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POSTER PRESENTATION

CREATED BURST FRACTURE MODEL FOR BIOMECHANICAL STUDIES

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INTRODUCTION: The investigators have managed many biomechanical experimental studies in this field in order to discover which treatment modality is the best.

The aim of this study is to create a burst fracture model using a new apparatus followed by to prove its activity in order to use in biomechanical studies.

MATERIALS AND METHODS: Eleven thoracolumbar spinal specimens from eleven calves were retrieved from an abattoir. Our design apparatus was used in order to create experimental burst fractures. This apparatus consists of two cylindrical steel bars with closed top, and two steel pistons with closed bottom. The steel bars are able to move through the steel pistons. Axial compression force was applied on each specimen through the apparatus average 17250 Newton (N) (range 16000-18500 N) in load by hydraulic material-testing machine.

RESULTS: Fracture was confirmed on each specimen according to both macroscopically as hearing a "clic" sound and as reaching of the maximum load of test machine.

All specimens were then evaluated with anteroposterior and lateral plain radiographs, and computed tomography (CT) seans. Plain radiographs showed widening of the interpedicular distance, flattening of the body height, and presence of segmental kyphosis. CT scan showed failure of anterior and middle column, and retropulsed bone fragment in the spinal canal. In addition posterior column was disrupted on some specimens which was indicated unstable burst fractures.

CONCLUSION: There has been a number of burst fracture model in literature. One of them was dropping a mass from the height onto the vertebra specimen. Others were that sudden compression on which specimen was mounted in the test machine, or the corpectomy models. Our model was created in which specimen was subjected gradual compression using hydraulic material-testing machine. We use presented burst fracture model in the biomechanical studies as an alternative method.

POSTER PRESENTATION

THE AGREEMENT BETWEEN RADIOGRAPHIC AND SURGICAL MEASUREMENTS OF INTERVERTEBRAL DISC HEIGHT: A CADAVERIC STUDY

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Whether in the cervical or the lumbar region, measurement of disc height has various clinical implications, including monitoring degenerative changes or intervertebral disc surgery with or without fusion. This study aimed to evaluate the agreement between radiographic and post-discectomy surgical measurements of human intervertebral discs' height C2-C3 thru L5-S1.

Eleven cadaver spines (10 males and 1 female, 243 disc levels) were used for this study. The death age for cadavers was ranged from 44 to 62 years (mean, 52 years).

The heights of all intervertebral discs of each spine were measured by both radiographic and direct "surgical" methods. For radiographic measurements, the method described by Frobin et al. was used, which was originally proposed for lumbar levels (Fig. 1 and 2). For direct measurement, discectomies were performed anteriorly, and the size of the biggest spacer which could be inserted into the space without excess distraction was recorded as the height of that intervertebral disc. Both radiologic and direct measurements were performed by two researchers to assess interobserver agreement.

For each region, the interexaminer agreement determined by the Bland-Altman method for both radiological and direct measurements was good. Mean values and standard deviations for radiological and direct measurements of disc heights were, recpectively, 4.65±0.59 mm and 4.45±0.58 mm for cervical, 5.06±0.74 mm and 4.90±0.71 mm for thoracic, 11.29±2.47 mm and 10.90±1.77 mm for lumbar regions. Although the radiographic measurements of the cervical and thoracic levels gave 0.2 mm higher values than those of direct measurements on average, the agreement between radiographic and direct measurements was found to be satisfactory. Thus, we conclude that, using preoperative lateral X-rays and the method described by Frobin et al., it is possible to estimate the post-discectomy surgical height of intervertebral discs correctly, for all the spine regions.

POSTER PRESENTATION

EFFICIENCY OF FRESH FROZEN ALLOGRAFT AND AUTOGRAFT COMBINATION IN POSTEROLATERAL SPINE FUSION: AN EXPERIMENTAL STUDY

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INTRODUCTION: Autografts (AU) are the most effective graft material used for spinal fusion. In clinical practice, when multi-level fusion is required, autografts could remain inadequate in means of quantity. Mixing the allograft and autograft is a reasonable solution to increase graft volume. On the other hand, alone allograft applications had good fusion rates in the literature. In this study, the question that we were willing to find an explanation is whether adding AU to fresh frozen allograft (FFA) supplies any advantages to achieve solid fusion over the alone FFA in posterolateral fusion model of rabbit.

MATERIAL AND METHODS: In the study, twenty-four New Zealand albino rabbits were used. Three groups were constituted as autograft alone, fresh frozen allograft alone, and the combination of AU and FFA. Allografts were prepared at sterile conditions and preserved at -22°C. The rabbit model for posterolateral fusion had been described by Boden was used. In the hybrid group, equal amount of AU and FFA were mixed. At the end of 6th week, all rabbits were sacrificed. Spine fusion masses were evaluated by means of manual palpation, radiography, biomechanics, and histology.

RESULTS: At the end of the study, it was recorded that autografts were superior to other materials in terms of spinal fusion formation as usual. There was no statistically significant difference between FFA and FFA-AU combination in radiologic, macroscopic and biomechanic parameters. In histologic examination, alone FFA application was superior than hybrid graft ($p<0.05$).

CONCLUSION: In the current study, we observed that FFA-AU combination has no major advantage over alone FFA application. Possible factor for an explanation to this finding is inherent antigenic properties of the FFA. We hypothesized that antigenity of FFA serves negative environment to AU and could lead the loss of autogenic advantages.

POSTER PRESENTATION

THE VARIATION OF SACRAL HIATUS AND CAUDAL EPIDURAL BLOCK: A MORPHOMETRIC STUDY

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STUDY DESIGN: Al morphometric study of the sacral hiatus using isolated sacrum.

OBJECTIVES: The purpose of the present study was to clarify the anatomic variations of the sacral hiatus using the bony landmarks of the sacrum for improving the reliability of CEB.

BACKGROUND DATA: The sacral hiatus is the most important bony landmark for CEB since the apex of the sacral hiatus shows the existence of a sacral canal. Sometimes experienced clinicians have difficulties to palpate the sacral hiatus and other bony landmarks. Therefore, it is important to clarify the anatomic variations of the sacral hiatus without soft tissue.

METHODS: The sacra in this study are from Kahramanmaras Sütçü İmam University Medical School, Cukurova University Medical School, Gaziantep University Medical School and Ankara University School of Medicine. A total of 96 isolated sacra were used in this study. The bony landmarks were sacral hiatus and sacral cornua. Morphologic types of the sacral hiatus were classified using these landmarks.

RESULTS: Anatomic abnormalities of the sacral hiatus were absent hiatus (6 sacrum: 6.25%) (Picture 2), absent sacral cornu (5 sacrum: %5.2), bony septum (6 sacrum: 6.25%), and complete agenesis (Picture 3) which means that sacrum has no posterior wall (2 sacrum: 2.08%).

CONCLUSIONS: The sacral hiatus has got anatomic variations. Understanding of these variations may improve the reliability of CEB. The CEB failure occurs even if the fluoroscopic view is used. The present study showed that CEB failure might occur in % 6.25 of patients (since absent hiatus) and difficult in % 11.45 (bone septum 6.25 and % 5.2 absent sacral cornu) of patients because of anatomic abnormalities. However, the risk of dural puncture may induce in complete agenesis which means that sacrum has no posterior wall (2 sacrum: 2.08%). In conclusion; we should pay attention to anatomic variations of sacral hiatus when performing CEB.

POSTER PRESENTATION

IN VITRO INVESTIGATION OF HEAT TRANSFER IN CALF SPINAL CORD DURING POLYMETHYLMETHACRYLATE APPLICATION FOR VERTEBRAL BODY RECONSTRUCTION

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The objective of this experimental study was to investigate the temperature variations within the spinal cord of calf cadavers during polymethlymethacrylate (PMMA) application for vertebral body reconstruction. Cervical spines including the cervical spinal cord of ten fresh cadavers were used. Corpectomy and laminectomy were performed and dura was exposed at the same level for proper placement of thermal sensors. Sensors were placed in multiple holes in the spinal cord at depths of 3, 6, 9 and 12 millimeters, respectively. Whether the thermal sensors were placed in the gray or white matter was determined by computerized tomography. The white and gray matters of the spinal cord exhibited different thermal properties. The white matter was more conductive and absorbed less heat than the gray matter. The heat sensor nearest to PMMA exhibited temperatures of 42° to 44°C. The second heat sensor placed at 9 mm depth within the gray matter showed 44°C. The third sensor, which was placed at 6 mm depth within the spinal cord recorded the same temperature as the first, i.e., nearest to PMMA sensor. The fourth heat sensor, which was at the farthest location from PMMA demonstrated 37° to 39°. The temperature distribution within the gray matter was inversely proportional to the distance from the heat source. The temperature at the dorsal white matter, which was distant from the heating source, remained nearly constant and was not elevated. Our data suggest that thermal injury to the spinal cord during PMMA application may be expected to be more significant in the gray matter when compared with other neural tissues.

POSTER PRESENTATION

ELECTRON MICROSCOPIC STUDY OF THE PROGENY OF EPENDYMAL STEM CELLS IN THE NORMAL AND INJURED SPINAL CORD

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BACKGROUND: Spinal cord injury (SCI) is a common and often irreversible lesion that can incapacitate patients for life. After SCI, precursor cells in the spinal cord proliferate in response to trauma, and this proliferation can be enhanced by exogenous stimuli such as the administration of specific growth factors. In the present study, we examined electron microscopic detection of the proliferation, distribution and phenotypic fate of these precursor cells in the injured adult rat spinal cord.

METHODS: Adult female Sprague-Dawley rats weighing 250-300 gr. were used. Three groups of rats were used. The first group was spinal cord injured animals with application of a 2.4 gr clip extradurally around the spinal cord at the T1 level. The second group was spinal cord injured animals with application of a 26 gr clip. The third group included normal, uninjured animals. The rats were sacrificed at 3 days, 3 weeks and 6 weeks alter injury. A segment of the spinal cord 0.4 cm. in length encompassing the injury site was removed and prepared for electron microscopy.

RESULTS: 3 days after mild injury (2.4 gr clip), ependymal cells begun to prolilerate and migrated from the central canal. They had tendency to surround perivascular spaces. They were close to the axons. The central canal rostral to the lesion site was widely dilated 6 weeks post-op in moderate injured groups (26 gr elip). The layer of ependymal cells lining the dilated canal showed reduction in cell height. Traumatic syringomiyelic cavities were observed in all of the animals. There was an active proliferative response of the ependymal cells to injury. There were large cluster of displaced ependymal cells associated with the dilated central canal. There were extensive cords and rests of ependymal cells remote from the central canal with a tendency to form rosettes and accessory lumina. 6 weeks after trauma, fascicles of 3-8 fibers enclosed within an ependymal cell were a common finding among the ependymal clus.

POSTER PRESENTATION

TOTAL SPINE MRI SCREENING IN ADOLESCENT IDIOPATHIC SCOLIOSIS (EVALUATION OF RESULTS IN 177 CASES)

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INTRODUCTION: Performing routine total spine MRI in adolescent idiopathic scoliosis is a controversial issue. Some authors believe that MRI must be performed in atypical cases, while some other do not agree with this idea. Considering our clinical experiences and present controversy, we decided to perform routine MRI of spine in all patients with adolescent idiopathic scoliosis and evaluate the results.

PATIENTS AND METHODS: A prospective clinical study was performed. In all patients with adolescent idiopathic scoliosis who were candidates for corrective surgery, a total spine MRI was performed.

RESULTS: There were 186 patients. 9 cases with mild neurological findings were excluded. In the remaining 177 patients (132 female, 45 male), average age was 15±2 years(11 to 22years).

Average cobb angle of the major curve was 59±17˚ (30 to 135˚). Convexity was to the right side in 146 cases and to left in 31 cases. In 12 cases (6.8%) there were positive MRI findings (table). In 5 cases (2.8%) neurosurgical intervention was necessary prior to scoliosis surgery.

There were no statistically significant relation between age, sex, presence of pain or curve angle and positive MRI findings (P>0.05).

Left convexity had statistically significant relation with positive MRI findings (P=0.013).

In males with left convex curves the probability of positive MRI findings was 8.8 times other patients.

CONCLUSION: Considering our research results and other reported articles, it seems that performing total spine MRI screening of all patients presenting as idiopathic scoliosis is necessary for detection of underlying pathologies before surgery, especially in male patients with left convex curves.

POSTER PRESENTATION

THE USE OF ONE CAGE FOR UNILATERAL TRANSFORAMINAL POSTERIOR LUMBAR INTERBODY FUSION: A PRELIMINARY REPORT

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INTRODUCTION: Unilateral transforaminal posterior lumbar interbody fusion (TLIF) is a technique that consisted of two mesh cages into the interbody space to support anterior column, in addition pedicle screw instrumentation to provide posterior column stabilization.

The aim of present study was to evaluate three cases who underwent TLIF procedure using one cage instead of two.

MATERIALS AND METHODS: Three cases with spondylolisthesis underwent TLIF procedure between 2003-2004. Average age was 33 years (range 27-38 years). Surgical procedure included laminectomy, left facetectomy, and decompression of affected nerve roots followed by discectomy and placement of a cage. There after, posterior pedicle screw instrumentation was carried out. Autologous bone grafting was combined in all patients as well.

RESULTS: Average follow-up was 15,3 months (range 10-19 months). Radiographic good fusion was obtained in two patients. Although one patient has had no complete fusion in 10th months postoperatively, fusion process goes well so far.

All patients had neurologic symptoms preoperatively. Two of them had complete neurologic recovery, whereas one patient had partial recovery so far. The patients had moderate low-back pain before surgery. Pain levels improved in all. All cases are house-wifes have been able to do their activities of daily living at the latest follow-up.

CONCLUSION: As generally accepted, TLIF is a procedure in which two cages is inserted into the disc space. In the present study, placement of one cage was attempted for TLIF procedure. The advantages were shorter operative time as well as less implants insertion. The patients fared well since surgery with relief of back pain and neurologic symptoms. Latest radiologic assesment showed that two patients have good fusion, one had a normal process of fusion so far. We consider that our short-term follow-up period is promising for the clinical outcome.

POSTER PRESENTATION

TREATMENT OF TWO CASES WITH L5-S1 SPONDYLOPTOSIS BY GAINES PROCEDURE: 5 YEARS FOLLOW UP

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INTRODUCTION: Spondyloptosis or grade 5 spondylolisthesis is defined as the forward slippage of the entire L5 vertebral body of S1. Reduction of severe spondilolisthesis continues to be a subject of debate. Reduction and fixation of L5 on to S1 is a treatment option but it has high rate of major complications after reduction. A method described by Gaines including L5 vertebrectomy, reduction and fusion of L4 on to S1 seems logical because it shortens the spinal canal and peripheral nerves can be re aligned avoiding neurological deficits.

This article reports two cases of spondyloptosis treated by Gaines procedure.

MATERIALS AND METHODS: One of the patient was 18 year old girl who was operated in 1995 and the other was 17 year old boy operated in March 2003 by Gaines procedure. Both of them attended our clinic with the complaints of low back pain tightness and weakness in legs, which progressively increased by time.

