating questionnaire about the of surgical success, and the rate of additional spinal surgeries.

Results:

55 patients were available for review with an average follow up of 6.2 years. Patient self-reported success ranged from 45% to 81% .The use of narcotic pain medication decreased substantially to only 50% of patients, and 16% underwent epidural nerve blocks. Additional lumbar spine surgery was performed in 18% of patients. Among them (X) (5.5%) were done during the short post-operative period and (Y) (12.5 %) were done 6 months or more following the initial surgery. Surgery due to insufficient decompression or restenosis of the operated spinal segment was performed in (Z) 3.5% of patients. None of the patients undergone spinal instrumentation or fusion surgery during the follow up period.

Conclusion:

The clinical outcome 5 years postoperatively after using the MIS approach for lumbar spinal stenosis showed a favorable maintenance of improvement in symptoms. Repeated lumbar spine surgical intervention within the follow up period were done in 18% of the patients. Secondary surgeries were performed mostly for symptomatic adjacent-level stenosis and did not required spinal fusion.

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Eleven years follow-up for total lumbar facet joint replacement (TOPS) in the management of lumbar spinal stenosis and degenerative spondylolisthesis

Y. Smorgick[1], Y. Floman[2], N. Rand[2], M. Millgram[2], Y. Mirovsky[1], Y. Anekstein[1]

1. The Spine Unit, Assaf Harofeh Medical Center, Zerifin 70300, Israel.
2. Israel Spine Center at Assuta Hospital, Tel Aviv, Israel.

Purpose:

To evaluate the feasibility and clinical improvement of a total posterior arthroplasty system in the surgical management of lumbar degenerative spondylolisthesis and or spinal stenosis.

Methods:

During a 1-year period (June 2006 to July 2007), ten patients were enrolled in a non-randomized prospective clinical study. The primary indication was neurogenic claudication due to spinal stenosis with single level degenerative spondylolisthesis. Patients were evaluated with X-rays and MRI scans, visual analog scale (VAS) for back and leg pain, the Oswestry disability questionnaire, and the SF-36 health survey preoperatively, at 6 weeks, 3 months and 6 months and at 1, 2, 3 , 7 and 11 years postoperatively.

Results:

The VAS score for back pain dropped from 56.2 preoperatively to 12.5 at 6 weeks and 19 at 7 years followup. The VAS score for worse leg pain dropped from 83.5 before surgery to 13 at 6 weeks and 8.8 at 7 years follow up. The ODI dropped from 49.1 preoperatively to 13.5 at 6 weeks and 10.3 at 7 years follow-up. MRI examination at 11 years after surgery demonstrate stenosis adjacent to the stabilized segment in 1 patient. Spondylolisthesis did not progress in any of the cases. In one patient, conversion to posterolateral fusion was performed due to an early device malfunction.

Conclusion:

In patients with spinal stenosis and degenerative spondylolisthesis, decompression and posterior arthroplasty with the TOPS System can maintain clinical improvement and radiologic stability over time.

Cervical kyphosis correction via the Anterior Cervical Approach - Outcome and Complications

M. Nulman[1], N. Knoller[2], R. Harel[1,2]

1. Arrow project, Sackler Medical School, Tel-Aviv University
2. Spine Surgery Division, Department of Neurosurgery, Sheba Medical Center, Ramat-Gan, Israel

Introduction:

Cervical kyphosis is considered pathologic, and when accompanied by spondylotic myelopathy, should be addressed during the surgery. The surgical goals include deformity correction, decompression of neural elements, and spinal stabilization using a biomechanically sound construct, while preventing pseudoarthrosis and minimizing surgical complications. Since deformity surgery is considered to be of higher risk, we compared patients who underwent surgery by means of the Anterior Cervical Approach in order to treat cervical kyphosis to patients treated for cervical myelopathy. We also compared pre and post operative Cobb Angles in patients treated for cervical kyphosis.

Methods:

Retrospective evaluation of data and images relating to patients undergoing anterior approach surgery for cervical kyphosis compared to cervical myelopathy at the Sheba Medical center between 2011 and 2016. We examined risk factors, number of levels treated, post operative complications, revision surgery rates and the Cobb Angle of the kyphotic patients using their images (CT, MRI, X-ray).

