Case Report

Traumatic spondylolisthesis of L45

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Abstract

The dislocation at L45 fallowing trauma is very rare. It can be due to par fracture or facet joints dislocation or locking facet Watson-Jones describe the mechanism as hyperextension in early 1940 was described. In these 2 cases hyperextension mechanism is the basic cause of this rare deformity.

Introduction

Traumatic spondylolisthesis of L45 is a very rare entity of thoracolumbar fracture. In The literature less than 15 case was reported since Watson Jones described the first case. During the the last 4 years we had 2 case of L45 traumatic Spondylolisthesis.

The first case

38 years, male traditional min workers his gold weal collapses in his back.

He presented to our hospital with unstable pelvic fracture bilateral weber B ankle fracture and traumatic L45 spondylolisthesis with paraplegia.

Surgery was done and L45S1 posterior lateral fusion was done

On 6 months follow-up he had complete neurological recovery

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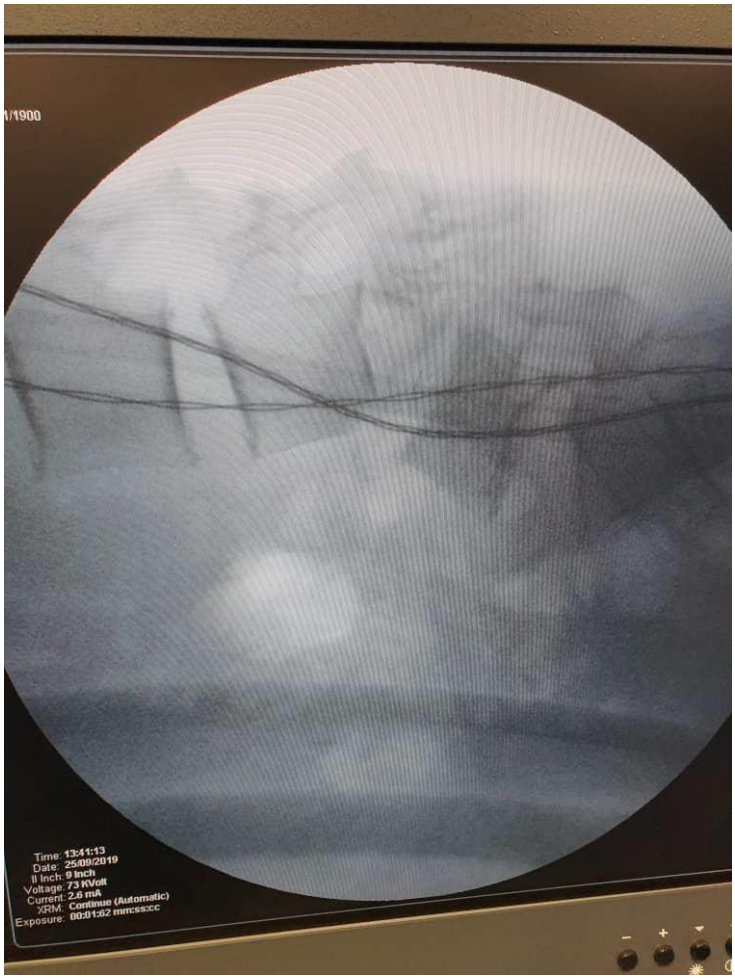