In the first stage the patient was positioned supine and an anterior transperitoneal midline incision was used. The body of L5 to the bases of pedicles and the upper and lower discs are removed. The second stage was performed by a posterior midline approach. The pedicles and loose neural arc is removed, reduction and fusion of L4 onto S1 is performed by pedicular instrumentation.

RESULTS AND DISCUSSION: At eight years and one year follow up, both patients were active no complaints were recorded. Slip angle has changed greatly from preto postoperation and solid fusion is achievied. Radiographic follow up is given in Table 1. In conclusion Gaines procedure is a major spinal reconstruction consisting of two stages. In our experience in such cases like this, Gaines procedure is indicated because of high incidence of neurologic deficits by direct reduction of L5 onto sacrum and without reduction it is difficult to achieve solid fusion. This procedure should be performed for severe cases like spondyloptosis and by experienced surgeons.

TABLE

TABLE 1 (radiologic follow up)

	Preop	Postop 6 m	Postop 1 y	Postop 8 y
Slip angle	42/25	0/0	8/0	6
L1-L5 lord	32/50	-	-	-
L1-L4 lord	26/20	32/9	30/9	40
L1-S1 lord	28/26	38/4	40/4	36
L4-S1% sli	100/100	24/25	38/25	40
Sacral Inc	24/32	26/34	24/34	30

values are in degrees and respectively for the patients

POSTER PRESENTATION

CLASSIFICATION OF ADOLESCENT IDIOPATHIC SCOLIOSIS (AIS) AS A GUIDE TO SURGICAL TREATMENT

PANAYOTIS SMYRNIS (KAT Hospital, Greece)

INTRODUCTION: Classification systems for AIS may not clearly discriminate between various patterns of curves. Adding numerous subgroups with rare types or those based on measurable criteria with notable intra and inter-observer variations is possibly increasing confusion. This is an attempt to redefine dividing lines between various common forms of AIS and their respective surgical management.

METHODS: Our investigation is based on 124 consecutive patients 107 F, and 17 M, with I.S. of 40-80 degrees and mean age 16y. Of these, 104 p. were operated, 42 Harrington (H) or Luque (L) instrumentation (1981 -1987) and 62 CDI systems (1988-2000) (Follow up 2 - 16y., mean 4y). All charts were evaluated retrospectively as to clinical picture, location (apex), size of curves and rotation in coronal and sagittal standing radiographs. Position of L4-L5 (horizontal, left or right tilt) was noted, also curve relation to CSVL (Central Sacral Vertical Line), flexibility on supine films, extent of fusion, postop. correction and balance disturbances.

RESULTS: Three main patterns were distinguished in 124p.

1. Right Thoracic (Rt T) (King type III, IV, V) curves in 34 p. (27 %).

2. Double Rt T- Lt L (Left Lumbar) (King type II and partly III) curves in 63 p. (51 %).

3. Left Thoracolumbar (Lt TL) ± Rt T (see King example type I) curves in 20 p. (16 %).

A trial application of this system on figures of 359 AIS (40°-80°) serially found in literature acknowledged 104 Rt T, 150 Double Rt T - Lt L and 71 TL curves (57 Lt, 14 Rt).

CONCLUSIONS: The present classification based on 124 and 359 from literature covers 91-96 % of AIS with 40°-80° curves. it relies on morphological signs clinical and radiological. Alter this standard assignment the Lt L curve in type 2, the T in type 3, the Lt PT (Proximal Thoracic) usually in type 1 or 2 and Sagittal Kyphotic sections if present are further analyzed using measurable criteria for selective fusion.

POSTER PRESENTATION

MANAGEMENT OF SCOLIOSIS IN PROTEUS SYNDROME: A CASE REPORT

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INTRODUCTION: Proteus syndrome is a rare congenital hamartomatous malformation with a wide spectrum of abnormalities including overgrowth of various tissues. More than 100 cases with their clinical and radiologic features have been reported in the literature. Although spinal deformities were present in more than half of cases, surgical correction of these deformities, especially scoliosis surgery has rarely been documented. This is the third case in the literature to the best of our knowledge the purpose of this study was report a new case of proteus syndrome with scoliosis and result of the surgical correction procedure.

CASE REPORT: 12 years old girl admitted with chief complaint of back asymetry. She had scoliosis with thoracolumbar curve with a Cobb angle of 44 degrees between T7-L2 (King type 3). She was treated with brace initially however curve progressed to 50 degrees within the next 6 months. She underwent posterior instrumentation (Cotrel-Dubousset) and fusion between T6-L3 the curve was reduced to 22 degrees postoperatively the spine developed further scoliotic deformity at 20 months follow up the Cobb angle was 46 degrees which was similar to preoperative value.

RESULT: In our patient a disabling deformity was present which was progressed despite conservative treatment with brace. although adequate correction was achieved initially with posterior instrumentation, postoperative loss of correction was observed at 20 month. We conclude that the spinal deformities seen at proteus syndrome has a high risk of progression even after adequate surgery. The overgrowth potential of the tissues in proteus syndrome may be responsible for these failures. Althought affected individuals have normal intelligence and life span, surgical correction of spinal deformities in proteus syndrome should only be considered in the presence of lung or other vital organ dysfunction.

POSTER PRESENTATION

UNIVERSAL SPINE SYSTEM (USS) INSTRUMENTATION IN ADOLESCENT IDIOPATHIC SCOLIOSIS

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INTRODUCTION: Adolescent idiopathic scoliosis (AIS) is the most common type of structural scoliosis. Cotrel-Dubousset (CD) instrumentation was the first system that provides bilateral segmental fixation of spine. USS instrumentation was introduced as a result of further development in posterior instrumentation systems. The purpose of this study is to evaluate radiological results of USS instrumentation for adolescent idiopathic scoliosis.

MATERIALS AND METHODS: Between 2003 and 2004, 11 patients with adolescent idiopathic scoliosis were surgically treated with Universal Spine System and posterior fusion. Standard standing posteroanterior and lateral radiographs were evaluated. The magnitudes of the curves were measured according to Cobb in both preoperative and postoperative radiographs.

RESULTS: Before surgery, the mean Cobb angle of the curve was 49.6° (range, 32°- 80°). After surgery the mean angle was 19.9° (range,10°-35°). The mean final correction of the curve was 23.3° (range,10°-30°) after an average of 11.8 months follow up. The correction obtained with surgery was maintained at 1 year follow up.

DISCUSSION: The main goals in the treatment of AIS are the correction of the deformity, providing the long term biologic fixation for maintenance. USS provided similar radiologic correction of the deformity when compared to previous reports. There was no significant loss of correction noted. The correction of the deformity is not related only to instrumentation used but the rigidity and magnitude of the curve and newly designed instrumentation devices usually provide technical case in application more than better correction of the curve.

CONCLUSION: The evaluation of newly designed instrumentation systems can only be made with comparing the results with published series of old instrumentation devices in terms of correction and maintenance of correction. The short term radiologic outcomes of USS for AIS were similar to older instrumentation systems.

POSTER PRESENTATION

COTREL-DUBOUSSET INSTRUMENTATION FOR ADOLESCANT IDIOPATHIC SCOLIOSIS; 6 YEARS FOLLOW UP

TARIK YAZAR, DERYA DİNÇER, OGUZ CEBESOY (Ankara University, Turkey), KEREM BAŞARIR, ENGİN KARADENİZ

INTRODUCTION: Coronal and saggital plane corrections are the critical to the long term success of scoliosis surgery.

MATERIAL AND METHOD: 30 patients with adolescant idiopathic scoliosis(ais) who had undergone posterior instrumentation with Cotrel-Dubousset (CD) system and fusion between 1998-2004 were evaulated. All spine radiograpies were obtained per 6 month interval after surgery. Cobb angle measurement was used for preoperative and postoperative evaulation. The scoliotic curves were classified according to King classification system. 4 of them were King type 1, 14 type 2, 8 type 3 and 4 type 4.

RESULTS: At the final follow up, coronal plane analysis showed that an average postoperative correction was 62 percent for thoracic curves and 64 percent for lumbar curves. Slightly higher correction were obtained in King type 3. Thoracic hypokyphosis mildly increase. The normal saggital curves was maintained in the lumbar spine at last follow up. There were no neurological deficit and no major wound problem occur after postoperative period.

CONCLUSION: The data suggest that from this study; CD instrumentation achieves satisfactory correction of the curves if the apropriate fusion level selected.

POSTER PRESENTATION

SCREWING BONE GRAFT ON TO THE BASE OF TRANSVERSE PROCESS A NEW TECHNIQUE IN THE TREATMENT OF ISTHMIC SPONDYLOLISTHESIS

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This study involves results of a new technique, with an average 2.4 (1-4) years of follow up, applied on 27 patients for the treatment of adult isthmic spondylolisthesis with a slippage of up to 50 %.

TECHNIQUE: Lytic area is reached via the posteralateral, intermuscular approach with a double incision. 1/3 superior of the superior facet of the caudal vertebra is removed. This helps the foramen to be seen much wider laterally. Bone tips on the lysis line and the fibrocartilaginous tissue are widely cleaned with Kerrison rongeur. Hence, the pressure on the radix at the foraminal level is removed. Transverse process of the slipped vertebrae decorticated so as to involve the lateral of the facet joint as well, and the transverse process of the vertebrae below it is decorticated so as to involve the facet joint (sacral ala in S1). Spondylolisthesis reduction screws are placed onto these vertebrae, sticking out 1 cm. Two oval holes, of which the distance is equal to that aıi the screws, are made on the unicortical block graft of appropriate size, obtained from the iliac bone. The graft is attached to the screws through these holes and placed on the decorticated bones. The connector and the rod are placed on the screws. The same procedure is applied to the other side as well. First, the screws on the caudal are tightened to the connectors, and then the screws on both slipped vertebrae are tightened simultaneously. Thus, not only the reduction is achieved, but also the graft, are placed into the base of the transverse process, which is the most sufficient area for fusion with a wider surface contact.

According to Lenke and Bridwell's radiographic grading classification, 20 patients were categorised as grade A; 6 were of grade B, and 1 was of grade C. Screw malposition was observed in 3 patients. In one of these patients, radicular damage developed and partial recovery was determined in a one-year follow up. No infection was observed.

POSTER PRESENTATION

SCREENING OF SPINAL DEFORMITIES WITHOUT IONIZING RADIATION

TARIK YAZAR (Ankara University, Turkey), KEREM BAŞARIR, DERYA DİNÇER, OĞUZ CEBESOY

Patients exposed to ionizing radiation while obtaining radiograms used for follow up of scoliosis. It has same shortcomings such as increased risk of breast cancer. Orthelius is used a new method of follow up without ionizing radiation based on 3-D modeling of the vertebral column with computer based on data obtained by spinous process palpation. It also avoids the angle changes due to rotation of patient. The reliability of this screening method was analyzed.

30 patients who were admitted with the complaint of back asymmetry were evaluated between October 2003 and March 2004 with Orthelius 800 and x-rays. Subsequent measurements with Orthelius were made by three investigators each for two time and the results were evaluated with reliability analysis.

Of the 30 cases evaluated with Orthelius, 26 had the diagnosis of scoliosis, 4 were normal. Twenty six thoracic and 13 lumbar deformities were diagnosed. The mean Cobb angle measured for thoracic and lumbar curves were 18.3° and 23.2° respectively. The results were SPSS 11.5 with reliability analysis. Alpha values for thoracic curves and lumbar curves were 0.96 and 0.98 respectively indicating high reliability.

In the adolescent patient the most common problem is the progression of the curve and the evaluation of the response to the treatment. Scoliosis patients were undergo a series of direct x-rays with a mean of 25 and exposed to high amount of ionising radiation mean 10.8 cGy which cause increased risk for breast cancer. Orthelius has the advantage of 3-dimentional evaluation without ionizing radiation with comparable intra and inter observer variability for Cobb angle measured on plane roentgenograms.

Despite high reliability of the method, treatment decision can not be based on solely this method but it can be used for evaluation of the progression and response to treatment with acceptable reliability. It may also be used for school screening.

Fig-1 Measurement with Orthelius

Fig-2 X-ray Cobb

POSTER PRESENTATION

PRIOR RESULTS OF THREE CASES, WHICH WERE APPLIED POSTERIOR FUSION AND INSTRUMENTATION BECAUSE OF ADOLESCENT KYPHOSIS

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FOREWORD: Prior results of three cases which were applied posterior fusion and instrumentation because of adolescent kyphosis were evaluated.

MATERIAL AND METHOD: Two girls and one boy whose spine were applied posterior fusion and instrumentation in 2000-2001, and after 49.3 months observation these 3 cases were evaluated. Posterior pedicle screws, hook combination and two rods are determined each-other with connectors and adjustement was provided for sagittal deformity. In instrumentation cases between Thoracic 2-Lumbar 2 (T2-L2), T2-L1, T4-L2 were applied. After the surgery 10 (9-12) days it was mobilized and discharged. The radiologic indication of the cases was done by Cobb method between T4 and T12 vertebrae. Indication is best evalueted in sagittal plan by determining proximal and distal levels. Preoperative levels were compared. The cases were scrutinize the magnetic resonance imaging displaying technique for searching the additive spinal abnormalities and they were reported in order to control and evaluation of postoperative process the existence of fusion and also the proximal or distal operation area. Pain activation of extremity and adaptation of social life and self confidence were observed.

RESULTS AND FINDINGS: The thoracic curve between T4- T12 in preoperative sagittal plan Cobb angle in average 71.6 (63-76) degrees after pursuance of 49.3 months (38-57) postoperative in average 38.3 (23-47)degree was measured. Radiologic improve was average 46.5 % (38-63). In many of cases early or late neurological deficit didn't occured. The pain which had occured in preoperative stage dissappeared. The loss of clinic and radiologic correction weren't seen. There weren't incapability result of the instrumentation by fusion. It wasn't needed the usage of corset in postoperative stage. In conclusion with the cosmetic get well of the cases their ioining the social life confidence and adaptation increase and also postoperative satisfaction were really well, as it was observed.

POSTER PRESENTATION

CONGENITAL CERVICAL SCOLIOSIS. A CASE REPORT

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(Dokuz Eylül University, Turkey)

Congenital cervical scoliosis is associated with Klippel-Feil syndrome in 50 % of the cases. In this study a 15 year-old patient having cervical scoliosis due to developmental bony abnormalities of cervical spine is presented.

15 year-old patient was admitted with the complaint of neck bending. Patient's head has been bent to right with limitation of motion. Cervical scoliosis was evident on anteroposterior plain radiography and Cobb angle was measured as patient was operated and bilateral C2-C6 lateral mass plate-transpedicular screw fixation was performed Congenital cervical scoliosis is rarely seen and lateral mass plate-transpedicular screw fixation can be successfully used in the treatment of these cases.

POSTER PRESENTATION

SPINAL DEFORMITY AFTER INTRADURAL TUMOR SURGERY: REPORT OF THREE CASES

ERCAN OZER, ORHAN KALEMCi, CEM YURTSEVER, KEMAL YÜCESOY
(Dokuz Eylül University, Turkey)

About 45 % spinal tumors are intradural. Because of spinal deformity risk, limited laminectomy or laminotomy are performed for surgery of these tumors for preservation of normal cervical alingment.

