

Non-Surgical Treatment of Spinal Cord Injuries
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Introduction

Over the past 6 decades, the general principles of management of acutely injured spinal cord patients have been defined. The physiological alterations and special characteristics of acute spinal cord injury were also recognised.

The arguments in favour or against surgical intervention, is ultimately aimed at arriving at an optimal management of these devastating injuries. Since there is no specific treatment to repair an injured spinal cord, all the emphasis is concentrated on prevention of further (secondary) injury whether it might be bio-mechanical or patho-physiological, concerns about the first i.e. biomechanical instability, lead to overemphasis on the benefit of surgical intervention, sometimes, without the support of specialist comprehensive care of the patho-physiological instability and multi-system dysfunction associated with spinal cord injury.

Management of SCI

1. Effective pre-hospital care, aimed at detection, resuscitation, immobilisation of the spinal column and rapid evacuation to a trauma centre
2. Diagnosis and assessment of extent of injury to the spinal column and spinal cord, using available imaging technique and detailed clinical assessment of dysfunction
3. Further management should take the following into consideration;
 - a. Few traumatic illnesses are as vulnerable to acute aggravation caused by improper management, or with such tragic results, more than spinal cord injury. Hypotension, hypoxia and fever associated with sepsis or post-operatively can lead to secondary injury to the cord, all these pathologies are more likely to occur following surgery than with specialist conservative management especially in the acute stage
 - b. Awareness of the physiological alterations associated with SCI e.g. Bradycardia & Hypotension, as a result of functional sympathectomy especially in lesions above T6; Over treatment of such alterations often occur in non-specialised centres
 - c. Maintaining spinal alignment at all times, using skull traction, log rolling and turning beds; Pressure ulcers are known to occur if the patient is not turned in casualty coach every two hours or the backboard is not removed in a maximum of 8 hours
 - d. In addition to the autonomic dysfunction, pointed out above, it has been shown that an injury to the spinal cord results in disruption of the blood brain barrier, impairment of its auto-regulatory mechanisms and cell membrane disturbance, all render the acutely injured cord susceptible to non-mechanical injuries
 - e. The effects of various anaesthetic agents on the injured spinal cord are largely unknown and might have an adverse effects

From the above it can be shown that conservative specialist treatment of spinal cord injuries is based on achieving two goals: 1) preservation of patient's life and 2) optimising the potential for recovery of neurological function.

When a decision is to be made whether to treat patients surgically or non-surgically, I feel that the following is very important to consider before embarking on one or the other option:

1. Realignment / decompression of the spine within 3-4 hours of injury either closely or surgically may benefit neurological recovery in incomplete lesions, but it is rarely achievable in current practice
2. Both surgical and non surgical interventions are associated with complication rates when offered in a non-specialised centre where comprehensive management of spinal cord injury is not available, consequently patients with SCI should be referred to specialist centres where both methods are available
3. It has been shown in several studies that delayed admission to specialist spinal injuries centre is associated with high complication rates including respiratory failure and infections, thrombo-embolism, pressure sores of grade 3 and 4, gastro-intestinal problems, urinary tract infections ...etc. in many of these patients surgery to decompress and stabilise the spine is done or improper conservative management was contemplated. The result was delayed mobilisation and prolonged hospital stay including ITU stay
4. There is no evidence that decompression of the spinal cord to improve spinal canal diameter is correlated with neurological recovery, nor there is any evidence that surgery in general improve the neurological outcome
5. The average stay in intensive care of patients treated surgically for cervical and high thoracic injuries in a non specialised centre is one week while in patients admitted acutely to specialist care is less than one day ?!
6. looking at the few papers that study neurological recovery in patients treated surgically and non-surgically, it appears that the chances of neurological recovery to walking (ASIA B to D or E), are higher in expert conservative than surgical treatment
7. Early mobilisation is not synonymous with the start of rehabilitation in high thoracic and cervical injuries or with early discharge from hospital, in these patients physiological instability due to autonomic areflexia, is not only a hindrance to starting rehabilitation but it can lead to secondary spinal cord injury, consequently it may delay any potential neurological recovery
8. Add to the above point, the vital capacity VC in a tetraplegic patient is further reduced in the sitting position with the possibility of hypoxia
9. If surgical intervention is required, and looking critically at the literature, delaying surgery for stabilisation of the spine until patients are generally stabilised is associated with less complications, ITU stay and ventilation and possibly better chances of neurological recovery for those with incomplete SCI, provided that they are treated in a specialist centre
10. There is significant correlation between days to admission to specialist care and length of stay in hospital, the longer the time between admission to this care the longer is the total hospital stay
11. There are certain situations where surgical intervention is indicated, namely: neurological deterioration due to further mechanical compression on the cord, non-compliant patient due to mental illness for example or a ligamentous injury that is not likely to heal in time

Summery & Conclusion

It appears that the controversy surrounding the complications of “conservative” management is mainly due to the way it is applied in clinical practice without expert specialist comprehensive care.

Most complications of spinal cord injury whether it may be in the acute stage or on the long term are preventable.

The development and maintenance of trained multidisciplinary team of professionals is a necessity, as well as the need for further meaningful research in order to solve a number of controversial issues.

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