

## MALFORMATION OF LUMBAR SPINAL ROOTS AND SHEATHS IN THE CAUSATION OF LOW BACKACHE AND SCIATICA

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It is well established that lumbar root compression, resulting in pain in the lumbar region and sciatica, may be caused by a variety of lesions, such as herniation of intervertebral discs, hypertrophy of the ligamentum flavum, osteochondrosis and spinal neurinomata. It is also well known that identical symptoms may develop in cases of root adhesion and radiculitis.

Within recent years four cases of malformation of lumbar roots and sheaths have come under the observation of the authors, displaying clinical changes which are grossly indistinguishable from those found in the conditions mentioned above. In reviewing the recent literature we have been unable to find such malformations described in conjunction with the problem of low back pain and sciatica.

### CASE REPORTS

**Case 1**—Woman aged thirty-one years. At the age of nineteen she had for a period of about three months suffered from a dull pain in the back of the right thigh and calf. This was relieved by manipulation. Eighteen months before entering hospital she began to complain of pain in the lumbar region. Some months later the pain began to pass to the back of the right thigh, and eventually also to the calf and the great toe. She had noticed a transitory tingling numbness in the right foot. The pain was made worse by coughing, sneezing and by bending forwards. Repeated manipulations had led to no improvement.

*Examination*—There was obliteration of the lumbar lordosis. The range of spinal movements was slightly limited. There was no local tenderness. No weakness or disorder of sensation was revealed in the lower limbs. Deep reflexes were all normal. Straight leg raising was slightly impaired and painful on the right.

*Lumbar puncture* revealed normal pressure conditions. The cerebro-spinal fluid was clear, and the cell count and protein content were normal. *Radiographs* showed slight narrowing of the fourth and fifth lumbar intervertebral discs, but no other abnormality. A diagnosis of herniated intervertebral disc in the lower lumbar region was made.

*Operation*—Laminectomy of the fourth and fifth lumbar vertebrae was performed. No protrusion of the two lower intervertebral discs could be found, but a peculiar affection of the fifth lumbar and first sacral nerve roots was seen (Fig. 1). From the region where the fifth lumbar root normally shoots off, a dural pouch extended laterally for about half an inch. In this were contained the fifth lumbar and first sacral roots which, more distally, separated into distinct nerves, each passing through its normal intervertebral foramen. Cranio-caudally the pouch measured about three-quarters of an inch, and ventro-dorsally a little less than half an inch. When the pouch had been opened both nerve roots were seen to be covered by a thin arachnoidal sheath; the fifth lumbar root lay most ventrally and passed laterally "below" the first sacral root. There was no thickening of the sheaths or nerves. But ventro-dorsally the pouch with its contents was a little more than twice as thick as a normal root. The dura was closed. The decompression effected by the laminectomy was thought to be adequate treatment.

*Progress*—Apart from a transient retention of urine the post-operative course was uneventful. She was transferred to her county hospital on the fifth day after operation. At that time she had no pain, and the neurological condition was unchanged. When readmitted almost a year later she related that in the first month after operation she had felt quite well. But after discharge from her county hospital she began to notice a sharp stabbing pain in the left gluteal region. The pain was made worse by straining, stooping and coughing, and would then pass to the small of the back and to the back of the left leg. At intervals the left leg became numb, and the muscles of the right calf felt cramped.

*On examination* there was still some limitation of movement of the lumbar spine, and there was tenderness on percussion over the third lumbar spinous process. There was slight weakness of