Preoperative lateral X ray

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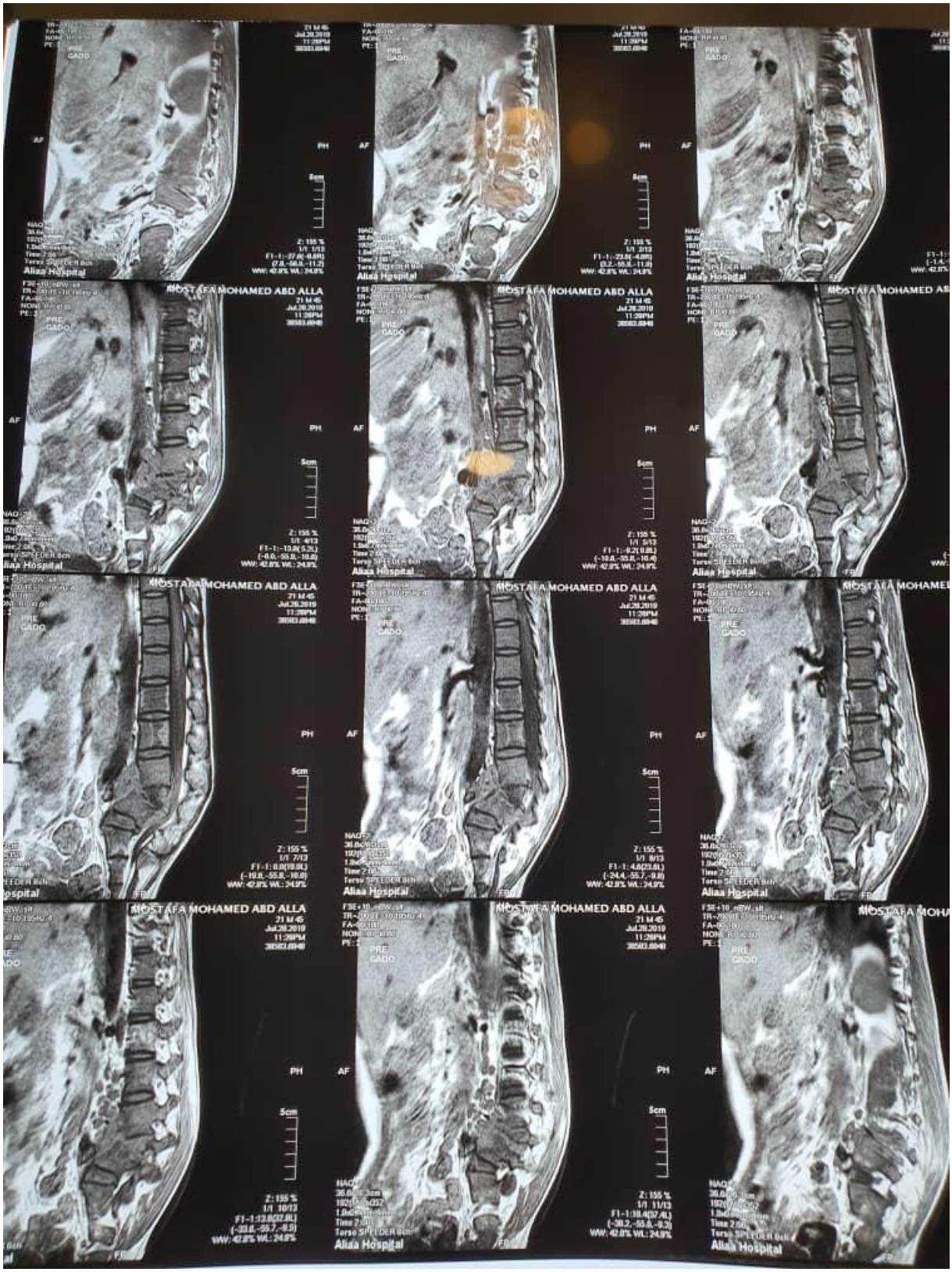