In this study, we present three cases of spinal intradural tumors, one is cervical dumpbell neurinoma, one is a thoracolumbar intradural schwannoma case and the other is a case of intramedullary cervical ependymoma. All patients admitted with complaints of pain at releavant sides. Dumpbell neurinoma was removed by performing two level hemilaminectomy and unilateral facet dislocation was appearent on second year control x-ray. Anterior cervical plating and lateral mass fixation were performed in this case. Thoracolumbar intradural tumor was resected using five level laminotomies. Hyperkyphosis was detected two years after surgery and posterior spinal instrumention was done to correct deformity. Ependymoma operation was carried on through one and half laminectomy, kyphosis was determined on fifth month control radiography. Both anterior and posterior internal fixations were used for correction.

Altough dynamic graphies give detailed information about instability, no problem was determined initial to the tumor resection operations in all these cases. Pain is an important follow up symptom suggesting deformity.

POSTER PRESENTATION

THORACIC SPINAL STENOSIS ABOVE SEVERE THORACOLUMBAR KYPHOSIS CAUSING NEUROLOGICAL DEFICIT

ÇAĞATAY ÖZTÜRK (Florance Nightingale Hospital, Turkey), MEHMET TEZER, MERCAN SARIER, MEHMET AYDOĞAN, CÜNEYD MIRZANLI, AZMİ HAMZAOĞLU

INTRODUCTION: The neurological deficit can be seen in severe thoracolumbar kyphosis caused by spinal tuberculosis (early or late onset), fracture and congenital deformities. We describe here a new entity of neurological deficit mechanism due to the thoracic spinal stenosis produced above the severe thoracolumbar kyphosis. Our aim is to highlight the exact reason of neurological deficit in patients with a severe thoracolumbar kyphotic deformity.

CASES: First patient was a 53-year-old man presented with a history of spinal tuberculosis and spastic paraparesia, urinary incontinence. The radiological examinations showed thoracolumbar tuberculosis with a kyphosis measuring more than 90° and compensatory thoracic lordosis with spinal canal stenosis at the lordotic segment. The second patient was a 78-year-old woman presented with a spinal claudication and difficulty in walking. She had a history of two previous operations due to the degenerative disc disease and osteoporotic Th12 vertebral fracture. Physical examination revealed upper and lower motor neuron signs. The last patient was a 34-year-old man presented with a spastic paraparesia. The radiology showed a kyphotic deformity measuring 90°, corresponding thoracic lordosis above the deformity and L1 hemivertebrae.

DISCUSSION: We believe in that facet orientation change and direction of them towards spinal canal cause spinal canal stenosis and foraminal stenosis in 1110 transition zone from the severe kyphotic segment to the compensatory lordotic segment above. These changes result in shearing stresses in long period and cause facet hypertrophy and spinal canal narrowing. We would like to remind the surgeons that survey of the spine above the kyphotic segment, especially transition zone from kyphotic segment to the proximal lordotic segment should be done to identify the cause of neurological deficit in patients with severe thoracolumbar or upper lumbar kyphosis of different etiologies.

POSTER PRESENTATION

THE POSTERIOR INSTRUMENTATION WITH THE PEDICLE SCREW IN THE SURGICAL TREATMENT OF ADOLESCENT IDIOPATIC SCOLIOSIS (AIS)

ÖMER KARATOPRAK (Göztepe Hospital, Turkey), KORAY UN AY, NADİR SENER

OBJECTIVE: In cases which the treatment is done with only pedicle screw (PS), the results of the correction is better but balance problems and increases in distal lumbar curve can be seen due to excessive correction. In this study the cases which were instrumented with pedicle screw (PS).

MATERIAL AND METHODS: Instrumentation with PS was applied to 17 females and 3 males. There were 1 Type I case, 5 Type II case, 8 Type III case, 1 Type IV case and 5 Type V case according to King classification. The patients were followed with the average time of 14.1 months (range 12-28) and they were evaluated with various parameters as preoperative, early postoperative and 12th month.

RESULTS: The postoperative correction average was calculated as 70.2 % (range 58.0±84.6); and the average of the lost of correction at the follow-up was calculated as 3.6 degrees (range 0°-8°). The average fixation point was 19.5 (range 15-26) and the average of the number of vertebrae included in the fusion was 12.3 (range 10-15). The apical vertebrae derotation established as 7.2 degrees (range 5°-10°) and translation established as 36.0% (range 22-44). The average amount of intraoperative bleeding was 1564.5ml (range 1200-2100), and the average time of the surgery was calculated as 357.7min (300-400). Postoperative frontal balance (distance of the middle of the C1 vertebra corpus at the midsacralline) average was measured as 15.3 mm (range 8-32). The average values at preoperative, postoperative and 12th month, Cobb angle, kyphosis between T4-T12, the lordosis between L1-L5 are shown at the table.

CONCLUSION: Thoracic pedicle screw doesn't have wide acceptance due to the fact that the risk of neurovascular complication is high. However the 3D correction can be established with a higher ratio and more moveable segments can be saved with the instrumentation of PS. Consequently, we think that PS instrumentation will be used more widely as the time passes.

TABLE

The average values at preoperative, postoperative and follow--up

	Preoperative	Postoperative	Follow-up
Cobb angle	61.8 (49-82)	18.3 (9-32)	22.0 (12-40
T4-T12 (°)	25.7 (14-44)	31.7 (25-40	31.9 (25-40
L 1-L5 (°)	-37.9 (-20)	-41.2 (-30)	-42.1 (-34)

POSTER PRESENTATION

AN EVALUATION OF THE RESULTS OF SURGICAL TREATMENT FOR CONGENITAL SCOLIOSIS

ALİ ŞEHİRLİOGLU, ŞAFAK EKİNCİ (Gülhane Military Hospital, Turkey), CEMiL YILDIZ, ERBİL OĞUZ, MEHMET ALTINMAKAS

STUDY DESIGN: Congenital scoliosis (CS) is the most common pathology of spine. The deformity pattern can be understood beter by using new scanning methods. A series of 31 consecutive patients with congenital scoliosis is presented.

MATERIALS AND METHODS: 31 patients (21 F, 10 M) with congenital scoliosis were included. Mean age at time of surgery was 14.3 (4-36) years. All patients had undergone a magnetic resonance imaging study for intramedullary pathologies and consultated with releated clinics. Four patients had treated by conservative methods previously and than by operatively. Hemivertebrectomy and posterior fusion had performed to 4 patients (13%), hemiepiphysiodesis to 7 patients (22%), posterior fusion to 14 patients(46%), anterior fusion to 2 patients (6%) and combine anterior and posterior fusion to 4 patients (13%). SSEP monitorisation was made in all operations. The mean follow up was 48.7 months (6 - 109).

RESULTS: Congenital scoliosis was most commonly found in the thoracolumbar region (16=51.62%), middle in thoracic region (10=32.25) and in the lumbar region (5= 16.13%). Rib anomalies were seen in 4 patients (12%), diastematomiyelia was seen in 3(9%), renal anomalies were seen in 2 (6%), hypertrichosis was seen in 2 (6%), mitral valve prolapse was seen in 2 (6%), pectus excavatum was seen in 2 (6%), sacral displasy was seen in 1 (3%) and servical block vertebrae was seen in 1 (3%)patients. Spinal cord disfunction had developed in one patient, her implants has took out and postoperative neurologic improvement was observed. Infection and skin problems were seen in two patients, treatment was achieved with dressing and antibiotherapy,

DISCUSSION: Determining the form of operative treatment is depend upon the age of patient, the type, area, natural history of the deformity and patterm of curvature. The correction of this deformity brought together the risk of neurologic deficit and the golden standart of the treatment is to halt and correct the curvature before the deformity becomes permanent.

POSTER PRESENTATION

COMPARISON OF THE RESULTS OF COTREL-DUBOUSET AND SUBLAMINAR WIRE FIXATION METHODS FOR THE TREATMENT OF ADOLESCENT IDIOPATHIC SCOLIOSIS

NECDET ALTUN (Gazi University, Turkey), ULUNAY KANATLI, AYKIN ŞİMŞEK

OBJECTIVE: At least 5 - year follow up results of adolescent idiopathic scoliosis, those were treated using Cotrel-Dubouset instrumentation and Luque sublaminar wiring methods were reviewed retrospectively. Results of these two methods were compared.

METHODS: Twenty nine patients were included in the study. Fourteen of patients were treated using Cotrel-Dubouset (CD) and fifteen were treated with Luque sublaminar wiring method. Mean age at the time of surgery was 15.3 years in CD group and 17.7 for sublaminar wire group. Preoperatively primary curves were measured using Cobb method, revealing a mean of 49.9 degrees for CD group and 56.4 degrees for sublaminar wire group. At the end of follow up period, mean Cobb value was 15.6 lor CD group and 19.7 for sublaminar group.

RESULTS: Statistical analysis of the results revealed that there is no statistical difference between these two methods at follow up ($p>0.05$). During follow up period, for two patients in CD group pull-out of proximal hook were encountered. In one of these patients revision was performed.

DISCUSSION: From aspects of correction of deformity and maintenance of correction, comparison of CD and sublaminar wiring method showed that there is no difference between these two methods at the end of follow up period.

POSTER PRESENTATION

KING TYPE II AND KING TYPE III ADOLESEENT IDIOPATHIC SCOLIOSIS; TREATMENT WITH THIRD GENERATION SPINAL LNSTRUMENTATION AND SEGMENTAL SUBLAMINAR WIRING

ASIM CILIZ, SÜLEYMAN PORTAKAL, SEMiH UÇAR (Ankara Numune Training and Research Hospital, Turkey), CEM CÜNEYT KÖSE, GÜRAY ÖZKAN, MEHMET ALİ TÜMÖZ

King type II and King type III adolescent idiopathic scoliosis; treatment with third generation spinal instrumentation and segmentals sublaminar wiring scoliosis is a three dimensional deformity. Adolescent idiopathic scoliosis is the most seen type. King type II and King type III scoliosis are the most common types that undergo surgery. In our study, correction was obtained by using sublaminar wires, pediculer screws, hooks and rods.

MATERIALS AND METHODS: In our study 28 patients that had adolescent idiopathic scoliosis were operated with using third generation posterior spinal instrumentation systems and sublaminar wiring between January 1998 and January 2003. The mean follow up period was 46 months (from 24 to 84 months). Patients mean age was 17 years (from 14 to 19 years). King type II deformity was in 17 patients and king type III deformity was in 11 patients. The total number of sublaminar wires that been used was 42. All sublaminar wires were placed at thoracal vertebral region. All patients were braced during the postoperative period as long as the rigid fusion was obtained.

RESULTS: The mean Cobb angle was 63 degrees (from 48° to 93°) preoperatively and improved to 30 degrees (from 12° to 48°) postoperatively. Average correction was % 52,4. At the last follow up the mean correction loss was 4 degrees (from 2° to 8°). Intraoperatively and postoperatively, no neurologic complication was seen.

DISCUSSION: Luque et al. described the segmental sublaminar wiring method in treatment of adolescent idiopathic scoliosis. Sublaminar wiring method has many advantages for correction in adolescent idiopathic scoliosis therefore its beneficial features attract the orthopaedic surgeons.

Appropriate correction could be obtained with third generation spinal instrumentation systems and sublaminar wiring. It is safe and easy method with experience.

POSTER PRESENTATION

SURGICAL TREATMENT OF UPPER THORACIC SCOLIOSIS OF A CASE OF AARSKOG SCOTT SYNDROME

FATİH DİKİCİ (TDV 29 Mayıs Hospital, Turkey), ÜNSAL DOMANİÇ

PURPOSE: Aarskog-Scott syndrome (AAS) or faciogenital dysplasia is a genetically heterogeneous developmental disorder. The X-linked form is due to mutations in the FG01 gene. This rare syndrome is a triad of facial, digital and genital characteristies. Facial features including ocular hypertelorism, a short nose with anteverted nares, long philtrum. Extremity dysmorphism including short broad hands with clinodactyly, and genital anomalies such as shawl form scrotum. Hyperextensibility of the joints, metatarsus adductus, brachydactyly, and genu recurvatum have been described. Vertebrae anomalies are such as hypoplastic cervical vertebrae, scoliosis, and spina bifida occulta.

MATERIALS-METHODS: 16 years old boy is refered to our clinic with shoulder asymmetry since one year. He had short stature (145cm), macrocephaly, broad upper lip with long philtrum, ocular hypertelorism, shawl scrotum, brachydactyly, and T3- T11 thoracic scoliosis with right thoracal hump. Cobb angle was 52 degree. Posterior thoracic approach with transpedicular instrumentation, correction, and fusion was performed between T1-L1 vertebrae. Cobb angle measured 18 degrees after surgical correction and thoracal hump disappeared. Patient mobilized on second day postoperatively and shoulder asymmetry resolved.

DISCUSSION-CONCLUSION: AAS syndrome is an uncommun genetic disorder with comman skletal deformities. Scoliotic deformities don't have any specific pattern. Surgical correction of the deformity can be difficult because of the premature fusion and hypoplastic vertebrae at these levels.

POSTER PRESENTATION

THE PREVALANCE OF SCOLIOSIS PROBABILITY IN SCHOOL-AGE CHILDREN

DİDEM ARSLANTAŞ, SELMA METİNTAŞ, ALAATTİN ÜNSAL, BURHANETTİN IŞIKLI, CEMALETTİN KALYONCU, ALİ ARSLANTAŞ (Osmangazi University, Turkey), MURAT VURAL

OBJECTIVE: To determine the poor posture in the school-age children is very important to prevent the development of both the bad appearance and the skeleton-muscle and internal disorders in the future. So, because of the conservative treatment opportunity of these disorders in the early phase, the surgical intervention incidence would be reduced.

MATERIALS AND METHODS: We selected 228 students for this study between the age 7-18 (mean 11.57±2.78). 116 of these 228 students were male (%50.9) and, 112 students were female (% 49.1). The students were evaluated for poor-posture, back pain, fatigue and familial story. The presence of structural scoliosis were searched via 'standing forward-bending test' of American Pediatric Academy.

RESULTS: The prevalance rate of the scoliosis possibility was determined as % 4.8. There was no correlation between the scoliosis possibility and sex (X2: 0.974, SD:1, p: 0.324). But we found a significant increase in the development of scoliosis with the rising age (X2: 9.295, SD: 2 p: 0.01). And also the scoliosis possibility was much more frequent in the students with poor-posture (X2: 5.968 SD:1 p: 0.015).

INTERPRETATION: The scoliosis prevalance is between % 1.7-4.1 in the literature. In our study we revealed the scoliosis prevalance as % 4.8. As a result we want to emphasize the importance in detecting this mostly conservatively treatable disorder in the school-age children would be helpful to prevent the scoliosis related disorders in their future life.

POSTER PRESENTATION

RESULTS OF SURGICAL TREATMENT FOR KYPHOTIC DEFORMITY OF THE SPINE SECONDARY TO TRAUMA OR SCHEUERMANN'S DISEASE

TEOMAN ATICI, UFUK AYDINLI (SSK Bursa Hospital, Turkey), BURAK AKESEN, RASiM ŞERİFOGLU

INTRODUCTION: Sagittal plane deformities, especially kyphosis, is not only a cosmetic problem but may also result with back and low back pain and neurologic impairment in time. The treatment strategy differs with severeness, progression and etiology of deformity.