Results:

The study included 27 patients operated for cervical kyphosis and compared to 345 patients treated for myelopathy. There were no significant differences in demographics and risk factors between the groups, there was a significant difference in the number of levels treated (median: 3 and 2 for cervical kyphosis and myelopathy respectively). Both surgery and anesthesia durations were significantly longer for the kyphosis group. There were no significant differences between the groups for all post operative complications, wound and surgical revisions, EBL and mortality. Cobb Angle between C2 and C7, as well as the maximal kyphosis angle was measured for 24 patients out of the 27 patients. We used pre-operative images (mean kyphotic angle 13.1, mean angle at maximal kyphosis17.9), post operative day 1 (mean lordotic angle 3.7, mean lordotic angle at maximal kyphosis 1.4) and in follow up images – average 161 days (mean lordotic angle 4, mean lordotic angle at maximal kyphosis 3.5). We applied a paired T-test to compare the mean Cobb Angles. A comparison of both the mean angles C2-C7 and the mean angles at maximal kyphosis preceding the operation, with the angles measured POD1 (mean correction 16.8, maximal 19.3) and the angles measured during follow up (mean correction 17, mean correction at maximal kyphosis levels 21.4) revealed significant improvement.

Conclusions:

When treating cervical kyphosis patients by the anterior cervical approach significant reduction can be expected. Anterior cervical approach for kyphosis correction is safe and effective with comparable results to anterior cervical approach for spondylitic myelopathy.

Posterior instrumentation of the spine utilizing O-arm imaging with computer-assisted navigation: technique and preliminary result

O. Rabau[1], N. Knoller[2], R. Harel[2]

1. Spine Surgery Unit, Department of Orthopedic, Assaf Harofe Medical Center, Zrifin, Israel.
2. Spine Surgery Division, Department of Neurosurgery, Sheba Medical Center, Ramat- Gan, Israel.

Introduction:

Spine instrumentation is on the rise over the last years. However, fixation of the spine remains a challenging mission, in which malposition screw can contribute to neurological deficit, vascular complications and surgical revisions. O-arm imaging with computer-assisted navigation was shown to improve accuracy rates. The authors present the surgical technique for navigation utilization and review the results of patients who underwent navigated posterior fixation during the last 3 years.

Methods:

The authors performed a retrospective review of 61 consecutive patients who underwent posterior fixation of the spine utilizing the O-arm fluoroscopy with computer assisted navigation between November 2014 and November 2017 at a single hospital. All patients underwent pre-instrumental and post-instrumental O-ARM scanning during the operation.

Results:

The distribution by gender was equal, mean age was 56.5 y/o (range 12 to 86 y/o), the mean number of levels was 2.9 (range 2 to 8). Spinal tumors were treated in 29.5% of the cases and degenerative spine in 21.3%. The pathology in the remaining patients consisted of trauma, myelopathy, instability and infection. Twenty-three patients (37.7%) underwent cervical fixation, 16 (26.2%) underwent thoracic fixation and 22 (36%) underwent lumbar fixation. The mean EBL was 328cc (range 0-1600cc). Mean surgery duration was 156 min, and mean anesthesia duration was 80 min. Operation related complication included Dural tear in 8 patients (13.1%), intraoperative repositioning of implants in 11 patients (18 %) and 2 surgical revisions.

Conclusion:

Navigation assisted instrumentation allows for higher accuracy of implants placement and utilization of intra-operative 3D imaging devices allows for implant position adjustments to optimal results. Better implants position reduces the need for surgical revisions and is presumed to improve surgical outcome.

Our Initial Experience with ALIF Cases – Clinical and Radiological Outcome

R. Masarwa[1,2], G. Gutman[1,2], O. Galili[2,3], K. Zeev-Vladimir[2,3], U. Ofir[1,2], L. Haimovich[1,2], Y. Folman[1,2], E. Behrbalk[1,2]

1. The Center for Spinal Studies and Surgery - Hillel Yaffe Medical Center.
2. Rappaport Faculty of Medicine, Technion University.
3. Vascular Surgery Unit – Hillel Yaffe Medical Center

Introduction:

Anterior Column Reconstruction (ACR) with Anterior Lumbar Interbody Fusion (ALIF) has been gaining acceptance over the past decade for the treatment of degenerative and adult spine deformity. However, indications remain limited due to concerns of potential approach complications. We present our first 8 ALIF cases performed at Hillel-Yaffe Medical Center.