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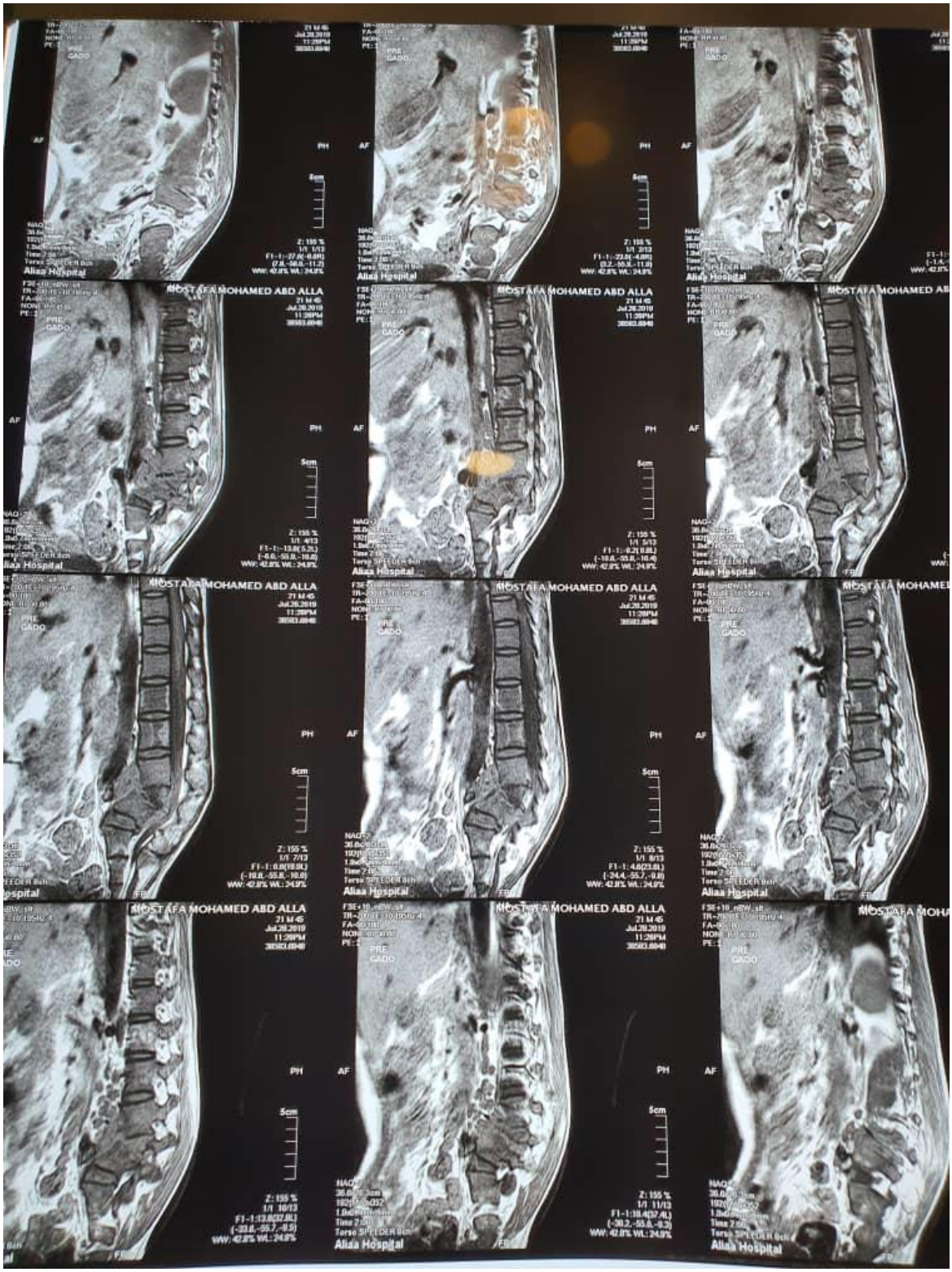

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The second case

40 years, farmer, victim of high speed motor vehicle accident presented with lower limb numbness, power grade 4 in Rt lower limb and 3 in Lt lower limb.

Patient underwent surgical stabilization decompression and fixation with complete recovery after 3 months.