MATERIALS AND METHODS: This is a retrospective study of 30 patients who underwent surgical treatment for kyphosis secondary to trauma (12 patients) or Scheuermann's disease (18 patients) between 1992 and 2003. The mean follow up was 47.7 months (range, 26-114) and 49 months (24-133) respectively. Radiological evaluation of Scheuerman kyphosis included assessment of thoracic kyphosis angle (TKA), lumbar lordosis angle (LLA), scoliosis angle (SA) and sagittal vertical axis (8VA); radiological evaluation of post-traumatic kyphosis included the determination of local kyphosis angle (LKA) and SA, if present. A posterior approach was performed in 13 cases and a combined anterior and posterior approach was performed in 5 cases of 30 whereas patients with post-traumatic kyphosis were treated using an anterior approach in one case, posterior approach in three cases and a combined anterior and posterior approach in 8 cases.

RESULTS: The mean TKA in Scheuermann cases was 72° (65°-94°) preoperatively and 39° (22°-58°) postoperatively. The mean loss of correction was determined as 5.5°. No positive sagittal balance was present during follow-up. The mean TKA in post-traumatic cases was 50° (25°-62°) pre-operatively and 18° (range -15° and 28°) postoperatively. At the last visit, the mean loss of correction was determined as 20. Proximal junctional kyphosis developed in two cases with Scheuermann kyphosis (17° and 13°) and in one case with post-trauma kyphosis (170) case.

CONCLUSION: These findings show that good results can be achieved in the treatment of kyphosis secondary to trauma or Scheuermann's disease, with appropriate selection of the surgical approach.

POSTER PRESENTATION

COMPLETE REDUCTION OF SPONDYLOPTOSIS COMPLICATED WITH PSEUDOARTHROSIS: A CASE REPORT

MAZHAR TOKGOZOĞLU (Hacettepe University, Turkey), OĞUZ OKAN KARAEMiNOĞULLARI, ORÇUN ŞAHİN

INTRODUCTION: Spondyloptosis is defined as severe spondylolisthesis of L5 vertebrae permitting vertical descent of the entire vertebral body of L5 below the end plate of S1. In this study, a case of surgically treated spondyloptosis was described and the treatment alternatives were discussed.

CASE REPORT: A 17 year-old male was admitted with a history of severe back pain in a 2-year duration accompanied with numbness and weakness in the lower extremities. Physical examination revealed positive straight-leg raising tests at thirty degrees with hamstring muscle tightness. Quadriceps motor power was 3/5 for both limbs. Lumbosacral radiographs demonstrated spondyloptosis between L5 and S1. MRI examination revealed L5 root compression on both sides. During surgery initially L5 laminectomy and foraminotomy, L4 inferior hemi-laminectomy and partial resection from S1 body were performed. After screw placement at L4, S1 and S2, reduction was achieved with distraction between L2 and S2, and then screws were placed on L5 as well with bone grafting. Implant failure and loss of reduction occurred at the 6th-month follow-up, which was treated with revision of instrumentation and fusion from L3 to S2. At final follow-up 6-months after the secondary procedure clinical and radiolographic fusion was observed.

DISCUSSION: The stabilization of the listhetic vertebrae and decompression of neural structures is the most widely accepted treatment choice for spondyloptosis. Though some authors favor spondylectomy and the progressive reduction of the dislocated segment, one stage reduction and instrumentation with fusion was successful in this case. Despite complete reduction, pseudoarthrosis and implant failure occurred. Complete reduction can be achieved by pedicle screw instrumentation systems with meticulous care to the nerve roots but combined anterior and posterior fusion may have prevented pseudoarthrosis. A "360 degree fusion" should be considered in spondyloptotic patients.

POSTER PRESENTATION

DOES VERTICAL THORACIC EXPANSION IMPROVE RESPIRATORY FUNCTION TESTS IN PATIENTS WITH SCOLIOSIS?

TARIK YAZAR (Ankara University, Turkey), KAMiL ÇAĞRI KÖSE, BURAKAKAN, OĞUZ CEBESOY

INTRODUCTION: Scoliosis is a deformity of the spine which can have serious effects on the cardiovascular system. The respiratory complications in untreated or ineffectively treated patients can lead to life threatening or disabling results. A new treatment method addressing the thorax in scoliosis surgery has recently been developed. Vertical expandable prosthetic titanium rib (VEPTR) application is used to expand the thorax in scoliosis patients. Our aim was to observe the short term effects of VEPTR application on the pulmonary functions of scoliosis patients.

MATERIAL AND METHODS: Three scoliosis patients were operated using VEPTR. One was a congenital thoracal scoliosis of 68 degrees with unilateral bar at T7-8-9 and contralateral hemivertebrae, the other was a thoracal juvenile scoliosis of 55 degrees who had undergone repeated fusion operations and the final one was an adolescent scoliosis of 65 degrees. All patients had respiratory function tests preoperatively and at 3,6 and 12 weeks follow-up. They were asked to evaluate their activities of sports and daily living and sleep comfort comparing the preoperative and postoperative situations.

RESULTS: The respiratory function tests did not reveal any improvement with preoperative values regarding forced expiratory volume and vital capacity but the oxygen saturation had improwed from a mean of 90 % (85-95 %) to 96 % (90-98 %). They also reported significant improvements in sports and daily living activities and sleep comfort. The deformity was not corrected in the previously operated patient with a fused spine. The other two patient had a correction of 25 degrees. The mean operating time was 65 minutes.

CONCLUSION: VEPTR is an easy and effective surgery and can provide subjective improvement of pulmonary functions in the short term. Long term and objective benefits should be studied the major drawback of this method is the high cost of the implant.

POSTER PRESENTATION

COMPARISON OF PEDICULAR SCREWS WITH HOOK ONLY POSTERIOR INSTRUMENTATION IN THE TREATMENT OF SCHEUERMANN KYPHOSIS

BÜLENT ÇELİK, MERT TÜZÜNER, ÖNDER ERSAN (SSK Ankara Hospital, Turkey), EMRAH KOVALAK, FATİH DUYGUN

Pedicular screws have been used in lower thoracic and lumbar segments. Use of pedicular screws in the upper thoracic spine is new in use. This change is the expectancy of better deformity correction and better fixation at the segmental level.

Between December 2000 and December 2004 a total of 51 patients with Scheuermann Kyphosis were operated. 24 of the Thoracic Kyphosis were corrected with pedicular screws, 14 were corrected with pure hooks while 13 had screw fixation at the T12-L1 level and hooks at the upper segments. In the Pure Pedicular screws group, a total of 234 screws were inserted between T2-T12. The maximum instrumented level was T8 (in 48 screws) and the least was T2 (only 8 screws). Pure Hook group had hooks between.

T2 and L1 with the use of different pedicular hooks, transvers hooks, lumbar and thoracic laminar hooks Hooks were formed into claws in all cases. Pre- and postoperative and last follow up xrays in two planes were taken on all patients and early CT of the spine was used to asses the placement of screws. None of the patients had neurologic complications. Early examination revealed that 34 screws outside the pedicles that did not cause deterioration of correction. The amount of correction was 51% in the pure screw group, 44 % in the pure hook group and 46 % in the combined group. Late follow up after 1 year showed 1.5 Degree of correction less in pure pedicular screw group, 4 degrees in pure screw group and 3.5 degress in the combined group. 2 patients in the pure book group had dislodgement of the claws without any loss of correction and one patient had screw pull out at the L1 level in the combined group.

According to our results alter a learning curve treatment of Adolescent Scheuerman kyphosis with pedicular screws offers better correction ease of rod placement with less loss of correction.

POSTER PRESENTATION

A MICROINVASIVE INTERMUSCULAR APPROACH TO LATERAL AT THE L5-S1 LEVEL DISC HERNIATION

KADİR KOTİL (Haseki Educational and Research Hospital, Turkey), MUSTAFA AKÇETİN

OBJECTIVE: Far-lateral at the L5-S1 level disc herniations are rare entitiy in the all lumbar disc herniations. To preserve the facet joint, an approach was performed. We describe a minimal invasive intermuscular approach (MIIMA) for decompression of the far-lateral at the L5-S1 level disc herniation.

MATERIAL AND METHODS: An imaging study revealing a L5-S1 far-lateral disc herniations (FLLDH) consistent with the patient's clinical presentation. In our department, between 2000 and 2004, a total of 580 patients underwent discectomy for lumbar disc herniation. 24 had a foraminal or extraforaminal herniation (4.1 %). 14 patients had at the L4-L5 level FLDH, the 10 cases of foraminal and extraforaminal disc herniation at the L5-S1 level (2.1 %). One patient has FLLDHs both at L5-S1 and L4-L5 levels. Mean patient age was 52 years. The male: female ratio was approximately 3:7. All patients failed at least 6 weeks of conservative therapy. Mean duration of symptoms until time of surgery was 7.2 months. Using this MIIMA technique, the authors removed herniated disc the exiting (L-5) nerve root. Clinical outcome was measured using the Prolo scale. All the patients were discharged within 24 hours. Satisfactory (excellent or good) results were demonstrated in 7 patients. There was no recurrence during the follow-up period, that ranged from 10 to 60 months.

CONCLUSION: The MIIMA procedure provides a simple alternative for treating lumbar foraminal or lateral exit zone herniated disc in selected cases. This approach is effective, allowing for the preservation of the L5-S1 facet joint, this approach in saving the facet joint and preventing postoperative instability and offering a direct view of the L5-S1 neural foramen.

KEYWORDS: Magnetic resonance imaging, far-lateral lumbar disc herniation, Lateral decompression, Surgical treatment, Microinvasive intermuscular approach.

POSTER PRESENTATION

LUMBAR DISC HERNIATION AND ALKAPTONURIA

ALi ARSLANTAŞ (Osmangazi University, Turkey), HAKAN BOZOĞLU, İLKNUR TOPÇU

INTRODUCTION: Alkaptonuria is a rare metabolic disorder caused by deficiency of the enzyme homogentisic acid oxidase, resulting in accumulation of homogentisic acid in various body tissue such as hyaline cartilage of major peripheral joints and the intervertebral discs.

MATERIAL AND METHOD: This report describes a case 61-year-old woman presented with a chief complaint of back pain for 4 year and a 2-month history of pain and numbness in the left leg. Neurologic examination revealed left L5 nerve root involvement.

RESULT: An L4-5 discectomy was performed and the nucleus pulposus was black. Histopathologic examination macroscopically showed black cartilage pieces and microscopically degenerated and pigmented cartilaginous tissue. Alkaptonuria was diagnosed alter discectomy procedure. The symptoms of the patients disappeared after surgery, and no symptoms were demonstrated on follow-up period.

COMMENT: Although intervertebral disc degeneration is frequently found in cases of alkaptonuria, lumbar disc herniation as a presenting feature of alkaptonuria is not common.

POSTER PRESENTATION

DISC PRESERVING TECHNIQUE IN THE UNILATERAL CERVICAL DISC PATHOLOGIES: TRANSUNCAL MICROFORAMINOTOMY

MUSTAFA AKÇETİN, KADiR KOTİL (Haseki Educational and Research Hospital, Turkey), MURAT KALAYCI, NECMETTİN GÜZEL

OBJECTIVE: We presented a clinical series of patients with unilateral radiculopathy treated with the transuncal microforaminotomy procedure, to establish procedural techniques and clinical and radiologic outcomes for the anterior cervical micro foraminotomy procedure. Cervical radiculopathy is typically caused by unilateral disc herniation or uncovertebral osteophytes that compress the ventral aspect of the nerve. Direct removal of a cervical lesion causing radicular symptoms without concomitant fusion seems to be an ideal treatment in selected patients. The indications for an anterior cervical neural foraminotomy are limited to unilateral radicular symptoms at one or two levels, with minimal neck pain.

MATERIAL AND METHODS: Six patients were treated with the anterior cervical micro foraminotomy procedure during a 5-year period with follow-up from 4 to 55 months. There were 4 men and 2 women (age range, 33-55 years). Five patients had symptomatic unilateral extruded soft disc herniation, and one had uncovertebral osteophytes confirmed by magnetic resonance imaging. Six patients had a single anterior cervical micro foraminotomy.

RESULTS: Six patients (100 %) had improved or resolved radicular symptoms. No morbidity or mortality.

CONCLUSIONS: Patients treated with the anterior cervical micro foraminotomy procedure have equivalent or better outcomes than those who undergo current cervical procedures. It appears to be a good alternative procedure for carefully selected patients with unilateral cervical radiculopathy and avoids a fusion of the disc space. This procedure is effective and disc protect procedure.

POSTER PRESENTATION

BILATERAL DECOMPRESSION OF LUMBAR DEGENERATIVE STENOSIS INVOLVING A MICROINVASIVE UNILATERAL APPROACH

MURAT KALAYCI, KADİR KOTİL (Karaelmas University, Turkey)

OBJECT: Degenerative central lumbar stenosis has traditionally been considered to be a result of bony narrowing of the spinal canal. The authors studied a consecutive prospective series of patients with spinal stenosis in whom surgery was performed by a single surgeon who used a bilateral decompression of lumbar degenerative stenosis involving a microinvasive unilateral approach.

METHODS: Ten consecutive patients with spinal stenosis underwent bilateral decompression; surgery was performed via an unilateral approach. Preoperative and postoperative MR imaging was also performed. Ten levels were surgically decompressed. The mean operative time was 45 minutes and the mean blood loss was 45 ml per level. Preoperatively stenosis was severe or absolute stenosis at 10 levels. Mean improvement rates for leg muscle strength and intermittant claudication were 70.0% and 98.9%, respectively.

CONCLUSIONS: Bilateral decompression of lumbar degenerative stenosis involving a microinvasive unilateral approach without instrumentation-assisted fusion can be successfully performed in patients with acquired spinal stenosis; the procedure can be undertaken on an outpatient basis, such a safe, effective and minimally invasive surgical method, with reasonable operative times, minimal blood loss, and no morbidity rates.

POSTER PRESENTATION

LUMBAR SPINAL STENOSIS: THE ANALYSIS OF THE PROGNOSTIC FACTORS IN ADULT AND ELDER AGE GROUPS

HÜLAGÜ KAPLAN (Ankara Atatürk Education and Research Hospital, Turkey), KUTAY ÇAKIROĞLU, MUSTAFA N. İLHAN, ÖMÜR KASIMCAN, MEHMET OĞUZKILINÇASLAN, MURAT ÇOBANOĞLU, EMRE YAĞLI, ALİ RIZA ÖZCAN, RECEP ÖZGÜN, CELAL KILIÇ

INTRODUCTION: In this study 99 lumbar spinal stenosis cases of two different age groups operated in our clinic between 2001-2004 are aimed to be analysed in terms of clinical, radiological and surgical treatment techniques.

MATERIAL AND METHOD: All cases were diagnosed regarding history, clinical and radiological examination. In order to compare all the symptomps; chi square test; to compare the duration, t-test and to evaluate the risk factors logistic regression analysis were used.