Methods:

We reviewed the radiological and surgical data of 8 patients following ALIF procedure at a mean follow-up of 22±9 months. Eight cages were inserted in 4 males and 4 females. The mean age was 48±16 years and mean BMI was 25±5 Kg/m2. Four patients underwent ALIF as a revision surgery after previous posterior spinal fusion that failed to relief their symptoms. In four patients ALIF was performed as a primary procedure for degenerative-disc-disease.
One Patient had degenerative-disc-disease with bilateral spondylolysis.
Anterior only fusion was performed in 7 cases, one case underwent 360 ° fusion. None of the patients had concomitant spinal stenosis. Medtronic ALIF cage system was used in all cases (6 Avilla cages with Pyramid plate, 3 Sovereign cages).

Results:

Surgical time averaged 3.5±0.3 hours with an average estimated blood loss of 158 ml (range 30-800ml). The mean hospital stay was 7±2 days.

Pre-operative to post-operative radiographic changes: (1) Fusion segment Cobb's angle increased from 4.1°±2° to 21.3°±4°, (2) Disc height increased from 8.9±2 mm to 20.7±4 mm, (3) Lumbar lordosis increased from 39.1±14° to 56.15±13° and matched the pre-calculated pelvic incidence, (4) Neural canal height changed from 14.75±4 mm to 20.0±5 mm.

Follow-up radiographs revealed no hardware subsidence or loosening. No patient required revision surgery.

Complication included severe radiculitis in 1 patient most probably due to Bone-Morphogenic-Protein use. Another patient had postoperative transient impairment of his left sympathetic trunk resolved in two weeks.

Conclusion:

Our initial experience with ALIF operation is encouraging.
The technique allows for excellent restoration of the sagittal vertebral parameters to their pre-degeneration status while enlarging the segment neuronal canal height.

Lumbar disc herniation in adolescents

A. Sliman[1], A. Puhov[1], V. Alexandrovsky[1], B. Zilberstein[1], B. Bernfeld[2], A. Bruskin[1]

1. Spinal Unit, Lady Davis Carmel Medical Center, Haifa, Israel
2. Orthopaedic Department, Lady Davis Carmel Medical Center, Haifa, Israel

Background:

Lumbar intervertebral disc herniation (LIVDH) is commonly seen in the adult population, and as a result, the signs and symptoms are well recognized and easily treated. On the other hand LIVDH is rare in children and adolescents where the signs and symptoms are atypical in this age group. This can lead to delay in the diagnosis and treatment.

In the literature, adolescents generally constitute around 0.5–3% of surgically treated LIVDH.

Methods:

Major databases were searched for studies that addressed lumbar disc herniation in young children.

We present 4 cases of lumbar discectomy that was performed over the past years in our department.

Results:

In general, diagnosis of lumbar disc herniation is delayed due to difficulty in extracting a reliable medical history. Lumbar disc herniation should be considered in the differential diagnosis of any adolescent presenting with a main complaint of back pain and/or radiculopathy, especially in the setting of recent trauma.

In order to narrow the differential diagnosis, a physical examination and imaging tests should be performed, mainly MRI, in order to establish a diagnosis. The initial management of lumbar disc herniation in adolescents is conservative treatment unless lumbar disc herniation affects the patient's motor and neurological functions. In which case, early surgical treatment must be considered.

Conclusion:

Awareness to lumbar disc herniation in adolescents will help to get a quick diagnosis. This will aid in initiating early intervention, be it conservative or operative, and achieving a favorable outcome. Operative treatment of LDH in adolescent individuals leads to very good outcome with high degree of patient satisfaction.

The Israeli Spinal Cord Injury Rehabilitation Registry (ISCIR)– a new perspective on continuum of care of patients with spinal cord injury

E. Engel-Haber, S. Noy, G. Zeilig

Background:

For many of the patients with spinal cord injury (SCI), the acute hospitalization phase is the beginning of a long journey. Rehabilitation then follows in a designated rehabilitation hospital thus marking the sub-acute or initial chronic phase before they enter the community. The importance of continuity of care and patient follow-up cannot be undermined.