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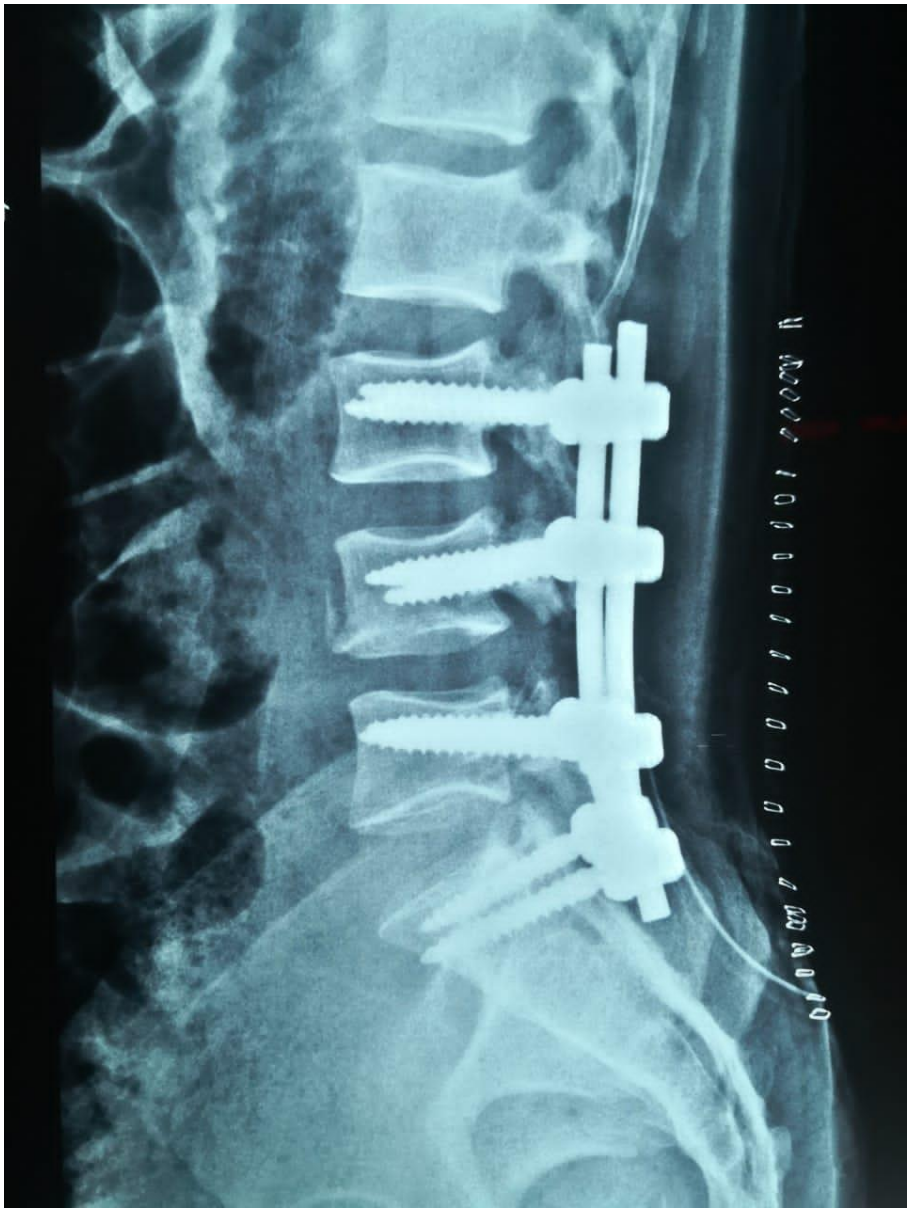

