ORIGINAL ARTICLE

Distribution pattern of surgically treated symptomatic prolapsed lumbar and sacral intervertebral discs in males

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ABSTRACT

Background: The pattern of distribution of surgically treated symptomatic prolapsed lumbar and sacral intervertebral discs has been published, though scantily, especially in males. We decided to look at our own series, compare and contrast ours with some of those published. **Materials and Methods:** We treated 88 locations of this lesion in 68 males. The clinical features were those of lower back pains, with or without radiation into the lower extremities, sensory loss and paresis of the limbs. There was a case of loss of urinary bladder and ano-rectal control. All lesions were confirmed through cauda-equinograms and treated under general anaesthesia in knee-chest position (MECCA position). The patients were followed up for 3-6 months post-operatively. **Results:** There were 88 locations in 68 males of 21-70 years of age, with 29 prolapses occurring during the age range 31-40 years, while 54 locations were on the left and 48 at L4/5. The procedures were well tolerated by all patients and there were no post-operative complications. **Conclusion:** This lesion in our series occurred mostly on the left, at the L4/5 level and peaked at 31-40 years age range. The predictability of occurrence of this disease, using side, level and age is still not feasible in males from our series.

Key words: Discs, distribution, lumbar, males, pattern, prolapsed, sacral, symptomatic

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INTRODUCTION

Prolapsed disc is a condition of the spine, when there is a tear in the outer annulus fibrosus of an intervertebral disc, allowing the soft central gelatinous nucleus pulposus to bulge out beyond the vertebral body margins posteriorly. This could cause pain directly through compression of a nerve root, and/or the tear may cause release of inflammatory chemical mediators, for example tumour necrotic factor (TNF).[1-5] Tears are almost always postero-lateral, since the posterior longitudinal ligament protects the postero-medial area. Prolapsed disc could be due to wear and tear from certain jobs that require constant sitting, like driving; recreational activities including rowing, skiing, weight lifting, jogging, walking, etc.[1,6,7] Genetics, height, age and smoking could also influence the occurrence of this lesion.[1,6-15]

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Intervertebral disc prolapse, protrusion, or extrusion accounts for less than 5%[16] (though some papers put it between 5% and 10%[17]), of all low back problems, but are the most common causes of nerve root pain and surgical interventions in the lumber region.[16] In this region, the clinical features of this lesion include lower back pain (lumbago), and sometimes, leg pains (radiation pains, sciatica), dysaesthesia, pareses/paralyses, loss of urinary bladder and ano-rectal control.

Plain radiographs of the spine, electromyograms (EMGs) and nerve conduction studies (NCS) could indicate this, but the diagnosis is usually confirmed through contrast myelography, *vis-à-vis* cauda-equinography, computerised tomography scan (CT scan), which may need coronal and sagittal views/reconstructions as well as axial or magnetic resonance imaging (MRI).[18-24] Treatment modalities include conservative measures with physiotherapy, rehabilitation, weight control, anti-inflammatory measures, epidural steroid injections, analgesia-assisted traction therapy (IVSAAT), lumbo-sacral back support and stem cell therapy.[1,7,25-36] Surgical measures include discectomy/microdiscectomy, fenestration, laminectomy with or without discectomy, artificial disc replacement and nucleoplasty.[1,37-44] The outcome of treatment depends on the location of the prolapse, clinical condition of the patient

and time of presentation and treatment.[45] Management complications include worsening of pain and neurological status, dural tears, infections, nerve root injury, vascular injury, development of pseudo-aneurysms and arterio-venous fistlulas, pulmonary embolism, retroperitoneal injuries, metabolic effects of steroids on the pituitary-adrenal axis, epidural haematomas and abscesses.[7,17,26,35,46,47] To be differentiated from this lesion, are other lesions, which could cause same symptoms and signs, as infections, abscesses, haematomas, tumours, aneurysms, arterio-veinous malformations, endometriosis, spinum bifidum occultum, osteophytes and spondylolisthesis.[1,7,48-60]