In Israel, trauma cases are recorded in a central registry since 1998, yet data for patients who completed rehabilitation programs was missing. In early 2017, the ISCIR was established with data collection already underway. Currently data is extracted from Sheba Medical Center's records. However, in the near future additional rehabilitation hospitals will participate.

Methods:

We reviewed all patients with SCI (traumatic and non-traumatic) admitted to the department of Neurologic Rehabilitation between 2012-2017. Collected data was based on International SCI data sets published by the International Spinal Cord Society. This data was also crossed with entries from the Israeli Trauma Registry and thus we were able to extract additional information by combining data from both registries.

Results:

Between 2012-2017, the admissions were as follows: more than 160 patients due to traumatic SCI, 140 due to non-traumatic injury and 90 returning (re-rehab) patients due to varying reasons. Of the patients with traumatic SCI, 46% had a cervical spinal injury, 39% had a complete injury (AIS A), 84% were male. Of the patients with non-traumatic SCI, 39% were cervical, 5% had a complete injury, 67% were male. Additional statistics were extracted and preliminary analyses were carried out.

Conclusion:

This preliminary report shows the demographics, causative factors, severity of injury, neurological & functional rehabilitation outcomes, as well as various factors that were measured during inpatient rehabilitation. As the rehabilitation database will continue to grow, we will be able to have a better understanding of quality of care and long-term outcomes of patients with SCI.

Severe sleep-related breathing disorders are rare in patients with spinal cord injury

V. Bluvshtein, D. Michaeli, T. Polak, M. Abu Rois, V. Goizman, A. Oksenberg, R.G. Pollack, E. Aidinoff, K. Elkayam, A. Catz

Loewenstein Rehabilitation Hospital, Tel Aviv University, Israel

Introduction:

Sleep-disordered breathing (SDB) is common after spinal cord injury (SCI), but its severity varies. The present study evaluated the severity of breathing abnormalities during sleep, after SCI, and its relationship with patient characteristics and sleep quality.

Methods:

Oxygen desaturation was measured overnight in 41 SCI patients, one month after admission to rehabilitation. The oxygen desaturation index (ODI) was calculated, as a measure of breathing disorder severity. Logistic and linear regressions were used to identify risk factors for SDB and factors related to SDB severity.

Results:

SDB (ODI >5) was found in 19 patients (46%), but the breathing disorder was severe in one of the examined patients only. Only BMI was found to be a risk factor for breathing disorder (p=0.01). The SDB severity was found to be related to age, BMI and PSQI score (r2=0.54; p0.01).

Conclusion:

Although SDB is prevalent in SCI patients, severe disorders are rare, and their severity is related to age, BMI, and impaired quality of sleep.

Ability realization after SCI or cauda-equina lesion and its improvement during rehabilitation

A. Catz, R.G. Pollack, L. Yamini, V. Bluvshtein, D. Michaeli, K. Elkayam, E. Aidinoff

Loewenstein rehabilitation Hospital, Tel-Aviv University, Israel

Summary:

Introduction: The Spinal Cord Injury Ability Realization Measurement Index (SCI-ARMI), is a measure assessing the net effect of rehabilitation mainly, after controlling for the motor deficit, age and gender. The present study examined the variability of SCI-ARMI scores and gain during the assimilation period of the tool, during routine use.

Methods:

SCI-ARMI recordings were retrospectively examined in patients admitted for rehabilitation, and compared between years.

Results:

SCI-ARMI scores were 53.3-58.0 at admission and 72.5-76.8 at discharge. SCI-ARMI gain was 20.4±19.9, its mean values progressing throughout the assessment period, from year to year, from 14.4 to 23.5, the progress being statistically non-significant ($p>0.05$).

Conclusion:

The findings indicate that SCI-ARMI is appropriate for routine clinical use. The influence of SCI-ARMI assessment on rehabilitation outcome will be reflected by upcoming years SCI-ARMI gain values.

IV Dexamethasone for the Treatment of Acute Low Back Pain with or without Sciatica. A Prospective Randomized Controlled Trial

O. Berger[1,2], G. Gutman[1,2], U. Ofir[1,2], A. Yassin[1,2], L. Haimovich[1,2], Y. Floman[1,2], E. Behrbalk[1,2]

1. The Center for Spinal Studies and Surgery Hillel Yaffe Medical Center
2. Rappaport Faculty of Medicine, Technion University

Study Design:
Prospective randomized double blinded controlled trial.