RESULTS: Average age was 58,30±11,90. 36,4 % (36) were female and 63,6 % (63) were male. The most frequent symptom for those above 65 was pain (96,9 %) and neurological claudication (90,6 %). The most frequent neurological symptoms were; 62,5 % reflex changes, 53 % laseque (+) and 50 % motor defici!. The anterior-posterior diameter was below 11,5 mm in 71,9 % of the cases. Partial recovery was observed in the early period of 62,5 % of the cases. 68,8 % of the cases were applied laminectomy; 87,5 % of which were in total and 12,5 % of which were in partial application. The most frequent symptoms below 65 were pain (100 %) and neurological claudication (92,5 %). The most frequent neurological symptoms were 71,1 % laseque and (+) 56,7 % sensory loss. Anterior-posterior diameter was below 11,5 mm in 56,7 % of the cases. In the early period, partial recovery was observed in 71,6 % of the cases. Laminectomy was made to 55,2 % of the cases; 56,7 % of the cases were performed totally and 43,3 % were performed partially.

CONCLUSION: There is a statistically meaningfull difference in the comparison of total or partial application of laminectomy in these two age groups (p: 0,002). Anterior-posterior diameter is below 11,5 cm in 83,4 % of the laminectomy applied cases. There is a statistically meaningful difference (p: 0,001). In logistic regession analysis, gender (females 2,75 times) (95 % CI,1,05-7,22) and motor loss (2,68 times), (95 % CI 1,09-6,63) increases lumbar spinal stenosis.

POSTER PRESENTATION

CORRELATION BETWEEN PAIN AND POSTURAL ABNORMALITIES IN CERVICAL DISC DISEASES

FİLİZ CAN (Hacettepe University, Turkey), ZAFER ERDEN, GÜRSOY COŞKUN, MELTEM IŞINTAŞ ARIK, AHMET ALANAY, ADİL SURAT

AIM: Despite antalgic posture in patients with cervical disc disease had been stated in the literature, there are very few studies about postural abnormalities in cervical disc diseases and its relationship on pain.

This study was carried out to determine whether there is a relationship between pain and postural abnormalities in patients with cervical disc diseases.

MATERIAL AND METHOD: 17 female, 9 male, a total 26 patients with cervical disc disease aged between 26-75 years (with a mean age 52.46±12.28) were included in the study. Postural abnormalities seen in the patients were recorded. Resting and activity pain level were evaluated according to the visual analog scale. Pearson correlation test was used to analyze the relationship between postural abnormalities and pain intensity level.

RESULTS: The mean resting pain intensity level was 4.15±2.62 cm and the activity pain was 7.09±2.46 cm. 84.61 % forward head, 69.23% flattened lordosis, 53.84 % thoracic kyphosis, and 50% tightness in the pectoral muscles were observed in the patients. It was found that there are correlations between resting pain and flattened lordosis (r: 0.41, $p<0.05$); pectoral muscle tightness and forward head (r: 0.040, p<O.05). There were no correlation between the other parameters.

CONCLUSION: To examining postural abnormalities in patients may help to determine the mechanical disadvantages in cervical disc disease and give an important contribution to plan the most appropriate rehabilitation program.

POSTER PRESENTATION

NUCLEOPLASTY FOR TREATING BACK AND RADICULAR PAIN- ONE YEAR FOLLOW-UP

ÖMÜR ERCELEN (American Hospital, Turkey), ERHAN BULUTÇU, FAHİR ÖZER

Nucleoplasty is a percutaneous procedure in the treatment of both discogenic low back pain and radiculopathy due to contained disc herniation. It involves the percutaneous removal of disc material by using a low temperature resister probe to disintegrate and evaluate disc material followed by thermal treatment of adjacent residual disc material.

This study evaluates the efficiency of nucleoplasty in patients with low back or radicular pain.

MATERIAL METOD: 48 patients either low back or radicular pain due to herniated discs which, were detected on MRI, were performed percutaneous nucleoplasty using coblation technology after failed conservative therapy. Visual Analogue Scale (VAS) for pain and Oswestry Disability Scale (ODS) for functional improvement were used to assess patients after procedure. % 50 improvement at the scales was accepted as success.

RESULTS: The patients were divided in to two groups. Patients who have radicular pain was the first group (n=30) and the low back pain was the second group (n=18). All patients in two groups have contained herniated discs on MRI scans.

74.6 % of patiens in group 1 and 50.6 % of patients in group 2 were improved after one year follow-up.

CONCLUSION: Treating radicular pain is more advantageous than back pain with nucleoplasty technique.

POSTER PRESENTATION

POSTLAMINECTOMY LUMBOSACRAL INSTABILITY

SAİT NADERİ (Dokuz Eylül University, Turkey), ÖZGÜR AKŞAN, LEVENT FIRAT, TANSU MERTOL, NURİ ARDA

Lumbosacral surgery may rarely cause instability. Such a condition is characterized with low back pain with or without radicular pain. This condition is one of the major causes of failed back surgery syndrome and requires a stabilization procedure. The aim of this study is to review the cases who underwent a stabilization surgery for postlaminectomy lumbosacral instability.

MATERIALS AND METHODS: There were 18 cases (13 female, 5 male) who underwent surgery for postlaminectomy lumbosacral instability, aged between 30 and 74. There was a one-level instability in 16 cases and a two-level instability in two cases. The unstable segment was located at L3-4 in four cases, at L4-5 in seven cases, and at L5-S1 in live cases. The unstable segments were located at L3-4 and L4-5 in 2 two-level instable cases. The instability occured after laminectomy for lumbar disc herniation in L4 cases, alter laminectomy for lumbar spine stenosis in two cases, and following instrumentation at the adjacent level in two cases. The first laminectomy performed six months to 19 years belore admission for instability. Low back and leg VAS score showed improvement in all cases, except for one case.

It is concluded that postoperative lumbosacral instability may occure following laminectomy for degenerative lumbosacral disorders. It is one of the reasons of failed back surgery syndrome, and prevention requires a careful preoperative clinical and radiological analysis before the first operation.

POSTER PRESENTATION

DEGENERATIVE SPONDYLOLISTHESIS OF LUMBAR SPINE ASSOCIATED WITH SCOLIOSIS

ERCAN ÖZER, CEM YURTSEVER, ORHAN KALEMCİ, KEMAL YÜCESOY (Dokuz Eylül University, Turkey)

Degenerative spondylolisthesis is seen as a result of lumbar spine degeneration and occurs on sagittal plane. Degenerative changes also occur on coronal plane also and can result in scoliosis. In this study we evaluated scoliotic changes in degenerative spondylolisthesis cases.

193 degenerative spondylolisthesis cases were operated and stabilised with pedicle-screw fixation at our clinic during the last six years. Preoperative and postoperative Cobb angles of cases were measured on antero-posterior plain radiographies. 15 patients having preoperative Cobb angles more than 10 degrees were included in this study.

Mean age of patients (range:56-73 years) was 63.1 years. Preoperative Cobb angles were between 12-32 degrees with a mean of 20.6 degrees. Postoperatively measured Cobb angles of patients were decreased below 10 degrees in all patients (mean:4.7)

Degenerative spondylolisthesis occur in the sagittal plane. Scoliotic change of lumbar spine on the coronal plane should also be considered in the planning of spondylolisthesis stabilisation operation.

POSTER PRESENTATION

EFFECTS OF PHYSICAL THERAPY AND SURGICAL TREATMENT ON ACTIVITIES OF DAILY LIVING IN PATIENTS WITH DEGENERATIVE SPONDYLOLISTHESIS: THREE-YEARS OUTCOMES

YEŞİM SALIK, KEMAL YÜCESOY (Dokuz Eylül University, Turkey), ERCAN ÖZER, SERAP ALPER

Degenerative spondylolisthesis is an important cause of low back pain. Treatment of spondylolisthesis consists of conservative and/or surgical alter exact clinical assessment. The goal of our study is to determine effects of physical therapy and surgical treatment on activities of daily living at 3 years of treatment in patients with degenerative spondylolisthesis.

Fifty-nine patients were involved in this study and treated with surgery or physical therapy. We proposed surgery for patients having more clinical symptoms and functional limitation and instability criteria. Twenty-nine patients treated with physical therapy and 29 patients with surgery. Physical therapy program was applied by one physiotherapist for a group of 3-5 patients together during four weeks, exercises continued at home for another two weeks under control. For surgical treatment, posterior spinal instrumentation and fusion were performed with same standard devices. Both groups were applied with visual analogue scale and Oswestry disability questionnaire and treadmill exercise test with standard protocol for provocation of low back and lower extremity pain before and alter two months of treatment and results of the tests were assessed.

When two groups were compared, predominant symptoms (back or leg pain) were found similar improvement, functional capacity and threadmill walking time were found better in physical therapy group however both groups' functional levels, symptoms and threadmill walking time were found to be significantly improved.

According to results of this study non-surgical treatment was associated with better outcome than surgical treatment at 3 years. When it’s considered that significant differences were existed between two groups before treatment, same differences may be present at 3rd year. When decrease of predominant symptoms are considered, results of surgical treatment was found as similar with non-surgical treatment.

POSTER PRESENTATION

TREATMENT APPROACH IN TANDEM (CONCURRENT) CERVICAL AND LUMBAR SPINAL STENOSIS

MEHMET AYDOĞAN (Florance Nightingale Hospital, Turkey), ÇAĞATAY ÖZTÜRK, MEHMET TEZER, ABDULLAH GÖGÜŞ, KORAY ÇAMURDAN, AZMİ HAMZAOĞLU

INTRODUCTION: Spondylotic degeneration can give rise to tandem (concurrent) spinal stenosis of lumbar and cervical spine. The primary manifestations include neurological claudication, gait disturbance and a mixture of findings of myelopathy and polyradiculopathy in both the upper and lower extremities. The purpose of this study is to determine existence and management of tandem (concurrent) cervical and lumbar spinal stenosis.

MATERIALS AND METHODS: Between 2001 and 2004, 7 patients were diagnosed with tandem spinal stenosis in a series of 213 patients who underwent surgery for spinal stenosis (a frequency of 3.3 %). Our management guidelines include that cervical surgery is performed first if the patients had predominat signs in the upper extremities or in the upper motor neuron region. In the patients who had significant symptoms in the lower extremities and no signs in the upper motor neuron region, lumbar surgery was performed first.

RESULTS: In this series, 3 patients received cervical surgery first and 4 patients lumbar surgery first. The average follow-up was 18.6 months. At the latest examination, all the patients had excellent or good results.

CONCLUSION: With the tandem spinal stenosis, the symptoms of either cervical or lumbar stenosis initially predominate. Often only the primary pathology is treated, then the secondary problem becomes evident. Although tandem spinal stenosis occurred relatively infrequent in this series, its potential presence should not be overlooked. Our results revealed that when correct diagnosis and management for the patients with tandem spinal stenosis was given, the patients had satisfactory outcomes.

POSTER PRESENTATION

SPONTANEOUS REGRESSION AF A LUMBAR HERNIATIONS

SELİM KARABEKiR (Kocatepe University, Turkey), AHMET YILDIZHAN, ELMAS K. ATAR, CANAN BALCI

A case of spontaneous regression of a lumbar herniated disc is presented. The disc regression correlated with clinical improvement and was documented on MRI studies. Although the phenomen of spontaneous disappearance of decrease in size of herniated disc fragments is well known, the exact mechanism underlying this process remains unclear. This poster discusses three possible explanations for disc regressions; retraction into the intervertebral space, dehydration/shrinkage, and resorption due to inflamatory reaction. The fact that neurological symptoms caused by a disc herniation may frequently improve without surgical intervention is well known. Recently, computed tomography and magnetic resonance imaging have been used to document this regretion in different spinal compartments. We present a case of lumbar radiculopathy caused by a herniated disc at the L3-L4 level in which clinical improvement was associated with a significant decrease in size of the extruded disc fragment, documented on MRI seans. This 31-year-old man presented in May 1997 with a 2 months history of low back and left leg pain with no obvious cause. MRI of the lumbar spine obtained 2 months after his symptoms began revealed a large extruded disc fragment. The dural sac was compressed and displaced by this fragment. A trail of conservative management failed to relieve patient's pain and so surgery was offered. The patient refused surgery. So he followed with serial neurological examinations with medical treatment. Over the next 6 months his pain gradually improved to the point that he did not require any medication and was essentially pain-free. After 4 years he come back to control examaination and a second MRI was obtained. The extruded fragment that had been located posterior to the L3 vertebral body, no evidence of compression or displacement of the dural sac. The case confirms the validity of nonsurgical management of herniated lumbar discs in the absence of neurological deficits.

POSTER PRESENTATION

THE ASSOCIATIONS BETWEEN PAIN, MOOD, DISABILITY, QUALITY OF LIFE, BALANCE, HAND GRIP, UPPER EXTREMITIES STRENGTHES AND NECK MOBILITY FOLLOWING CERVICAL DISC SURGERY

RAZİYE NESRİN DEMİRTAŞ, YASEMiN KAVLAK, HAİİL HAKAN UYSAL, Alİ ASLANTAŞ, ERHAN COŞAN (Osmangazi University, Turkey), RAMAZAN DURMAZ, METİN ANT ATASOY, FEZAN ŞAHİN DAĞAN

The aim of this study was to assess the relationships of pain, disability, mood, quality of life, balance, hand grip and upper extremities muscle strengthes, patient satisfaction in the cervical disc surgery patients.

Thirty nine patients who were diagnosed as having cervical disc herniation and had been operated participated in this study. Neck, shoulder and arm pain on Visual Analogue Scale (VAS), Neck Pain Disability Questionaire (NPDS), the Medical Outcomes Study 36 - Item Short-Form Survey (SF-36), Beck Depression Questionaire (BDO), Hand Grip Strength test (HG) and manual muscle test of upper extremities muscles, the measurements of neck motions and Patient Satisfaction Questionaire (PSQ) were applied to the cervical disc surgery patients.

There were contrary associations between VAS and the dominant and nondominant HG ($P<0.01$), effected and non effected upper extremities muscle strengths ($p<0.01$), neck extension ($p<0.05$), the same subscales scores of SF-36, positive associations between VAS and the scores of BPDS ($p<0.01$). BDQ was corre/ated with subscale scores of SF-36 (negatively) and BPDS ($p<0.01$), (positively). BPDS scores increased, while same parameters or balances decreased. There were negatively correlations between PSQ and continuous pain ($p<0.01$), VAS ($p<0.05$), BDQ ($p<0.01$). No patients had participated the physical therapy and rehabilitation program following lumbar disc surgery.

In conclusion, these results of the cervical disc surgery patients mav be related to the resrictions of postoperative activity. Early identification of those patiens with restrictions is essential in order to rehabilitation.

POSTER PRESENTATION

SURFACE STRAIN DISTRIBUTION ON CERVICAL SPINE IN LORDOTIC AND STRAIGHT POSTURE

SÜLEYMAN ÇAYLI (İnönü University, Turkey), CUMHUR KILINÇER, SERKAN İNCEOĞLU, EDWARD C. BENZEL, LISA A. FERRARA

Kyphotic change in the cervical spine was proposed as one of the factors promoting degenerative changes. The knowledge about the effects of a loss in cervical lordosis on the surface strain patterns of the cervical vertebrae would provide a better understanding of the clinical question of whether and how the loss of cervical curvature might accelerate degenerative changes. Thus, this study designed to demonstrate the changes of cortical strains of the vertebrae under axial compressive loads associated with physiologic movements in a straightened cervical spine.