MATERIALS AND METHODS

Eighty-eight (88) locations in the lumbar and sacral regions, in 68 males, were surgically treated by the author from 1971 to 2009. There was no selection of patients population-wise or socio-demographically. There were no inclusion/exclusion criteria. The patients' ages ranged from 21 to 70 years. Their clinical features were those of lower back pains, radiating pains, impaired sensation and paresis in the affected lower limb/s. There was one emergency case due to loss of urinary bladder and ano-rectal control. Plain spinal radiographs and cauda-equinograms (Figure 1), as well as routine laboratory investigations, were carried out on all the patients. No other radiological investigations were done, either for the lack of such facilities (CT, MRI) and/or the findings with cauda-equinograms were very adequate. All the operations were done under general anaesthesia in the knee-chest position (MECCA position) (Figure 2), through fenestration, in which, from the adjacent laminae on same side, the lower part of the upper lamina and the upper part of the lower lamina, together with the in-between yellow ligament, were nibbled off. This gave a clear view and adequate space to remove the pathological process and enucleate the nucleus pulposus totally, through an incision in the annulus fibrosus. The author (the main surgeon) has never had the need of any form of magnification for such operations to date. This small incision was left open. The rest of the wound was closed in layers, after satisfactory haemostasis, without any drains. All patients were allowed after all patients were up the next day post-operatively, though physiotherapy was started as soon as they were returned to the ward.[61] The stitches were removed 9 days post-operatively. The patients were discharged home 2 days thereafter, but to return for follow-up checks about 7 days later.

RESULTS

The routine laboratory tests (complete blood count, random blood sugar, serum creatinine, serum calcium, lipid profile, serology for syphilis and retro-virus, urinalysis and stool analysis) were within normal limits. The cauda-equinograms revealed 2 prolapses at L1/2, 6 at L2/3, 5 at L3/4, 48 at L4/5 and 27 at L5/S1, none at Th.12/L1 and S1/2, totalling 88 [Table 1]. As in Table 2, at L1/2, each side had 1 prolapse, at L2/3, there were 3 on each side, at L3/4, there were 3 on the right and 2 on the left; at L4/5, the right had 20 and left 28 prolapses; at L5/S1, there were 7 on the right and 20 on the left. In total, the right had 34 and left, 54 prolapses. Table 3 shows that on the right side, there were 3 prolapses in the age range 21-30 years; 11 in 31-40years; 7 each in 41-50 and 51-60; 6 in 61-70 and none thereafter. There was also none in 1-20 years. The left side had no prolapses in the age range of 1-20 years; 9 in 21-30years; 18 in 31-40; 13 in 41-50; 9 in 51-60; 5 in 61-70 years, respectively, and none thereafter. The total showed, therefore, 12 in the 21-30; 29 in 31-40; 20 in 41-50; 16 in 51-60; 11 in 61-70 years of age.

The patients with bilateral lesions were 1 at L1/2 (67 years); 2 at L2/3 (55 and 67 years); 1 at L3/4 (36 years); 7 at L4/5 (32, 33, 46, 48, 55, 55, 66 years), the 46-year-old being the emergency case; 1 at L5/S1 (39 years), totalling 12 patients. Eight (8) patients had multiple lesions, viz. 1 atL1/2 and L2/3 (67 years); 1 at L2/3 and L3/4 (53 years); 1 at L2/3 and L4/5 (55 years); 5 at L4/5 and L5/S1 (28, 33, 35, 39, 40 years). All the patients tolerated the procedure very well and recovered from the anaesthesia without any additional gross neurological deficits. There

Table 1: Level and age ranges

Level	1-10 years	11-20 years	21-30 years	31-40 years	41-50 years	51-60 years	61-70 years	71-80 years	Total
L1/2	–	–	–	–	–	–	2	–	2
L2/3	–	–	–	–	–	4	2	–	6
L3/4	–	–	–	2	1	1	1	–	5
L4/5	–	–	7	11	15	9	6	–	48
L5/S1	–	–	5	16	4	2	–	–	27
S1/2	–	–	–	–	–	–	–	–	–
Total	–	–	12	29	20	16	11	–	88

Table 2: Level and sides

Level	Right side	Left side	Total
Th12/L1	–	–	–
L1/2	1	1	2
L2/3	3	3	6
L3/4	3	2	5
L4/5	20	28	48
L5/S1	7	20	27
S1/2	–	–	–
Total	34	54	88