Objective:

Acute LBP is a global health issue, short period of IV steroids for pain treatment is still controversial. We compared the treatment effectiveness of intravenous (IV) Dexamethasone as adjuvant therapy with opioids and nonsteroidal anti-inflammatory drugs (NSAIDS) to that of placebo) IV 0.9% sodium chloride (, opioids and NSAIDS. In patients with acute excruciating low back pain (LBP) with or without sciatica and no neurologic deficit.

Methods:

34 subjects admitted to our unit were enrolled and consecutively randomized into two groups. 15 subjects were assigned to receive IV Dexamethasone in addition to opioids and NSADIS (Dexa group) and 19 subjects were assigned to receive placebo with opioids and NSAIDS (Placebo group) for a 3 days period. Visual Analogue Scale (VAS) score for low back and leg pain were compared at baseline and after 3 days.

Results:

Both groups were similar according to age (46.5±10.8 years in the Dexa group vs 47.5±9.2 years in the Placebo group (p=0.77) and gender (10 males in the Dexa group vs 14 males in the Placebo group (p=0.72). There were no differences between VAS score at baseline and at final follow up (91.3±16.4 in the Dexa group vs 94.7±6.9 in the Placebo group (p=0.42) and 38.7±20.6 in the Dexa group vs 45.8±31.9 in the Placebo group (p=0.46) respectively. Even though the total amount of oxycodone administered in the Dexa group (85.66 mg) was slightly less than in the placebo group (99.41 mg), it didn't show statistically significance (p=0.6).

Conclusions:

Adding IV Dexamethasone to opioids and NSAIDS for the treatment of acute LBP is not better than Opioids and NSAIDS alone. The use of IV Dexamethasone carries out the risk for potential adverse effects. We recommend not to use IV steroids for the treatment of acute excruciating LBP with or without sciatica.

Soft tissue balancing. an innovative technique for the conservative treatment of low back pain. a prospective cohort study

R. Masarwa[1,2], G. Gutman[1,2], G. Peled, U. Ofir[1,2], L. Haimovich[1,2], Y. Folman[1,2], E. Behrbalk[1,2]

1. The Center for Spinal Studies and Surgery - Hillel Yaffe Medical Center
2. Rappaport Faculty of Medicine, Technion University. Tel Aviv, Israel

Study Design:

Prospective cohort study.

Introduction:

Soft Tissue Balancing (STB) is based on manual pressure over trigger points with aim of generating ischemia and as a consequence to achieve an anti-inflammatory effect over the desire area. The objective of this study was to investigate the treatment effectiveness of the STB technique in Low Back Pain (LBP) without nerve root irritation patients.

Methods:

The Visual Analogue Scale for LBP (VAS back), Oswestry Disability Index (ODI) and SF-12 were tested in 35 subjects with chronic LBP before the onset of treatment (OT) and at final follow up (FFUP). All subjects were treated after CT or MRI of their lumbar spine performed and the need for surgery was excluded. All treated by a single experienced expert in alternative medicine - STB.

Results:

The cohort included 24 females and 11 males, mean age of 53.07±15.34 years, BMI 24.82±2.35. They received a mean of 4.15±1.70 sessions. Treatment length was 29.42±16.6 days. Vas back (7.86±1.20 OT, 2.21±2.45 FFUP; $p<0.0001$), ODI (49.45±17.85 OT, 15.44±17.86 FFUP; $p<0.0001$) and SF-12 (34.91±21.27 OT, 70.95±21.45 FFUP $p<0.0001$) all showed significant improvement by the end of the treatment.

Conclusions:

This study provides evidence that STB is effective in reducing chronic LBP. Subjects seeking advice for the conservative treatment of LBP might benefit from this innovative therapy.

The Efficacy of dilute Povidone-iodine Slution Irrigation before wound closure in the prevention of postoperative infection of spinal surgery

S. Menachem, A. Shtewee, I. Caspi, M. Levinkopf, A. Friedlander

Infections after spinal surgery are a common complication with multiple consequences the could be devastating.