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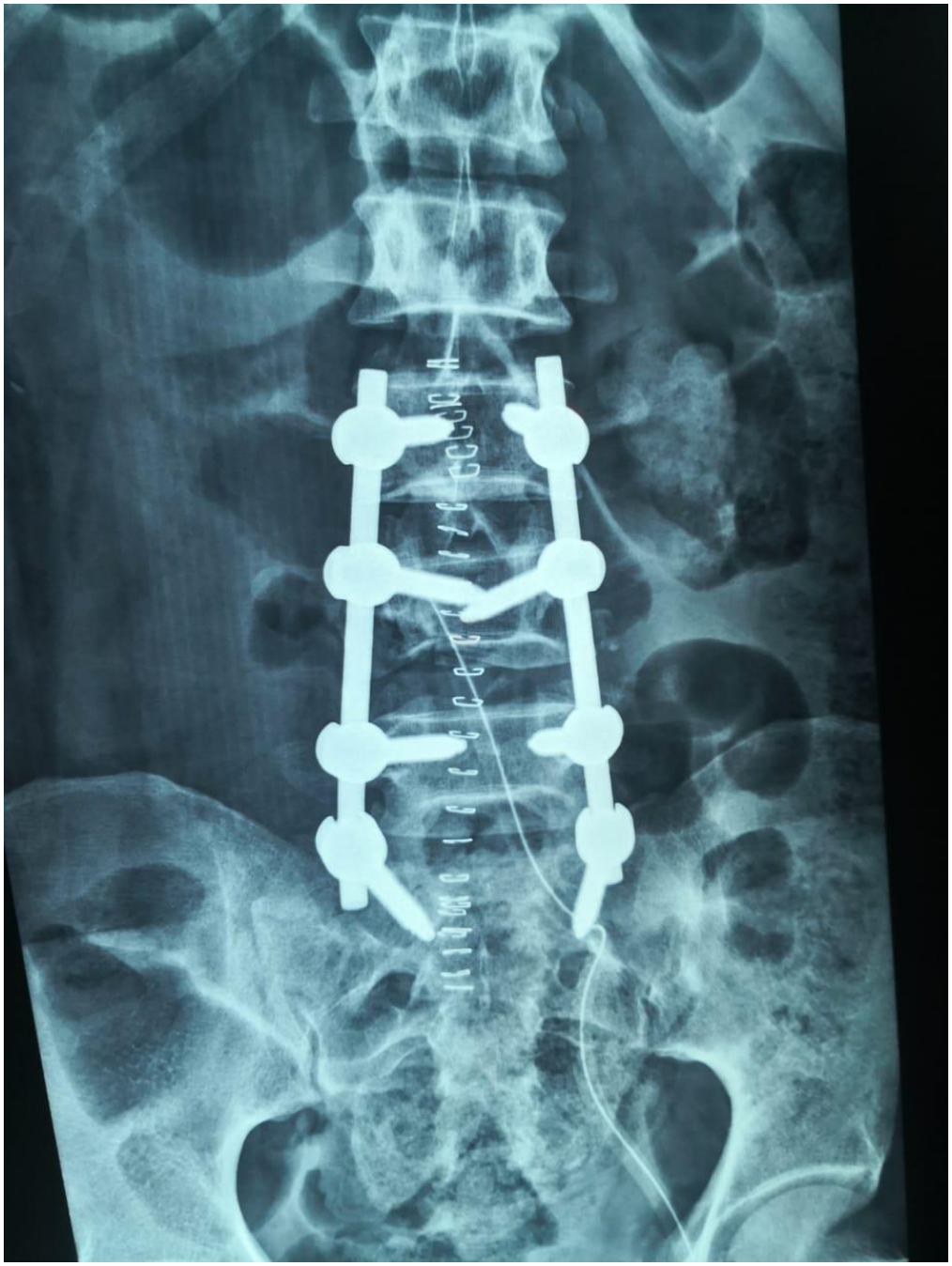

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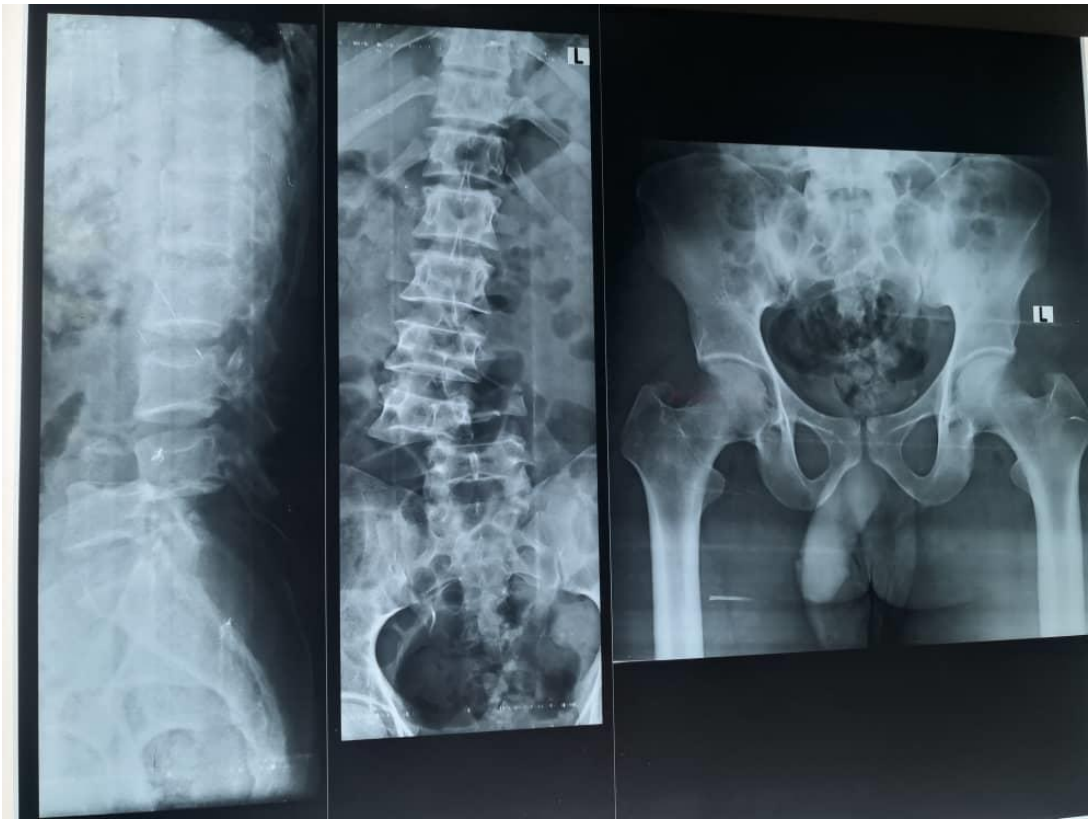

