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Intercostal Nerves to Spinal Nerve Roots Anastomosis (Spinal Cord Bypass) and Harrington Rod Fusion in Traumatic Paraplegia — Technical Note

By

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With 3 Figures

Summary

This paper describes the technique of anastomosis of intercostal nerves to spinal nerve roots together with Harrington Rod fusion in traumatic paraplegia, with the help of a case history in which this combined procedure has been performed for the first time.

Keywords: Traumatic paraplegia; nerve anastomosis; intercostal nerves; spinal nerve roots; spinal cord bypass; Harrington Rod Fusion.

Although the return of function in a totally paraplegic patient from a complete spinal cord injury seems to be an impossibility, in a recently published article by Epstein some functions in the lower extremities have been observed in children with meningomyelocele who had anastomosis of their intercostal nerves to the nerves supplying the lower extremities. In his article Epstein suggested the possibility of using this procedure for traumatic paraplegic patients. We recently had the opportunity of trying this procedure together with the Harrington Rod (Distraction) fusion procedure, in a traumatic totally paraplegic patient, and are reporting this case as a technical note, as we feel that, although it is too early to predict the results, in an otherwise hopeless situation this procedure will be worth trying, and only after several trial procedures will one be able to assess the efficacy of this procedure. We are also reporting this case because this is probably the first time that this procedure has been performed with Harrington Rod fusion for a traumatic paraplegic.
Case History

This 25-year-old man was involved in a car accident, and sustained a compression fracture of the first and second lumbar vertebral bodies (this patient has six lumbar vertebrae) with total paraplegia. He had no rectal tone, no anal sensation, and no reflexes in the lower extremities. Initially the patient did not want to be operated upon, and was treated conservatively. After about ten days,

the patient felt that perhaps spinal fusion might be worth trying, and so at this stage we decided to put in Harrington Rods and anastomose some of the intercostal nerves to the nerve roots supplying the lower extremities. Prior to this, a myelogram was performed with metrizamide, which showed evidence of a complete block at the fracture site. He also had spinal somatosensory evoked potential studies, which indicated complete loss of spinal function at the level of the twelfth thoracic segment.

Operative Procedure

The operation was done under general anaesthesia, with the patient in the prone position. A midline incision, extending four segments above and four segments below the fracture area was made,