Table 3: Side and age ranges

Side	1-10 years	11-20 years	21-30 years	31-40 years	41-50 years	51-60 years	61-70 years	71-80 years	Total
Right	–	–	3	11	7	7	6	–	34
Left	–	–	9	18	13	9	5	–	54
Total	–	–	12	29	20	16	11	–	88

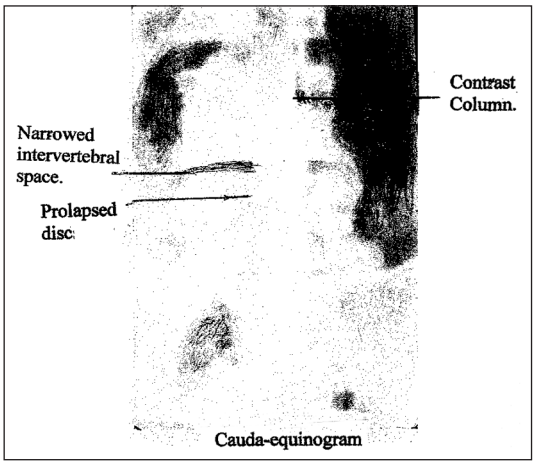

Figure 1: Cauda-equinogram

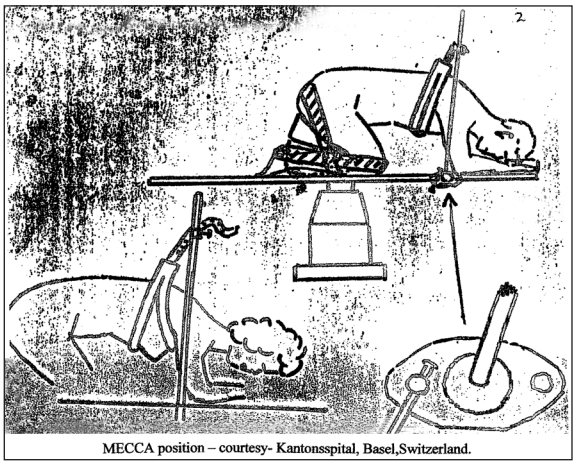

Figure 2: Mecca position

were no complications following surgery. The patients were followed-up for up to 6 months post-operatively. Their wounds healed by primary intention and their pains and previous neurological deficits had all resolved.

DISCUSSION

The majority of herniated discs will heal themselves in about 6 weeks and do not require surgery.[1] However, the presence of neurological deficits requires some type of surgical intervention or the other, even if minimally invasive. Cauda-equinograms are still very useful, especially where CT and/or MRI are not available/affordable. There was no adverse reaction to the contrast used [Amipaque (metrizamide) or Lopamiro 300 (iodine/trometamol/edetate calcium disodium/hydrochloric acid)]. The operation, in the knee-chest position, keeps the intra-abdominal contents farther away from the operation site to avoid injuring them, while the operation lasts. In our series, there were no prolapses up to the age of 20 years, as observed by others, though, there were some in other papers, and none after the age of 70 years.[7,15] The incidence peaked at the range 31-40 years as against in the fifth decade in other papers.[7] We noticed that, before the age of 51 years, there were no prolapses at L1/2 and L2/3 levels, but, thereafter, 2 at L1/2, and 6 at L2/3, then none after the age of 70 years. This agrees with other findings, that with advancing age, there appears to be a relatively increased incidence of herniation at the L2/3 level.[7] So far, there has been no explanation for this observation. The incidence of this lesion is supposed to be age related, but our series showed a decline after the age of 50 years and none after the age of 70 years.[7] More information will probably be required. Majority of our cases were at L4/5, which agrees with some, as against L5/S1 found by others.[7,17,21,26] We found more lesions on the left (54 to 34), as with others, though, theirs included females.[17] The peaking for both sides was from 31 to 40 years.

The bilateral lesions were mostly at L4/5, spread equally from 31 to 60 years, with the only emergency case at 46 years. The multiple lesions were mostly (5 of 8) at L4/5 and L5/S1, with 4 at the 31-40 years age range, all being on the left side.

CONCLUSION

In our series, symptomatic prolapsed lumbar and lumbo-sacral intervertebral discs in males occurred mostly on the left side, at the L4/5 level and peaked at the age range of 31-40 years. We are not able to depend on these findings for the predictability of the occurrence of this lesion in males. More investigation is required.

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