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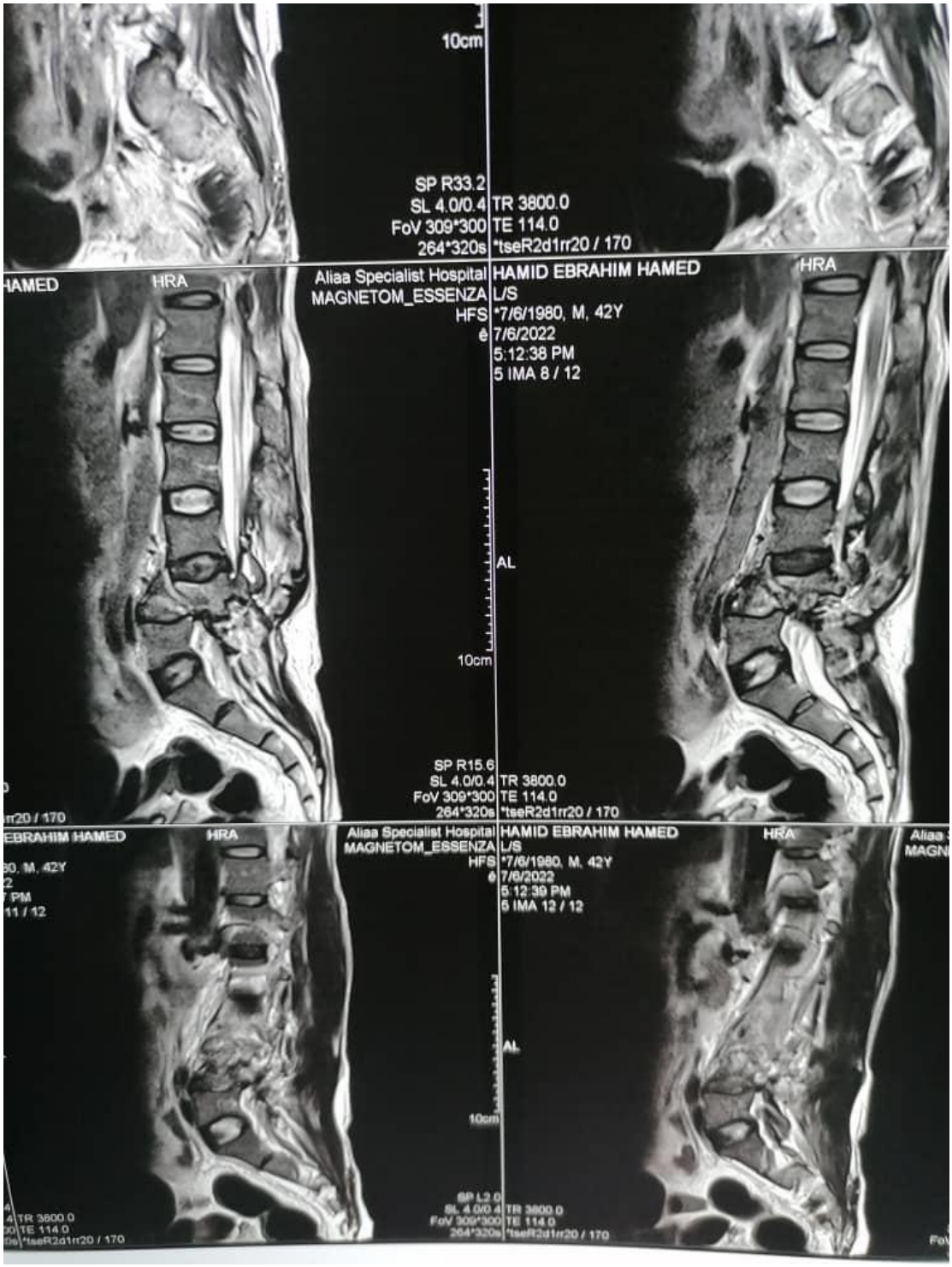

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Discussion

In 1940 the first reported case of L4-L5 traumatic spondylolisthesis, by Watson Jones (1,2) after that time 14 case had been reported. L4-L5 traumatic spondylolisthes is a rear condition (3). While the most common reported site is at L5-S1. Bilateral locked facet injuries at L45 are less common only 11 cases were reported in literature (13), in all reported cases of traumatic spine spondylolisthesisL45 was found as a result of misuse of seatbelt i.e., without abdominal strap (2,3). Dislocations of lumbar spine occur in more frequency at the thoraco-lumbar junction with decreasing frequency at lower levels (14,15). The anatomical consideration of lumbar facet joints play a significant role inL4-5 traumatic spondylolisthesis(2,4,5);lumbar facet joints are arranged in sagittal plane weak for hyperflexion but strong for rotation(8) The main factor that resist occurrence of dislocation probably is the hypersagitalisation of superior articular processes.(2,7) the frontal orientation of S1upperarticular process almost always in hance adislocation to the L5-S1 joint(4)Sacrum has good stability it is fixed tightly bysacro-iliacligament. (8) As well as paravertebral lumbar muscles play a Potential role in lumbar stability (6) Although the biomechanical features of L5S1make it less susceptible to dislocation (comparetoL4-5) such as there strongligaments,more extension arange of motion and facet joints are arranged less sagittally; but the majority of cases the dislocation occuratL5-S1.(20,21) The mechanism of injury goes with forcible hyperextension stress as described by Watson-Jones and many authors. However, hyperflexion with varying degrees of distraction is the most frequent mechanism of facet dislocation in the lumbarspine (3,6,7). Hyperflexion without distraction cannot result in dislocation or fracture-dislocation in the lumbar spine (5,8). The mechanism was a combination of hyperflexion, distraction,and rotation.(2,8).Some reported cases mechanismsofL4-5 dislocation injury were high energy motorvehicle accidents.The secame with considerable posterior soft tissue damages, including supraspinatous ligaments,interspinous ligaments, and facet capsules of other levels. Zenonos hypothesised the mechanism when using seatbelt as the thoracic spine act as fulcrum, the foreword momentum of the body and remaining thoraco-lumbar spine leading the spine to swing forward. while the pelvis held on by seatbelt, there is a large extension.

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Distraction at the lumbar and lumbosacral junction; but high energy injuries are complex event so that it is difficult to analyse the exact pattern of injury. Presence of fractured transverse processes of lumbar vertebrae higher thanL4support an indirect evidence of forceful contraction of iliopsoas muscles to resist hyperextension (20,21). Athorough clinical examination and carful imaging assessment including x-ray, Ctscan and MRI provide an early diagnosis. MRI demonstrates a disruption of the posterior ligamentous (9,10,11). To achieve radiological diagnosis of this entityinitial good radiograph that demonstrate the altered associated of lumbar facet joints is mandatory. (15,16). A complete disruption of both joints with avulsion of the interspinous ligaments and disc injury are potentially highly unstable.(8) Some authors managed this entity by L4L5 laminectomy, cage, and fixation by four pedicular screws connected by two parallel rods.(2) Open reduction and circumferential bony fusion restored segmental stability and painless function.(11) Early physiotherapy aids rapid recovery in the event of asensory-motor deficit.(2),some authors reported that immediately and one hour after injury, decompression result in 85and75% improvement in somatosensory deficit respectively.(12) Some authors have reported cases of bilateral dislocation reduced successfully with external reduction maneuvers (7,17,18).But there is high risk of secondary neurological impairment. Therefore surgical treatment should be performed for all type of lumbosacral dislocation. Disc assessment is mandatory in all cases because severe disc injuries requiring fusion maybe found even in the absence of an anterior slip (19). Soft tissue damage result as secondary events to dislocation, represented as disruption of joint capsules and ligmentum flavum(20) From different reported cases ,we abstract that theL4-5traumatic facet fracture dislocation andL5-S1dislocationshould be arranged into the same disease entity due to their mechanisms of injury are similar.(20)