Twelve fresh young adult sheep cervical spines (C2-T1) were obtained for biomechanical testing. Randomly selected six specimens were secured to a curved rod and frozen in natural 45° lordotic posture. Remainder six specimens were frozen into straight posture using a straight rod passing through their spinal canal. While all the specimens were still frozen, attached rods were removed and specimens were mounted into polyester resin (Banda body filler, Atlanta GA) up to the mid-body on the superior end of C2 and the inferior end of the T1. Two axis (09, 909 rosettes) strain gauges were mounted to the anterior surface of the vertebral corpus and the bilateral lateral masses of the 4th, 5th, and 6th cervical vertebrae. Each specimen was positioned and fixed into an electromechanical universal materials testing machine and non-destructively tested for compression, flexion, extension, and lateral bending at a rate of 25 mm/min for 6 cycles.

Comparing to natural lordotic posture, straight posture resulted in significantly higher strain on the anterior surface for compression and flexion and lower strain on the posterior surface for all the movements. During extension and lateral bending, straight posture resulted in lower strains comparing the lordotic posture on both anterior and posterior surfaces. Obstructive compression test resulted in higher strain values on the anterior surface in straight posture.

POSTER PRESENTATION

UNILATERAL INTERBODY CAGE APPLICATIONS FOR LUMBAR DEGENERATIVE DISC HERNIATION WITH UNILATERAL FACET HYPERTROPHY

H. SELİM KARABEKİR (Kocatepe University, Turkey), AHMET YILDIZHAN, CANAN BALCI, ELMAS K. ATAR,

The aim of the study was to find a solution to unilateral degenerative disc herniation with unilateral facet hypertrophy with a minimal surgical procedure. When a case was admitted with the diagnosis of degenerative disc with facet hypertrophy the surgery planned to discectomy + partial facetectomy + unilateral interbody fusion by the help of one peek cage and DBM bone graft. We have 29 patients, 11 of them male and 18 of them were female in this study. Mean age is 45.3, and males' is 52.2 and the females' is, 41.1. 12 patients' levels were L4-L5, 5 were L5-S1, 5 were L4-L5 and L5-S1, 4 were L3-L4 and L4-L5 and 1 is L1-L2 and L4-L5.There's 3 recurrence of L5-S1, 2 of L3-L4, 2 of L4-L5 and one of L4-L5 and L5-S1. Total level that used for interbody fusion was 39 and all of them unilaterally.19 of them only one level, the others two levels which were adjacent with the other. The patients' preoperative mean VAS was 9.31/ 10. There isn't any complication of dural tear or neural tissue injury at peroperatively. The follow-up of the patients was change between 12 - 28 months, mean follow-up was 17.27 months. All patients direct x-rays to ok at postoperative 1., 2., 3.,6., 12. and 24. months. And lumbar CT at 12. and 24. months. Radiologic fusion rate was 72 %. The patients mean VAS alter 1 year was 2.28/10.There isn't any complication of infection or dislocation of interbody cage. One of the patients' have subsiding at L5-S1 level. Only two of them have pricking feel at operation side. The follow-up of the patients stili keep on. As a result of our study, unilateral using of cages for interbody fusion for degenerative discs with facet hypertrophy alone is safe if choice of the patient was good.

POSTER PRESENTATION

CERVICAL SPONDYLOTIC MYELOPATHY TREATED BY OBLIQUE CORPECTOMY WITH A SPECIAL EMPHASIS ON "KNEE BUCKLING" SYMPTOM: A PROSPECTIVE COHORT STUDY

TALAT KIRIŞ, CUMHUR KILINÇER (İstanbul University, Turkey)

INTRODUCTION: Anterolateral partial oblique corpectomy (OC) aims to decompress cervical spinal cord without subsequent fusion and saves the patient from graft, instrument, and fusion related complications. Although a promising technique, there are few studies dealing with its efficacy and safety.

PATIENTS and METHODS: In this prospective study, 40 consecutive patients underwent an OC (one to four levels from C3 to C7) for cervical spondylotic myelopathy (CSM), since 1997. The patients ranged in age from 43 to 78 (mean, 55.5) years. The average follow-up period was 36 months (range, 6 to 84 mo). Pre- and postoperative clinical and radiological data were analyzed to assess the results and find possible factors related to outcomes.

RESULTS: Thirty-seven of 40 patients (92.5%) improved at 6-month follow-up, according to Japanese Orthopedic Association Score (JOAS). The improvement was the most prominent in lower extremity dysfunction. There were no signs of postoperative instability or posture change. A fairly constant symptom, knee buckling, which means a sudden weakness in the knees, was observed in 35 patients (87.5%), and resolved postoperatively in 32. Horner's Syndrome developed in 10 patients (25%) and it was permanent in 4 of them (10%). Recovery was positively correlated with.

Preoperative JOAS (r= 0.37, P= 0.018) and existence of knee buckling symptom (r=0.39, p= 0.012).

CONCLUSIONS: OC for treating multilevel CSM achieved good results with a low morbidity rate in our series. Knee buckling symptom can be used as an early and reliable indicator of CSM, and a possible predictor of good neurological recovery alter OC, if successful decompression can be achieved.

POSTER PRESENTATION

SENSITIVITY AND SPECIFICITY OF QUANTITATIVE MEASUREMENTS TAKEN FROM MRI EXAMINATIONS IN PATIENTS WITH LOWER BACK RELATED PAIN

SOFIA CHATZIIOANNOU (University of Athens, Greece), SPIROS GEORGE PNEUMATICOS, ACHILLES CHATZIIOANNOU

PURPOSE: Magnetic resonance imaging is a study commonly used in the diagnosis of low back related leg pain. However, many have questioned the specificity of this examination. The purpose of this study is to identify quantitative measurements that will enhance the specificity without compromising the sensitivity of this technique.

METHODS: MRI of the lumbar spine was obtained in 30 asymptomatic volunteers and 30 patients with low back related leg pain. The anterior-posterior width and the areas of the spinal canal and of any disc herniations were measured from the axial sequences of the MRIs at the L3-4, L4-5, And L5-S1 levels. Clinical findings were recorded in the symptomatic patients to include the radicular pattern of the leg pain as well as any motor, sensory, or reflex changes. Finally, the symptomatic level was confirmed by relief of symptoms immediately following surgical decompression.

RESULTS: Only 2 out of 30 asymptomatic patients had findings correlating to the L3-4 level, and therefore no statistically meaningful results could be obtained for that level. For the remainder of the patients the most specific and sensitive measurement was the ratio of the anterior-posterior width of the disc hernation and the thecal sac. At the L4-5 level a ratio of the width of the herniated disc and the thecal sac of 30 % demonstrated a sensitivity and specificity of 95 %. Similarly at the L5-S1 level aration of 40 % demonstrated a sensitivity and specificity of 95 %.

CONCLUSION: Quantitative measurements of the MRI of the spinal canal and the herniated disc can be both sensitive and specific for low back related leg pain. In particular, the ratio of the anterior-posterior width of the herniated disc and the spinal canal, a measurement easily obtainable by both the interpreting and the referring physician, provides an excellent specificity and sensitivity in interpreting MRI examination in patients with low back related leg pain.

POSTER PRESENTATION

MULTILEVEL ANTERIOR CERVICAL FUSION. A RETROSPECTIVE STUDY

SPIROS GEORGE PNEUMATICOS (University of Athens, Greece), VASSILIOS NIKOLAOU, CHRISTIANA SAVVIDOU, ALKIVIADIS KALLIAKMANIS, GEORGE PAPACHRISTOU

PURPOSE: The purpose of the present study was to evaluate the results of three level anterior cervical fusion with the use of tricortical autograft and plate fixation.

MATERIALS AND METHODS: Over a 3 years period 17 patients with cervical spondylosis, radiculopathy and or myelopathy were treated with anterior cervical discectomy and fusion (ACDF). All patients underwent three level anterior fusion from C4-C7 with the use of tricortical autograft and plate fixation. Seven patients were males and 10 females. The average age was 58 years (47-72). Preoperative work-up included clinical examination, dynamic and static X-Rays of the cervical spine and MRI of the cervical spine. Selective nerve root blocks were done in 5 patients. The mean follow-up was 18 months (10-24). Patients were seen at 2 weeks, 1 month, 3 months, 6 months and 6 months intervals thereafter.

RESULTS: No patients were lost to follow-up. There were no intra and postoperative complications, with the exception of dysphagia noted in 3 patients which resolved within the first month. As noted from the radiographic evaluation along with dynamic views (flexion/extension) all but on patients had developed fusion, in all three segments. The one patient developed asymptomatic pseudarthrosis at the C6/C7 segment. 14 patients rated their results as excellent and 3 good with the Ogden score.

CONCLUSIONS: The literature suggests that multilevel ACDF is characterized by a high incidence of pseudarthrosis and reoperation rates, with persistent symptoms. In our series the union rate was 94 % with excellent satisfaction in our patient group. It appears that multilevel ACDF with autograft and plate fixation provides satisfactory results in a selected group of patients.

POSTER PRESENTATION

MRI FINDINGS IN FAILED BACK SURGERY SYNDROME

MOHAMMAD EL-SHARKAWI, MOHAMMAD KORIEM, AHMAD MOSTAF (Assiut University, Egypt), YOUSEF BADRAN

INTRODUCTION: Nowadays MRI is establishing itself as the modality of choice for imaging the postoperative spine. Its major advantages are its multi-planar capability, superior soft tissue contrast resolution and excellent tissue characterization. The intravenous administration of gadolinium compounds is an important adjunct to MRI in clarifying the probable cause of the postsurgical syndrome.

MATERIAL AND METHODS: Over all 100 patients, who had been previously operated upon for lumbosacral intervertebral disc disease and who presented with either persistant low back pain, with or without sciatica, or limitation of movement were included into this prospective study.

All patients with complicated postoperative lumbar spine were subjected to full history taking, thorough clinical evaluation, and complete radiological examination including, plain x-rays. dynamic views, oblique views and MRI.

Magnetic Resonance Imaging studies were performed with a 1.5 T super-conducting MRI system.

RESULTS: The causes of FBSS in the 100 patients included were:

1- Recurrent disk herniation in 43 patients (43 %).

2- Postoperative scar tissue formation in 41 patients (41 %). 3- Secondary spinal canal stenosis in 25 cases (25 %).

4- Postoperative infection in 9 cases (9 %).

5- Pseudomeningocel in 5 cases (5 %).

6- Sublaxation in 4 cases (4 %).

7- Arachnoiditis in 3 cases (3 %).

8- Malignancy in one case (1 %).

9- Fracture in one case (1 %).

CONCLUSION: Gadolinium enhanced MRI is needed to reach accurate diagnosis and differentiation of recurrent disc herniation from epidural fibrosis and/or the presence of both. MRI also gives accurate, sensitive and early diagnosis of postoperative discitis and infection and can differentiate it from degenerative disc disease and neoplasm. Moreover, MRI study can diagnose postoperative arachnoiditis, bony stenosis as well as iatrogenic pseudomeningocele.

POSTER PRESENTATION

FACTORS AFFECTING OUTCOME IN CERVICAL SPONDYLOTIC MYELOPATHY

YUSUF KURTULUŞ DURANSOY (SSK İzmir Educational University), MURAT AYDIN, YUSUF ÇAKIR, FÜSUN DEMİRÇİVİ ÖZER, ALİ RIZA ERTÜRK, MAHMUT ÇAMLAR

Cervical spondylotic myelopathy (CSM) is a condition characterized with pyramidal tractus and/or nevre root involvement. The preoperative decision making process and choice of surgical approach are affected by a variety of factors. The aim of this study is to review our results alter surgery for CSM in our department. We also investigated the effect of age, duration of the symptoms, spinal canal diameter, cervical curvature, presence or absence of preoperative high signal intensity within the spinal cord as revealed by T2 weighted MRI on the outcome.

There were 43 patients with cervical spondylotic myelopathy, 31 males and 12 females, aged between 45 and 73 (mean 57.1). The main complaints include gait difficulty, numbness, and extremity pain. Preoperative neurological evaluation was performed using Japanese Orthopaedic Association (JOA) scale (modified by Benzel). Mean preoperative JOA score was 11.1. The neurological examination confirmed cervical myelopathy in all cases, radiculornyelopathy in twenty three cases.

Twenty seven cases underwent laminectomy, fifteen patients underwent discectomy or median corpectomy, and one patient underwent a combined approach. Nine patients required an instrumentation procedure. The mean follow up was 23.0 months. Postoperative mean JOA score was 14.4.

It was concluded that the choice of surgery is an important component of preoperative decision making process. The application of an appropriate approach results in neurological improvement and good outcome.

POSTER PRESENTATION

TRANSILIAC ANTEROLATERAL INSTRUMENTATION OF THE FIFTH LUMBAR VERTEBRA: A NEW SURGICAL APPROACH

ERKAN KAPTANOĞLU (Ankara Numune Educational and Research Hospital), ÖZERK OKUTAN, İHSAN SOLAROĞLU, ETEM BEŞKONAKLI

INTRODUCTION: High lying lateral iliac spine (lIS) impedes anterolateral screw placement to the fifth lumbar vertebra. The aim of the present study was to document the relationship between intercrestal line and vertebral body level, and to describe an anterolateral screw placement to the fifth lumbar vertebra.

MATERIALS AND METHODS: Lumbar X-rays of 100 female and 100 male adult patients were reviewed for the study. Patients admitted to the neurosurgical out patient clinic with low back pain and none was canditates of surgery. The anteroposterior and lateral lumbar X-rays were evaluated. The spinal level marking the intersection of a line joining the iliac crest was determined. The relationship between intercrestalline and the corresponding vertebral body level was recorded. An illustrative case of high lying lIS was also demonstrated.

RESULTS: LIS was found to be at the level of L5 vertebrae in 1.5% of the patients. In 68% of the patients, LIS was at the level of L4-L5 disc space. LIS was found to be at the level of L4 vertebrae in 30.5% of the patients and was as high as the upper one third of the L4 vertebrae. in 5% of cases. Analysis of level of LIS in male group showed significant difference comparing to female group ($p<0.05$). The level of LIS tends to be at higher lumbar level in male comparing to female.

CONCLUSION: Anterolateral instrumentation of the fifth lumbar vertebrae is difficult if high lying LIS impedes enstrumentation. High lying LIS may not allow to give parallel direction to the screw inserter sleve in order to insert screws into body of the lifth lumbar vertebrae. In such cases, anterolateral instrumentation of the fifth lumbar vertebrae is possible by opening a burr hole in the LIS.

POSTER PRESENTATION

THE CORRELATION BETWEEN THE DEGENERATIVE CHANGES AND OSTEOPOROSIS IN THE LUMBAR SPINE OF ELDERLY PATIENTS

MUSTAFA UYSAL (University of Başkent, Turkey), UTKU GÜRÜN, METİN ÖZALAY, SERCAN AKPINAR, NECİP CESUR, REHA N. TANDOĞAN

INTRODUCTION: Disc degeneration, facet arthrosis and morphological changes of vertebra play an important role in spinal degeneration. The purpose of study was to examine the affects of osteoporosis on degeneration of lumbar spine.

