

# Outcome Between Plaster Cast And Fiberglass Cast In Stable Thoracolumbar Burst Fracture

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## INTRODUCTION:

The majority of spinal fractures occur in the thoracolumbar region (T10-L3) presumably as a result of transition from the relatively immobile thoracic spine to the mobile lumbar spine. Spinal fractures include compression, burst, flexion-distraction, and fracture-dislocation injuries, with burst fractures accounting for 10% to 20%. Patients with such fractures may be treated with either non-operative or operative modalities based on TLICS scoring. Non-operative treatment may include the use of a brace, cast, bed rest, and analgesics. In our center, many used cast as it is relatively cheaper, readily available and our staff are well trained in applying it on patients. There are two types of cast used, which are plaster of Paris and fiberglass. Therefore in our study, we want to observe and compare the short term outcome of managing stable thoracolumbar burst fracture using these two materials

## MATERIALS & METHODS:

Forty cases of stable thoracolumbar burst fracture were treated conservatively in orthopedic ward Hospital Sultanah Aminah Johor Bahru and Hospital Tengku Ampuan Afzan from January 2013 till December 2015. 40 patients were followed-up with minimum period of 1 year and evaluated for the functional (Oswestry disability index) and radiological (kyphotic angle deformity and anterior body compression) outcomes by a series of questionnaire and measurement.

## RESULTS:

There were 40 patients received conservative treatment with body cast for stable thoracolumbar burst fracture. 20 patients treated with body cast made from plaster of paris and remaining 20 patients with fiberglass cast. There were 26 male and 14 female with mean age 40.1 years old. Racial distribution showed Malay population 65%, Chinese 22%, Indian 10% and others 3%. In plaster of paris group, mean

kyphotic angle deformity at last follow up was  $16.60 \pm 2.95$  with a mean improvement 4.45 degree and anterior body compression at last follow up was  $30.35\% \pm 10.2$  with mean improvement of 9.30%. In fiberglass group, mean kyphotic angle deformity at last follow up was  $15.55 \pm 3.38$  with a mean improvement 7.25 degree and anterior body compression at last follow up was  $25.90\% \pm 7.81$  with mean improvement of 3.45%. The functional outcome showed Oswestry Disability Index (ODI) score in plaster of paris group was 23.70 (SD = 7.82) and in fiberglass group was 18.50 (SD = 5.94).

## STATISTICAL ANALYSIS:

Mann-Whitney test indicated that the difference in kyphosis deformity improvement was significantly greater in the fiberglass group at last follow up ( $Mdn = -7.50$ ) than the plaster group ( $Mdn = -3.00$ ),  $U = 118.50$ ,  $p = 0.026$ . Similarly, significance difference was also observed for the anterior body compression difference in the fiberglass group ( $Mdn = -14.50$ ) compared to the plaster group ( $Mdn = -7.00$ ),  $U = 127.50$ ,  $p = 0.049$ . No significant difference was indicated by Mann-Whitney test for functional score between the two groups.

## DISCUSSIONS:

These findings may be contributed by the material used in fiberglass which is made from fiber reinforced plastic containing silica or silicate with varying amount of oxides of calcium, magnesium and boron. It is strong light weight material and less brittle, hence favored by the patient in general. Its strength and weight are also better than many metals with the stiffness in tension and compression but weak in shearing forces. In contrast, the strength of plaster of paris depends on thickness which in excess will increase weight and bulk and heat production. Reapplication rate also more in this type of cast in view of breakage.

## CONCLUSION: