Editorial

ROLE OF SURGICAL MANAGEMENT IN INJURIES OF THORACOLUMBAR SPINE

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Over past two decades there has been considerable advancement in surgical management of spinal injuries. This has resulted in significant improvement in all facets of management of spinal column injury, particularly stability of thoracolumbar spine. Thoracolumbar region is most commonly involved in spinal injuries. Stabilization of spinal fractures by posterior route is most common and widely accepted method of surgical treatment. Harrington introduced posterior spinal instrumentation in 1959, since then it is the most frequently used system for stabilization and fusion of unstable thoracolumbar fractures [1]. The primary goal of Harrington rod stabilization is to improve alignment, provide stability, allow earlier rehabilitation and prevent late kyphotic deformity [2]. Early stable fixation allows early mobilization of patient and reduces complications of prolonged bed rest. Most patients treated with dual Harrington rod stabilization require external bracing for protection of hook lamina interface until solid arthrodesis is achieved. To overcome these shortcomings newer methods were introduced. Remoldi et al, introduced use of sublaminar wires with Harringtons instrumentation to improve fixation especially in the thoracic spine [3]. In 1970 Edward Luque developed a segmental spinal system for the treatment of severe progressive scoliotic deformities to avoid the need for external bracing [4]. Cortel and Dubosset of France, in 1980 developed a universal posterior spinal system that allowed for multiple hook fixations on a singular rod as a mechanism for the correction and fusion of spinal deformity [5]. This system is technically more demanding and more expensive. On the other hand sublaminar wiring along with cross linked rods like Hartshill rectangular frame are inexpensive ways to stabilize the spine but they have limited axial control and risk of traumatizing neural elements during passage of sublaminar wire and hence reserved for patients with complete neuro-

logical injury. Roy- Camille in 1986 developed a system of spinal plates and pedicle screws for stabilization of lumbar and cervical spine [6]. Steffe in 1986 utilized spinal plates with segmental pedicle screws for unstable fracture dislocation of spine where fusion and internal stabilization was required [7]. This device allows controlled distraction, attains desirable spinal contour and favourable neurological outcome. Pedicle screw fixation is rapidly becoming a widely used method and has emerged as first choice in decompression and stabilization of thoracolumbar spine. The anterior approaches to the spine have evolved. This has led to evolution of anterior instrumentation systems, which can be placed at time of anterior decompression if desired to improve stability. Among available systems are Kaneda device, Zielke plate, Danek instrumentation and ATL-plates [8]. They use screws through the vertebral body above and below connected through a plate or rods to afford stability. These devices are load sharing and require the use of a post-operative brace. Anterior approaches have resulted in several complications and hence are not popular.

Between 30-40 persons per million population sustain spinal cord injury every year all over world. Although it is infrequent, it causes catastrophic disability and tends to involve young adults between age group of 10-30 years. The most common cause is motor vehicle accidents (45%), followed by fall from height (25%), sports injuries(15%) and act of violence (15%). However in war they are caused by bullets or by splinters from exploding mines, bombs and shells. The management of fractures of thoracolumbar spine is intended to maximize neurological recovery, optimize spinal stability, restore spinal anatomy and maintain motion. After initial resuscitation and neurological evaluation of patient, plain radiograph is taken and depending on presence of neurological deficit or burst fracture, additional study such as MRI or CT scan is

performed for details of bony and neural damage. Reformatted 3-D images of bone column require MRI images of spinal cord which helps in planning surgical intervention [9,10]. The decision to treat thoracolumbar fractures operatively or non-operatively is controversial [11]. Conservative treatment is indicated to those patients with clearly stable fractures of thoracolumbar spine having no neurological dysfunction [12]. Whereas surgery is indicated in unstable fracture dislocation of spine with complete or incomplete spinal cord injury for early mobilization of patients.

Indian Armed Forces is a pioneer in setting up first and largest comprehensive spinal cord injury treatment centre having 80 beds at Military Hospital, Kirkee in 1968. Soon after two more centres having 40 and 20 beds were opened in Command Hospital (Central Command) Lucknow and Command Hospital (Western Command) Chandimandir respectively. The facility for initial treatment and proper evacuation by fastest means has been provided upto forwardmost area. After initial treatment, these patients become independent in activity of daily living and are wheel chair borne. Patients who belong to hilly terrain, remote and desert areas require constant care to prevent complications like urinary tract infection, renal failure, bedsores and pneumonia which needs total rehabilitation. We have the best paraplegic homes in the country, 70 bedded in Kirkee and 30 bedded in Mohali near Chandigarh.

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