MATERIAL AND METHOD: 82 subjects were selected randomly among women older than 55 years of age who had back pain. Degenerative changes for all levels (L1-L5) such as disc pathologies, facet arthrosis and morphological vertebral changes were examined in MRI and X-ray. Disc degeneration were graded according to Thompson's classification. Degree of discopathy were defined in five grades (normal, bulging, protrusion, extrusion). Four grades of arthrosis of the facet joints were evaluated according to the modified classification of Pathria in axial MRI. Morphological changes of vertebra such as fractures, osteophytes and concavity index were examined in X-ray. Subjects were divided into two groups which "T scores" in DXA were lower than "-2,5" is group1 and higher than "-2" is group 2.

RESULTS: A significant difference between groups according to the disc degeneration, facet arthrosis, discopathy and no difference in morphological changes was found in Mann-Whitney-U analysis. In examination five lumbar level, disc degeneration and discopathy (except the L4-L5 level) for all level was significantly different between group 1 and group 2. According to facet arthrosis, the difference was significant only in L3 vertebrae.

DISCUSSION: Our results was similar in literature that demonstrated an inverse relation between osteoporosis and spondylosis. In this study osteoporosis was found negatively correlated with disc degeneration, discopathy and facet arthrosis although not correalated with vertebral fracture, osteophyte formatian and concavitiy index. Several authors showed that elevated disc degeneration was corraleted with BMD and degenerative disc disease was connected with facet arthrosis. We also concluded that degenerative changes is related negatively with osteoporosis.

POSTER PRESENTATION

WHEATHER IF POSTERIOR INTERBODY FUSION WITH POSTERIOR INSTRUMENTATION HAVE ANY EFFECT ON LUMBAR LORDOSIS?

ŞEVKİ ERDEM (Erciyes University, Turkey), FUAT DUYGULU, AHMET GÜNEY, MAHMUT ARGUN, SİNAN KARAOĞLU, MEHMET GÜREL

Our purpose is to compare the effects of posterior lumbar interbody fusion (PLIF) on local segmental lordosis, with posterior instrumentation with mesh cage or threaded cylindric cage.

METHOD: 32 patients (38 segments) were taken with degenerative disc disorders with lumbosacral or lumbar arthrodesis. In 15 cases with cylindric threaded cage (Group I), and in 17 cases (23 segments) with mesh cage (Group II) interbody fusion were performed. For both groups in all cases posterior compressive pedincular instrumentation and posterolateral fusion performed.

RESULTS: In Group I, preoperative segmental lordosis was 8.9 degrees and, in Group II it was 9.9 degrees. The difference between two groups were significantly different. At the final follow-up, group I with segmental lordosis mean was 10.9 degrees, at the second group mean was 15.3 degrees. The difference was significant. In group II, segmental lordosis increased was 5.4 degrees, and group I this increase was 2 degrees. Two patients in threaded cage group during operation dural tear occured. With none of the mesh cage) place cases this complication occured.

DISCUSSION: Mesh cages for PLIF had a beter sagittal reconstruction, compared to cylindric threaded cages, however we consider no clinical difference between two techniques.

POSTER PRESENTATION

POSTERIOR TRANSPEDICULAR FIXATION AND POSTEROLATERAL FUSION: A TREATMENT OPTION OF LOMBER SPONDYLOLISTHESIS

ÜMIT KEPOĞLU, UTKU ADİLAY (Bakırköy Psychiatric Hospital, Turkey), BEKiR TUĞCU, SEMiH BiLGİÇ

Spondylolisthesis is frequent cause of low back pain in modern community. Surgical treatment should be choice for patients with intractable pain and increasing deformity. The aims of surgery are reducing listhesis, obtaining adequate decompression and fusion.

In this study, we evaluated 32 patients whose were treated for lomber spondylolisthesis between 1996 and 2004 in our hospital, retrospectively. The patients were consists of included 29 females and 3 males, ranging in age from 22 to 70 years with a mean of 52.6 years. The level of spondylolystesis was at the L5-S1 in 19 patients, L4-L5 in 11 and L3-L4 in 2 patients. Spondylolystesis degrees according to Meyerding scale were grade 1 in 19 patients and grade 2 in 13 patients. Neurological status of patients was graded with Frankel scale. All patients have been evaluated with preoperative dynamic lumbar graphs, computed tomography and magnetic resonance imaging. Posterior decompression, posterior transpedicular screw placement and posterolateral fusion have been done in all patients. The stabilization systems were evaluated with lomber graph and computed tomography, which obtained on the first postoperative day for all patients. Lumbar graphs were repeated at 3 and 6 months for evaluating the fusion. Law back pain was improved in all patients. There was not any requirement for reoperation.

We report our experiences on surgical therapy of lomber spondylolisthesis in this study. Posterior transpedicular screw fixation and posterolateral fusion should be choice for the treatment of the lumber spondylolisthesis. The patients, demographic and clinical characteristic, operative details and results of the therapy were discussed.

POSTER PRESENTATION

THE ROLE OF SACROILIAC ORTHOSIS ON FUNCTIONAL LEVEL IN PATIENTS WITH SACROILIAC PAIN

EBRU DOLUNAY, FİLİZ CAN (Osmangazi University, Turkey), AHMET ALANAY

INTRODUCTION: Sacroiliac joint pain is that sacroiliac joint dysfunction (SIJD) with/without concomitant innominate torsional asymmetry, may cause LBP. SIJ is designed for stability rather than mobility, therefore additional stability procedure may be required. While lumbar braces are commonly used for lumbar disc diseases, there are very few studies on pelvic support for SIJ pain.

The aim of this study was to investigate the effects of sacroiliac orthosis on pain and functional level in patients with SIJ dysfunction.

METHODS: 40 patients with SIJ pain were divided into two groups. 20 patients were treated with manual theraphy and exercises while 20 patients had SIJ orthosis inserted to the same treatment program. The treatment program was 8 weeks, 3 session per week. SIJ orthosis was taken of at the end of 14 th week. The pain level was measured with VAS scale, functional level was assessed by Oswestry Disability index and Roland-Morris Disability Ouestionnaires. Resumption of Activities ol Daily Living Scale (RAOL) was used to evaluate activity level returned.

RESULTS: Although there were significant improvements in pain for both groups alter the treatment the pain relief in SIJ orthosis group (t=14.17 in rest, t=31.7 4 in activity) was greater than the control group (t= 7. 19 in rest, t=28.68 in activity). Functional level was higher in orthosis group alter the treatment in according to Oswestry index (t=2.82, p=0.007) and to Roland-Morris Ouestionnaire (1=-3.74, p=0.001). RADL points for returning to activies was 141.61 in orthosis group and was 116.54 in control group (t=1.24, p=0.022).

CONCLUSİON: It was conluded that the use of SIJ orthosis inserted to rehabilitation program gives an additional benefits to relieve pain and to improve functional ability in management of SIJ dysluntion. The level of returning to daily file could be higher with use of it. The results would be supported with further studies included diagnostic analjesic block.

POSTER PRESENTATION

SURGICAL MANAGEMENT OF DORSOLUMBER TUBERCULOUS SPONDYLITIS IN ADULTS

MOHAMED ALAMELDEEN (Sohag University of Medicine Hospital, Egypt)

BODY: Over the last three years; we treated 16 cases of single level tuberculous spondylitis. AII cases were managed by anterior decompression debridement and strut graft using anterolateral decompression or retroperitoneal approach. No internal fixation was used but postoperative plaster jacket was applied. The age of our patients ranged from 22 to 75 years. Four patients presented with neurological deficit one case was grade B, one case was grade C and two cases were grade D according to Frankel classification.

The follow up period ranged from 18 months to 3 years (average 20 months). The functional and neurological recovery were satisfactory.

Fusion was achieved 5-6 months in 14 cases and delayed for 9-10 months in two cases.

We concluded that anterior radical resection and bone grafting without internal fixation is a safe and effective method in treatment of dorsolumber spondylitis.

POSTER PRESENTATION

TREATMENT OF THE POTT ABSCESSES WITH SIMPLE DRAINAGE

ORHAN BÜYÜKBEBECİ (Gaziantep University, Turkey), GÜNHAN KARAKURUM, M. AKİF GÜLEÇ, M. ÖMER ARPACIOĞLU, SAVAŞ GÜNER

INTRODUCTION: In tuberculous osteomyelitis, current management is based on early diagnosis and the use of anti-tuberculous drugs. The clinical outcome can be sufficient with anti-tuberculous treatment alone. Surgical indications are reserved in certain circumstances such as progressive neurologic deficit, marked spinal instability, and failure of drug treatment.

In the literature, the serious complications have been reported in patients with large abscess. We performed the simple abscess drainage without arthrodesis in 11 patients while being treated medically.

MATERIAL and METHODS: Simple drainage was performed in 11 adult patients. There were 4 female and 7 male patients. Magnetic resonance imaging (MRI) demonstrated the extent of the abscess and the exact localization. Six psoas abscesses, two presacral abscessess, two epidural abscesses, and one combined epidural and presacral abscess were diagnosed. The definitive diagnoses of the patients was done microbiologically.

We preffered an anterior approach for drainage of abscess. The aspiration material was also used for the diagnostic purposes. We didn't perform the anterior or posterior spinal fusion. The brace has been used for two or three months, postoperatively. At follow-up period, we didn't find the complications such as neurologic deficit, spinal instability, and vertebral collaps.

RESULTS: We obtained good results after an average follow-up of 4,5 years (range 2-6 years). No further procedures (an example: arthrodesis) were necessary in our patients.

CONCLUSIONS: In patients with tuberculous vertebral osteomyelitis, there is an increased risk for progressive neurologic deficit in the spinal instmentation.

POSTER PRESENTATION

SPINAL HYDATID DISEASE. A REPORT OF 2 CASES

MOHAMMAD G. HASAN (Assiut University, Egypt), MOHAMMAD EL-SHARKAWI, ESAM EL-SHERIF

INTRODUCTION: Spinal hydatid disease is rare in Egypt, even in the rural areas. Its prognosis is regarded as poor with high recurrence rate.

PATIENTS AND METHODS: This is a report of 2 cases treated in the last year in a university hospital. None of the 2 patients had pulmonary, liver ar any other organ infection by the disease. The cysts affecting the spine were seen in the upper cervical region in one patient and in the thoracic region in the other. In addition to the vertebral involvement, both patients had intraspinal extradural hydatid cysts. Both patients presented with cord compression symptoms and, despite the use of CT and MRI, both were initially misdiagnosed and treated as Pott's disease.

RESULTS: The correct diagnosis was made only after surgical re-exploration by an experienced surgeon and was confirmed later on by the pathologic and laboratory findings. Neurological improvement occurred following surgical decompression and excision of the disease. Antihelminthic therapy was given and the response to treatment was monitored by measuring the antibody titre.

CONCLUSION: This is the first report of a case involving the upper cervical spine. Surgery remains the best therapy for spinal hydatid disease. Prolonged antihelminthic therapy is necessary to prevent recurrence of the disease.

POSTER PRESENTATION

THE EFFECT OF SURGICAL TIMING ON THE RECOVERY OF NEUROLOGICAL WITH THE THORACOLUMBAR SPINAL TUBERCULOSIS

SERDAR NECMİOĞLU (Dicle University, Turkey), NEBAHAT TAŞDEMİR, SUAT SELEK

Constructive results of early surgical treatment on neurological recovery have been maintain in the literature but effect of late surgical treatment on neurological recovery is unclear in the thoracolumbar spinal tuberculosis.

Between 1998-2003 years we reviewed retrospectively 11 patients with thoracolumbar spinal tuberculosis and neurological deficit, who had delayed surgical treatment because of various causes between 1-9 months with an avarage of 3.2 months.

In our cases mean age was 36 years (24-47), 7 were females and 4 males.

Local kyphosis was measured preoperatively. Neurological deficit was classified according to Frankel classification as grade A in 3 patients, grade B in 4, grade C in 4.

After exposure, the tuberculous lesion region, including the collapsed vertebrae and in-between intervertebral disc, was almost completely resected in order to release the segmental spinal cord. Then, autologous iliac, rib or fibular graft was harvested to complete inter-body fusion. Except one patients who had L4 segment involvement, anterior titanium-alloy rod-screw system was used to reconstruct the stability of the-affected segments .

Anti-tuberculosis chemotherapy was continued for at least 9 months, and the patients were supported with thoracolumbosacral orthosis for 3 months after surgery.

Spinal fusion occurred at a mean of 4.2 months after surgery. During the follow-up period, a mean of 16 degrees of kyphosis correction was achieved after surgery in our group. In 2 case vertebral involvement was 4 while others had 2 vertebral involvement. Of all patients with neurological deficits showed obvious improvement. They were improved to lower grades 4 grades in one case 3 grades in four and, 2 grades in five.

As a results there was no correlation between the neurological recovery and time of surgery. We think that decompression should be performed in patients with neurological deficit even if the patients are admitted late.

POSTER PRESENTATION

BRUCELLAR SPONDYLO-DISCITIS WITH RAPIDLY PROGRESSIVE SPINAL EPIDURAL ABSCESS MIMICKING LUMBAR DISC HERNIATION: CASE REPORT

K. ZAFER YÜKSEL, MEHMET ŞENOĞLU (KSU Medical School, Turkey), MÜRVET YÜKSEL, MUSTAFA GÜL, ÖMER FARUK KOKOĞLU

Spinal brucellosis can be misdiagnosed as lumbar disc herniation because of nonspecific neurological and radiological findings of this condition. This situation gives rise to rapid progression of the disease and some diagnostic defects. Some cases are even detected after the lumbar disc surgery. In this study we present a rapidly progressing epidural abscess case as a result of brucellar sponylo-discitis mimicking lumbar disc herniation and causing progressive neurological deficits. Patients with low back pain and/or sciatica should be evaluated for brucellosis with routin serological tests especially in endemic areas in order to manage diagnostic difticulties of this rare condition.

POSTER PRESENTATION

THE RESULTS OF ANTERIOR APPROACH AND FIXATION IN THORACOLUMBAR VERTEBRAE TUBERCULOSIS

OSMAN AYNACI (Karadeniz Techinical University, Turkey), ÇETİN ÖNDER, OLCAY TURGUTOĞLU, FATİH CANYILMAZ

INTRODUCTION: Although the radiological methods and antituberculosis treatment evolves with time, both the diagnosis and the treatment of the Pott's disease still remain to be a problem. The methods altering from conservative treatment to radical anterior debridement and fusion are being used in vertebrae tuberculosis. Considering these, we performed different methods to the patients that admitted to our clinic as conservative treatment (27), CT guided percutaneous drainage (21), anterior debridement and fusion together with posterior fixation (13) and debridement, fusion, anterior fixation in the same operation by anterior approach (12). The aim of this study is to present the results of the patients on whom debridement, fusion and fixation were performed by anterior approach between 1998-2001.

METHOD: 7 cases were female and 5 were male. The mean age was 40 years (22-65). ln all of the patients, one or two vertebrae were affected. Radical debridement was performed to the affected region by using anterior approach. Allografts and the costae excised at the time of surgery were used for anterior fusion. Anti-tuberculosis therapy was given for 9-12 months.

