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Variant Jefferson Fractures: Diagnosis and Treatment
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Objective: To investigate the diagnosis and treatment of variant Jefferson fracture.
Methods: A total of 23 patients from 2002 to 2008, male 18 cases, female 5 cases, with a mean age of
45 years (24-65 years) and a mean follow-up of 17 months (5-35 months), were included in this study
conducted at The First Affiliated Hospital of Soochow University, Suzhou, China. Lateral and
anteroposterior open-mouth radiograph and Computed Tomography (CT) scan of cervical spine were
used to classify the fractures, determine therapy selection and fracture union. 19 patients were treated
with collar or plaster immobilization for 3 months after traction for 3-4 weeks, 2 patients were treated with
posterior occipital fusion and 2 patients were treated with anterior decompression internal fixation
procedure.
Results: There were a total of 13 patients with 3-part fracture of atlas, 6 patients with 2-part fracture and
4 patients with 1-part fracture. 5 patients presented with neurologic deficits caused by spinal cord injury,
11 patients were found to have associated spinal or other fractures. Follow-up evaluation indicated that all
fractures progressed to union, without aggravated neurological defect. In 19 nonoperative treatment
patients, there were no complication such as local pain, tardive atlas dislocation or tetraplegia. In 4
operative treatment patients, there were no complication such as infection, leakage of cerebrospinal fluid,
or implant failure (loosening, bending, or breakage of screws).
Conclusion: Lateral and anteroposterior open-mouth radiograph combine with CT scan of cervical spine
are helpful to diagnose and classify variant Jefferson fracture. In most of variant Jefferson fracture, collar
or plaster immobilization after traction reduction is an effective method of management.
Keywords: Atlas, Fracture, Computed tomography scan