Postoperative infection can compromise the clinical outcome of the surgery causing a longer and more complex recovery process as well as economic implications.

The progress and use of advanced sterilization techniques, and the administration of preoperative antibiotics, significantly reduced the number of infections from 5.9% prior to the use of antibiotics to 2.2% after its introduction.

Despite efforts to characterize specific factors which increase the risk of infection and treat them, postoperative infections are still the most common postoperative complication.

Povidone iodine is a compound containing polyvinyl pyrrilidine and triiodine ion and is used as an antiseptic for skin, mucous membranes and wounds.

This product has extensive antibacterial activity against many pathogens, including MRSA.

There are studies that demonstrated cytotoxicity when used in concentration of 5% or above, but at low doses of 0.35% - 0.5% there are almost no toxic effects or side effects at all.

The goal of this study was to examine the effect of the use of sterile diluted betadine solution on the rate of acute infections after spinal surgery.

Our hypothesis was that the use of a sterile betadine solution will reduce the number of acute infections postoperatively.

A randomized controlled study Is being conducted for patients undergoing primary lumbar spinal fusion.

Patients were divided in two groups, in group 1 wounds are irrigated with diluted betadine solution prior to wound closure, in Group 2 wounds are irrigated with sterile saline alone. Otherwise, perioperative management is the same.

These results represent the first cohort of 20 patients who were operated since the beginning of the study.

Group 1 – 9 patients in total, no superficial or deep wound infections, Group 2 –11 patients in total, 2 deep wound infections.

Conclusion – based on the preliminary results of our study, betadine lavage before wound closure may be an inexpensive, effective means of reducing acute postoperative infection in patients undergoing spinal fusions.

Risk of rod fracture in adult spinal deformity (ASD) patients undergoing long posterior spinal fusion and three column osteotomy (3CO)

M.H. El Dafrawy[1], M. Khashan[2], M. Raad[2], M. Abou Areda[1], K. Kebaish[1]

1. Johns Hopkins University Baltimore-United States
2. johns hopkins baltimore-United States

We evaluated rate and risk factors of rod fractures (RF) in 205 patiens who underwent long posterior spinal fusion and 3CO for ASD surgery. Multivariate logistic regression model (MVR) showed that correction of lumbar curve >25° in the coronal plane was independent risk factor for RF (odds ratio 3.57 p=0.019), correction of LL>30° trended towards increased risk(odds ratio 2.3 p=0.077)

Hypothesis

Rod fracture in ASD pts undergoing 3 CO is related to the degree of correction and severity of coronal and sagittal deformity including pre-op SPL, LL, TK and major cobb angle.

Design

Retrospective review of prospective data

Introduction

Recent studies showed high % of RF in ASD undergoing 3CO (20-30%), additional rods quad/ satellite rods are advocated to prevent instrumentation failure. This study aims at identifying the rates and predictors of RF in ASD patients undergoing 3CO with classic dual rod constructs.

Methods

A prospective database of ASD surgery was queried for pts > 18 years who underwent VCR or PSO between July 2004 to December 2014. All surgeries were performed by a single surgeon, all pts had standard dual rods. T test was used to compare pts with RF and those without RF in terms of age, Charlson score, BMI, surgical indication, primary versus revision surgeries, baseline radiographic parameters, number of fused levels, type and level of the osteotomy, pelvic fixation. Variables with significant differences were used in a multivariate logistic regression model to identify predictors of RF

Results

205 consecutive pts met the inclusion criteria (94 VCR and 111 PSO). Main baseline patient and surgical characteristics of both groups summarized in table1. Overall rate of RF occurred in 26/205 pts (14 VCR and 12 PSO). Asymptomatic RF not requiring revision occurred in 7/14 pts with VCR and 3/12 in PSO pts. 7 pts required revision of RF in VCR and 9 in PSO group. On univariate analysis pelvic fixation was a risk factor for RF. In the multivariate analysis, predictors of RF were: correction of the major lumbar curve >25° in the coronal plane was (odds ratio 3.57 p=0.019), as well as correction of LL > 30° in the sagittal plane trend towards increased risk (odds ratio 2.3 p=0.077). Age, BMI, Charlson index , levels fused and SPL correction were not found to be a risk factor for RF.

Conclusion

Overall rate of rod fracture in ASD pts undergoing long PSF and 3CO was 12.6 % (26/205), only 7 RF occurred at the osteotomy site. 16/26 pts required revision surgery, the remaining 10 pts had asymptomatic single RF. Multivariate logistic regression model showed that correction of coronal lumbar curve>25° was an independent risk factor for RF.

Normal sagittal parameters of global spinal balance in children and adolescents: a prospective study of 646 asymptomatic subjects

G. Gutman[1,2], H. Labelle[3,4], S. Barchi[4], P. Roussouly[6], E. Berthonnaud[7], J.M. Mac-Thiong[3,4,5]

1. The Center for Spinal Studies and Surgery - Hillel Yaffe Medical Center, Hadera, Israel.
2. Rappaport Faculty of Medicine, Technion University, Haifa, Israel.
3. University of Montreal, Faculty of Medicine, department of surgery, Montreal, Quebec, Canada.
4. 4CHU Sainte-Justine, Department of Surgery, Pediatric Orthopaedics, Montreal, Quebec, Canada.
5. 5Hopital du Sacre-Cœur de Montreal, department of surgery, Orthopaedics, Montreal, Quebec, Canada.
6. 6Department of Orthopedic Surgery, Centre Medico Chirurgical de Readaptation des Massues, Lyon, France.
7. 7Clinical Research Unit, L'Hopital Nord Ouest Villefranche, Villefranche, Saone, France.

Introduction:

Purpose:

To document values for parameters of global spinal balance in asymptomatic children and adolescents.

Methods:

Multicenter prospective study of normal sagittal global spinal balance in Caucasian children and adolescents. Spinosacral angle (SSA), spinal tilt (ST), and C7 translation ratio were evaluated in 646 asymptomatic children and adolescents (276 males and 370 females).

Results:

Mean and standard deviation for SSA, ST, and C7 translation ratio were, respectively 132.1° ± 8.3°, 93.2° ± 4.6° and -0.7 ± 8.3. Mean ± 2 standard deviations were, respectively 116°-149° for SSA and 84°-102° for ST. C7 plumbline was behind the HA (hip axis) in 78 % of subjects. Correlations between global balance and age were small (-0.17 ≤r ≤0.19).

Conclusion:

Asymptomatic children and adolescents tend to stand with a stable global balance, and 95 % have an SSA and ST between 116° and 149° and 85°-102°, respectively. C7 plumbline in front of the HA is not necessarily associated with a spinal pathology.

The use of polyester sublaminar bands in complex and revision spinal deformity surgery: operative technique and exemplary cases

S. Tahboub, Y. Barzilay, J. Weinstone, A. Hamed, H. Arzi

Pediatric Spine service, Spine Unit. Shaare Zedek Medical Center.

Introduction

The use of sublaminar wires in spinal deformity corrective surgery has preceded the use of pedicle screw-based constructs. Technical difficulties, the need to expose the spinal canal ,post-operative wire failure and cutting out through the laminae along with mechanical advantages of pedicle screws resulted in the technique falling out of favor. The aim of this study was to examine the role of polyester sublaminar bands selected complex spinal deformity cases.

Indications and advantages

Polyester sublaminar band technique relies on the very stiff cortical bone of lamina. In cases where pedicle anatomy and/or poor bone quality preclude the use of pedicle screws, polyester sublaminar bands allow a good anchor for deformity correction and construct stabilization. Pedicle anatomy tend to be least favorable at the curve apex, where correction forces are at the greatest. The addition of a very good bone purchase along with high corrective potential using a band tensioner, can significantly facilitate correction in these cases. In cases of poor bone quality, the bands may be used to augment screw constructs, especially at the apex, thus preventing pull out of the convex apical screws. The flexible fabric prevent metal fatigue failure as observed with metal wires, and the wider contact surface decreases risk of cutting out. In comparison to pedicle and sub or supralaminar hooks, polyester sublaminar bands offer a less rigid implant with smaller laminar fracture risk and 180 degrees anchoring around the lamina that eliminates the risk for cranial or caudal migration.

Limitations and disadvantages

Polyester sublaminar bands are a flexible implant and so can only withstand tensile forced and not compressive forces. The use of the bands requires exposure of the spinal canal and passing the band between the lamina and the dural sac, and thus increase the risk for epidural bleeding and spinal cord injury. Sublaminar band is a posterior element based implant and if used exclusively may increase the risk for the crank shaft deformity.

