Case study

Rehabilitation Strategies in Management of Complex Case of Cervical Burst Fracture- A Case Report.

ABSTRACT

A burst fracture is a descriptive term for an injury to the spine in which the vertebral body is severely compressed. They typically occur from severe trauma, such as a motor vehicle accident or a fall from a height. With a great deal of force vertically onto the spine, a vertebra may be crushed .If it is only crushed in the front part of the spine, it becomes wedge shaped and is called a compression fracture. However, if the vertebral body is crushed in all directions it is called a burst fracture. Burst fractures cause severe pain. The diagnosis of a burst fracture is usually made by x-rays and a CAT scan. Occasionally, an MRI scan may be ordered as well, in order to assess the amount of soft tissue trauma, bleeding or ligament disruption. The review of the CAT scan and x-rays allows the treating physician to make a determination as to the level of the fracture, whether it is a compression fracture, burst fracture or fracture dislocation. A spinal compression fracture also may be caused by trauma to the spine. Events that may cause trauma to the spine can include: A car accident, a hard fall or a fall from a height of more than 15 feet, landing on the feet, and a blow to the head. Any fall from a standing height that results in a spinal compression fracture or any other fracture most likely indicates weak bones due to osteoporosis. The physical exam should be performed to document both spinal deformity, that is, angulation of the spine or tenderness of the spine at the level of fracture, as well as, a neurologic exam. Neurologic exam should include testing of the muscle strength, sensation, and reflexes of the lower extremities, as well as, testing of bowel and bladder sphincter control. A 36 year old man was brought to the hospital as he had a fall from electric pole approximately 20 feet height. He had sustaining injury to the neck. Surgery was done as patient was diagnosed with C6 burst fracture with fracture dislocation of C5-C7. Therapeutic Interventions includes exercises, strengthening exercises, cervical fracture fixation, and traction.

Key Words: Burst Fracture, Spinal Cord, Cervical Spine.

INTRODUCTION

The C6 spinal vertebra is the part of the cervical spinal cord, located in the lowest region of neck. The C6 nerve roots, which exit the spinal column between the C6 vertebra and C7 vertebra, directly affects the control of the muscles in the forearm and wrist (1). Spinal burst fractures result from the failure of both the anterior and the middle columns of the spine under axial compression loads. Conservative management is through bed rest and immobilisation once the acute symptoms have settled. Surgical treatment involves either anterior or posterior stabilisation of the fracture, sometimes with decompression involving the removal of bone fragments that have intruded into the vertebral canal (2). Characteristic components of the injury include: centripetally oriented disruption of the vertebral body, unilateral or bilateral laminar fractures that about the spinous process, marked anterior wedging, vertically oriented vertebral fracture emanating from the basivertebral foramen, increased interpediculate distance, and significant spinal canal narrowing by characteristic retro-pulsed fragments (3).

CASE REPORT

Patient had a fall from an electric pole approximately 20 feet height. Sustaining injury to the neck following which he was unable to move his both upper and lower limb. Bowel and bladder control was lost following the incident. Patient was diagnosed with C6 burst fracture and dislocation of C5-C7. Patient was managed with C6 corpectomy, reduction of dislocation of C5-C7 with interbody mesh cage and plate. Patient had no medical past history.

On examination, Pulse was 52/min, RESP was 26/min, Blood Pressure was 94/56 mm Hg and Temperature was Afebrile.

THERAPEUTIC INTERVENTION

Cervical fracture fixation is performed to restore alignment of the cervical spine. A fracture, in one of the cervical vertebrae (C1-C7) can damage the spinal cord and cause pain, limited

range of motion, muscle weakness, abnormal sensation or even total paralysis (4). Common symptoms include: Pain, Swelling, Reduced range of motion, loss of muscle strength, reduced ability with everyday activities (5).

A structured rehabilitation programme will be advised which will incorporate short and long term treatment goals in order to assess your progress and maximise potential following surgery. Physiotherapy may include:

- Ice and ultrasound to reduce pain and any swelling.
- Advice about certain positions of the spine – to increase comfort by relieving pressure off the affected areas while you are sleeping and sitting.
- Advice about certain types of movements – to increase your confidence when moving with less pain.
- Structured exercise programme tailored to your functional and sporting exercises
- Stretching exercises to improve flexibility of the neck and reduce pain.
- Active and passive range of movement exercises such as bending, straightening and rotating the neck to prevent soft tissue from shortening.
- Isometric strengthening of the neck muscles and the 'core' abdominal muscles.

Physiotherapy treatment may include:

Pain reduction: Physical therapist may use different treatments, technologies, and manual (hands-on) therapy to control and reduce pain. These treatments can help to avoid the need for pain medications, including opioids.

Movement guidance: Avoiding certain movements will promote healing and help prevent future fractures or collapse of the vertebrae.

Flexibility exercises: Gentle spinal range-of-motion exercises for the neck, middle, and low back, and the hip and shoulder areas.

Strengthening exercises: Gentle exercises to help stimulate bone strength and straighten the curve of middle back. These may include upper- and lower-body, stomach, and back muscle-strengthening activities.

Posture and spine sparing: To maintain safe posture and spinal positions. This will protect the vertebrae from undue stress when sit, stand, walk – and even while sleep.

Fall prevention: Exercises to improve balance and steady walking to prevent falls. Use of a walker or cane for temporary support may be instructed as the recovery begins.

It is important to commence physiotherapy as soon as possible to rebuild your strength and flexibility and promote recovery in a safe and effective way.

DISCUSSION

Burst fractures are a type of compression fracture related to high-energy axial loading spinal trauma that results in disruption of the posterior vertebral body cortex with retropulsion into the spinal canal (6,7). Lower cervical spine" of the German Society for Orthopaedic and Trauma Surgery (DGOU), formulated "Therapeutic Recommendations for the Lower Cervical Spine", taking into consideration the current literature (8). Therapeutic goals are a permanently stable, painless cervical spine and the protection against secondary neurologic damage while retaining the greatest possible amount of motion and spinal profile (9,10).

CONCLUSION

A structured rehabilitation programme is advised which will incorporate short and long term treatment goals in order to assess the progress and maximise potential following surgery. Physiotherapy treatment is be done to improve the flexibility of spine, improve range of motion, to improve posture and to regain the strength of the body.

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