RESULTS: The mean follow-up period was 5 years (4-6) The mean correction of local kyphosis angle was 17 degree. In the long term follow-up, the average increase in kyphosis was 2 degree. 3 cases with neurological disorder improved completely in the follow-up period. According to Frankel's classification, 2 cases in group C and one in group D moved up to group E.

DISCUSSION: Although there are many surgical procedures in vertebrae tuberculosis, anterior fixation is not common. We obtained satis factory results in Pott's disease when the anterior fixation and grafting were performed in the same session after the radical debridement of the vertebral region that the abscess was present. According to our clinical experience, we concluded that Pott's disease could be treated by anterior approach in an approopriate condition.

POSTER PRESENTATION

CERVICAL SPINAL OSTEOMYELITIS IN HEMODIALYSIS PATIENT: REPORT OF 2 CASES

ALİ RIZA GEZİCİ (Ankara Numune Educational and Research Hospital, Turkey), FİKRET ERGÜNGÖR, ÖNDER OKAY, ALİ DALGIÇ, MEHMET SEÇER

In long term hemodialysis some musculuskeletal pathologies are common. This are renal osteodystrophy, tenosynovitis, bone cysts, soft tissue calcification, increased osteomyelitis incidence and ischemic osteonecrosis. As a further fact, long term hemodialysed patients have increased tendency to infection disease.

CASE 1: A 66 years old man having hemodialysis for one year. Presented with acute quadriparesia. His radiological findings revealed epidural abcess in C4 and C5 levels. Via posterior approach C4 and C5 hemilaminectomies and abcess drainage has been performed. Microbiological studies did not any infection agents. In early postoperative period his quadriparesia has improved.

CASE 2: A 45 years old man having hemodialysis for three years. Presented with acute quadriparesia. His radiological findings revealed epidural abcess in the levels ol C5, C6; ostemyelitis in the vertebral bodies C4, C5, C6, C7 and anterior kyphosis. Via anterior approach C4, C7 partial and C5, C6 total corpectomies, abcess drainege, fibular otogrefting and C4 for C7 screw-plate stabilization has been performed. Staphylococcus aureus has been detected in microbiological studies. His neurological status has been improved in early postoperative period.

In hemodialysis patients immun supression and A-V fistulas are be common causes bacteraemia. In normal population vertebral pyogenic osteomyelitis has an incidence of % 2.8 and lumbar region involvement is common. In hemodialysis patients incidence is higher and the involvement is more common in cervical region. Only in 25-45 % of the cases, the infection agent are detected and % 50 of them is the staphylococcus.

In hemodialysis patients vertebral osteomyelitis mav reveal similar clinical presentation with spondyloartropathy; especially in which the infection agent is not certain. In hemodialysis patients with vertebral infectious involvemet the neurological status and vertebral stability must be evaluated and treated respectively as soon as possible.

POSTER PRESENTATION

MULTIPLE, PRIMARY PARASPINAL HYDATID CYSTS WITHOUT SPINAL LNVASION: A CASE REPORT

ÖMER SELİM YILDIRIM (Atatürk University, Turkey), HAYATİ AYGÜN, HALİL RIFAT ÇANAKÇI, ALİ OKUR

INTRODUCTION: Hydatid cyst of the paraspinal muscles without spinal involvement is rare and can pose various diagnostic problems in the low back pain. We report our experience in the management of patient who developed multiple hydatid cysts in the paraspinal muscles without spinal association.

MATERIAL AND METHOD: A 67-year-old woman presented with signs and symptoms of back pain and multiple mass in his thoracolumbar and sacral area. The mass had been present for more than 1 year and slowly but steadily in size. MR images demonstrated a well defined cystic mass ('mother cyst') containing a few round lesions ('daughter cyst'). The liver, spleen, lungs, and brain were entirely normal at a detailed work-up by ultrasound and/or CT. Because of the high suspicion of hydatic disease, a complete surgical resection was performed, and germinative membranes and scolices were shown, establishing a histopathologic diagnosis of Echinococcus granulosus. Albendazole therapy was commenced.

RESULTS: At 2-year follow-up, a clinical and radiological examination yielded no evidence of recurrence and MR imaging demonstrated resolutian of paraspinal muscles to their normal anatomy.

CONCLUSIONS: Hydatic disease is prevalent in most sheep-raising Mediterranean and other countries [1-4]. Primary cyst may localize anywhere in the body but commonly they are found in the liver (55-70 %) and lungs (20-30%) [2]. Isolate paraspinal involvement is apparently more rare [4]. Back pain can be caused by a number of factors: Protruding disk, age, osteoporosis and fractures, back sprain and strain, tumors and infection. The most comman cause of low back pain is degenerative disease [5]. This case emphasized that in endemic areas A patient have a sign of the back pain and mass symptoms complain, if who live in the endemic area. We must be consider the cyst hydatid in the differential diagnosis.

POSTER PRESENTATION

HYDATID DISEASE OF THE VERTEBRAL COLUMN AND STABLISATION: A CASE REPORT

ALİ RIZA GEZİCİ (Ankara Numune Educational and Research Hospital, Turkey), FİKRET ERGÜNGÖR, ÖNDER OKAY, ALİ DALGIÇ, ÖMER POLAT, SERKAN ATASOY

Hydatid disease is a parasiter infection which in most cases echinococcus granulosus is the agent. The liver is mostly involved but involment of any region of the body is possible. Bone involvement is about 0.5 % to 1 and 50 % of them is the vertebral column. Spinal canal localization is 1-2 %, vertebral hydatid desease shows a slow progress and the most comman signs are pain and neurological symptoms related to cord compression.

CASE: 21 years old female admitted with back pain and monoparesis in the left leg. Radiogically findings revealed a cystic mass distructing L1 vertebra corpus and revealed the left psoas muscle. Via anterolateral approach L1 corpectomy, cyst resection, iliac allografting and screw rod stabilisation had been performed. The pathological analysis revealed hydatid cyst peroperatively. The monoparesis improved in early postoperative period. the albendazole+praziquantel treatment had been administered for 8 months postoperatively. No recurrence was present after 1 year postoperatively. Progression is slowed in vertebral hydatid disease, rupture and multilocilation is common, caused by microfractures in the bone famelles. The first signs are generally nonspecific and progression is common. Destruction of the vertebral body and the collapse causes kyphosis, besides cyst resection vertebral stabilisation is the choice of treatment. In most cases radical corpectomy is mandatory for total cyst removal. The most common complication is cyst rupture and following recurrences. The irrigation of the operation field by formaline, 0.5 silver nitrate or hypertonic solutions are suggested to avoid the recurrence. Albendazole, mebendazole, praziquantel or the combinations of these drugs must be admistirated as the medical treatment. As a result the total cyst removal can be done by resection of the involved vertebral segments and vertebral stabilisation as a key point for treatment.

POSTER PRESENTATION

THORACO - LUMBAR SPINE TUBERCULOSIS: ANTERIOR DEBRIDEMENT AND INTERNAL FIXATION

T. NEDiM KARAİSMAİlOĞLU, ALPARSLAN TUHTA (Ondokuz Mayıs University, Turkey), TANER ALIÇ

Tuberculous spondilitis remains an important pathological entity in developing countries and it's treatment controversial.

From Junary 1995 to Marc 2001, 25 patients who had spine tuberculosis were treated operatively in our clinic.

The process was located in thoracic part of vertebral column at 13, in lumbar part at 12 patients. There were 10 men and 15 women patients.

Average age was 40,5 (5-65) years and average follow up time was 73,5 month (43-140). All patients underwent anterior surgery.

All symptoms disappered in post operative period and fussion obtained alter 6-7 months.

In conclusion based on the results of our study on the treatment at active tuberculosis spondylitis; internal fixation along with anterior debridement and fussion provides a very high and effective rate of deformity correction and maintanence.

POSTER PRESENTATION

A CASE OF INFANTIL POTT'S DISEASE WITH FIVE YEARS FOLLOW-UP

SABRİ AYDIN, NUVİT SARIMURAT, LALE HANCI, MURAT HANCI
(Cerrahpaşa Hospital, Turkey)

A case of tuberculous spondylitis in an eight month old boy is reported. The infant was presented with two months history of progressive paraparesis. Radiologic evaluation revealed thoracic spinal cord compression due to vertebral body collaps with abscess formation. Anterior radical debridment and bony grafting was performed. Anti-tuberculous drug treatment administered for eighteen months. At the immidiate post-operative period his neurologic functions gradually improved. On the fourth year of treatment he was ambulant, and had mimimal kyhpotic deformity despite of bony graft resorption.

POSTER PRESENTATION

POSTERIOR EPIDURAL ABCESS AFTER VERTEBROPLASTY- A CASE REPORT

YETKİN SÖYÜNCÜ (Akdeniz University, Turkey), HAKAN BİLBAŞAR, MERTER ÖZENCİ, ZEKİYE BİGAT, SEMİH GÜR

Transpedicular vertebroplasty for the treatment of compression fractures of the thoracic and lumbar spine has been well described. Complications are rare and there are a few reported infectious complications requiring surgical management as corpectomy with anterior reconstruction and posterior stabilization but we have not seen any reports about epidural abscess in the literature. We presented a patient in whom posterior epidural abscess developed after vertebroplasty in which drainage and antibiotherapy was required for treatment.

METHODS: A 70 years-old female with a painful T12 osteoporotic compression fracture, without a radiologic and laboratory sign of infection, underwent percutaneous vertebroplasty using polymethyl methacrylate without complication. She had a medical history for type II diabetes mellitus, osteoporosis and hypertension. Pain relief was evaluated by visual analog pain scale.

RESULTS: She had significant improvement in pain after vertebroplasty at the second day. One week after operation, however, she had fever and increased back pain. On clinical examination, abscess formation was determined at the vertebroplasty site. Wound cultures revealed Acinetobacter species and S. aureus. It was drained surgically and antibiotic treatment was started. She had progressive neurologic deterioration (paraparetic) at the 25th day after vertebroplasty. MRI of the thoracolombar spine revealed posterior epidural abscess. Partial laminectomy and drainage were performed. She had complete neurologic recovery at the follow-up period.

DISCUSSION: An epidural abscess, which is an unusual complication of the vertebroplasty, represents a medical and surgical emergency. Treatment is generally urgent surgical drainage combined with antibiotics. Vertebroplasty should proceed under sterile conditions with great caution and antibiotic prophylaxis should be considered in risky patients to prevent this serious complication

POSTER PRESENTATION

SPINAL EPIDURAL BRUCELLA ABSCESS

NİYAZİ NEFİ KARA, MERİÇ ÜNAL (SSK Denizli Hospital, Turkey)

Bruceliosis and brucella spondilitis is a chronic infection that caused by brucella genus bacteries (B. Melitentis, B. Abortus, B canis) especially B. Melitensis. Human brucellasis is primarily an occupational infection. Fever, night sweating, artralgia, back pain and fatigue are seen in most patients. Epidural abscess and granulation are the complications that seen occasionally but causes neurological deficits. Disease is typically seen in countries that milk and milk products are produced in non-healthful conditions. Disease is endemic in Mediterranean Countries, Middie East and Latin America. Medical therapy is generally efficient but if there is no response to medical therapy or there is neurological deficit, abscess formation or deformity, surgical therapy has become necessary. In our clinic, six cases of spinal epidural brucella treated, two of them had gone to surgery. In spondilodiscitis, in medical therapy only quinolones or rifampicin-docsicyeline combination are efficient but if there is spinal epidural abscess, after surgical drainage and irrigation, same combinations can not efficient enough. Two cases that undergo surgery, streptomycine 1 gr/day for 20 days added to therapy and it was successful. In this report, there are two cases that had back and lelt cruris pain; both of them has 1/320 brucella agglutination test, and in MRI one of them has abscess formation at the level L4-5 and the other has at L5-S1. The follow up and therapy has evaluated. In spinal epidural brucella with neurologic deficit, beside surgery, using streptomycine is very important for controlling the disease.

POSTER PRESENTATION

HYDATID CYST OF THE LUMBOSACRAL SPINE: A CASE REPORT

MÜSLÜM GÜNEŞ, UTKU ADILAY (Bakırköy Psychratric Hospital, Turkey), BEKİR TUĞCU, BÜLENT KARAKAYA, BÜLENT DEMİRGİL

Hydatid disease occurs in humans as a result of faeco-oral contamination and spinal echinococsis is rare even in areas where echinococsis is endemic. Hydatid cyst primarily occurs in liver and lung. Bone involvement constitute only 0,5-2% of all hydatisosis. About half of bone involvement occurs in vertebrae. Thoracic spine is the most comman site of the spinal hydatidosis. Primary hydatid cysts of the lumber and sacral spinal canal are very rare. According to affected level severe neurological deficits may accur.

We present a 31 years old man with cauda equina syndrome caused by a primary hydatid cyst of the lumbosacral spinal canal. He had admilted to hospital with left foot and law back pain three years ago. Magnetic resonance imaging revealed intraspinal hydatit cyst extended from L2 to S2. Cyst had been totally removed. He was symptom free for three years. Alter three year, he presented with acute cauda equine syndrome. His neurological examination revealed total plegia of dorsal flexion of the left foot and perianal hypoesthesia. MRI showed lumbosacral hydatidosis again. After total remove of the cyst, his neurological status revealed immediately reliel.

POSTER PRESENTATION

CT GUIDED PERCUTANEOUS DRAINAGE AND DISRUPTION OF LUMBAR SPINAL SYNOVIAL CYSTS

ROBERT SEIGEL (Colorado Imaging, United States), JOHN WHITAKER

Lumbar region spinal synovial cysts are produced as a result of degenerative arthropathic changes in the facet joints. Radicular complaints are produced by cysts acheiving significant size to produce nerve root impingement and often in a lateral neuroforaminal location. These cysts may be surgically removed, but can recur. We report a variety of CT guided techniques to attempt palliative pain control either by cyst drainage, disruption, fenestration and/or placement of epidural steroids and anesthetic into the epidural space. The cysts may be punctured and drained via direct CT guided approach either with large spinal needle ar small curved two needle technique (21 gauge spinal with 25 gauge curved needle with memary). Cysts are initially filled with local anesthetic to reduce viscosity and allow more efficient drainage of synovial fluid. Steroids are introduced to reduce inflammation and the facet joint is olten cannulated at the same time to attempt further drainage of synovial fluid and placement of steroids to reduce further inflammation and synovial fluid production. If possible, air is introduced under pressure to altempt cyst disruption. Because the procudure can produce temporary expansion of the cyst befare disruption or drainage, conscious sedation with Versed and Fentanyl is always utilized. In many cases the patient is also administered epidural steroid under CT guidance.

A variety of illustrative cases will be presented to demonstate success and failure of the technique. Postoperative recurrences and preoperative attempts at palliative pain control will be shown. Same cases have thick outer walls and inspisated synovial fluid and are resistant to percutaneous therapy. Other cases can be disrupted or drained resulting in significant long-term pain control of over one year in same patients. This procedure can often be effective as a non-surgical alternative for pain relief even if the cyst is only incompletely drained or disrupted.