Review of 3 cases

Three cases of complex spinal deformities in which we used polyester sublaminar bands in a hybrid pedicle screw construct are presented. In all 3 cases bony anatomy or post-operative status made pedicle screw trajectory very challenging, and with high probability for insufficient bone purchase: First case is severe dystonic proximal junctional kyphosis s/p neuromuscular scoliosis correction. Second case is highly dysplastic upper thoracic neuromuscular curve. Third case is neglected 130 deg thoracolumbar neuromuscular curve. Good immediate post-operative outcome and short term follow up were achieved using the polyester sublaminar bands in the involved segments, with no implant related complications.

Conclusions

According to our short-term experience and the relevant literature, polyester sublaminar bands can be safely and effectively used in complex and revision spinal deformity surgery.

Local control rate for Renal Cell Carcinoma (RCC) Spinal Metastasis treated with Spinal Radiosurgery (SRS)

R. Harel[1,2], L. Zach[3]

1. Stereotactic Radiosurgery Division, Talpiot Medical Leadership Program, Department of Neurosurgery, Sheba Medical Center, Ramat-Gan, Israel
2. Spine Surgery Division, Talpiot Medical Leadership Program, Department of Neurosurgery, Sheba Medical Center, Ramat-Gan, Israel
3. Radiation Oncology unit, Oncology Institue, Sheba Medical Center, Ramat-Gan, Israel

Introduction:

RCC is becoming more prevalent and the spinal column is the most common site for metastases. Fractionated radiotherapy has been shown to have low impact on local recurrence for RCC spine metastases. Spine Radiosurgery (SRS) is a modality for the treatment of spine tumors and was previously reported to be effective for RCC metastases treatment.

Methods:

Patients suffering from spine tumors indicated for spine radiosurgery were treated by a single fraction of 16Gy or 18Gy dose in an ambulatory set-up by the author in Sheba Medical center or Assuta medical Center. A retrospective review of the cases was performed, examining the indications, method of treatment, side effects and response to treatment. A sub-analysis of RCC metastases only patients was undertaken.

Results:

155 lesions were treated in 136 sessions. Overall local control rate was 95%. Thirty-one RCC Metastatic only lesion were treated in 28 treatment sessions. Local control rates were 97% at a mean follow-up of 333days post SRS. side effects observed will be discussed. None of the patients developed radiation induced myelopathy. Selected cases will be presented and discussed regarding the indication for treatment, treatment method and dose, and complications. Discussion will emphasis on the single recurrence case.

Conclusions:

SRS is non-invasive treatment of spine tumors. The local control rate is high with low complication rate. SRS is beneficial as a for RCC metastases and should be employed more frequently.

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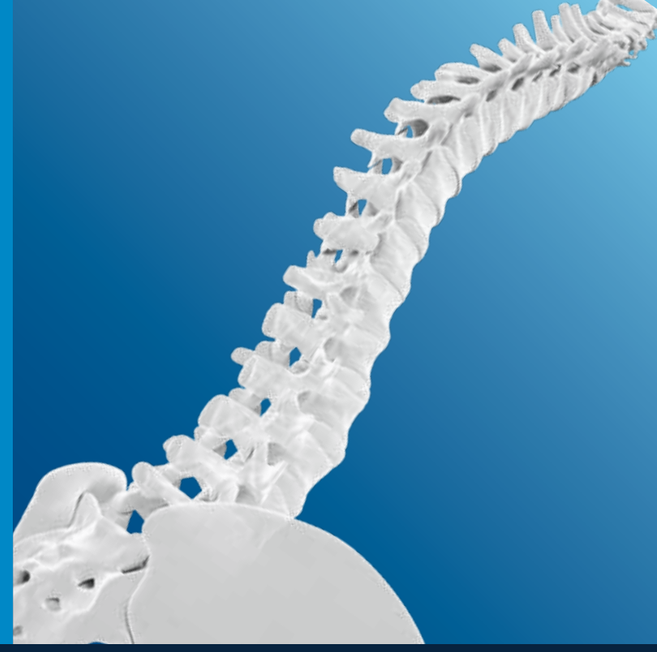

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