References:

1- Watson-Jones R. Fractures and joint injuries. 1st ed. Baltimore: Williams & Wilkins; 1940 p. 641.

2- N'Dri-Oka et al. Chinese Neurosurgical Journal DOI 10.1186/s41016-016- 0027-6

3- Mori K, Hukuda S, Katsuura A, Saruhashi Y, Asajima S.Traumatic bilateral locked facet at L4-5: report of a case associated with incorrect use of a three-point seat belt. Eur Spine J. 2002;1 1(6):602-5.

 online ISSN 1858-6279 ISSN 1858-6155

4- Saiki K, Hirabayashi S, Sakai H, Inokuchi K. Traumatic anterior lumbosacral dislocation caused by hyperextension mechanism in preexisting L5 spondylolysis: a case report and a review of literature. J Spinal Disord Tech. 2006;19(6):455-62.

5- Roaf R. A study of the mechanics of spinal injuries. J Bone Joint Surg (Br). 1960;42-B(4):810-23.

6- Hilibrand AS, Urquhart AG, Graziano GP, Hensinger RN. Acute spondylolytic spondylolisthesis. Risk of progression and neuro- logical complications.

J Bone Joint Surg Am. 1995;77(2):190-6.

7- Zoltan JD, Guilula LA, Murphy WA. Unilateral facet dislocation between the fifth lumbar and first sacral vertebrae: case report. J Bone Joint Surg Am1979;61:767-9.

8- CASE REPORT Korean J Spine 9(3):278-280, 2012

9- Lim CT, Hee HT, Liu G. Traumatic spondylolisthesis of the lumbar spine:a report of three case. J Orthop Surg. 2009;17(3):361-5.

10- Zhou TH, Tang X, Xu YQ, Zhu YL. Traumatic spondyloptosis of L4. Spine. 2010;35:E855-9

11- Amesiya R, Orwotho N, Nyati M, Mugarura R, Sabakaki Mwaka E. Traumaticbspondyloptosis of the lumbar spine: a case report. J Med Case Rep. 2014;8:453.

12- Delamarter RB, Sherman J, Carr JB. Pathophysiology of spinal cord injury. Recovery after immediate and delayed decompression. J Bone Joint Surg Am. 1995;77:1042-9.

13- Arnold PM, Malone DG, Han PP: Bilateral locked facets of the lumbosacral spine: treatment with open reduction and transpedicular fixation. J Spinal Cord Med 27(3):269 -272 2004

14- Bak KH, Cheong JH Kim CH, Oh SH Kim JM, Lee CB: Outcome of thoracolumbar fracture-dislocation according to the injury mechanism. Korean J spine 1:51-57, 2004

15- Stuart RM, Song SJ: Unilateral lumbosacral facet joint dislocation without associated fracture. Australas Radiol 48(2):224-229, 2004

16- Tsirikos AI, Saifuddin A, Noordeen MH, Tucker SK; Traumatic lumbosacral dislocation: report of two cases. Spine (Phila Pa 1976) 29(8):E164-168, 2004

17- Boger DC, Chandler RW, Pearce JG, Balciunas A: Unilateral facet dislocation at the lumbosacral junction. Case report and literature review. J Bone Joint Surg Am 65(8):1174-1178, 1983

18- Newell RL: Lumbosacral fracture-dislocation: a case managed conservatively, with return to heavy work. Injury 9(2):131-134, 1977

 online ISSN 1858-6279 ISSN 1858-6155

19- Vialle R, Charosky S, Rillardon L, Levassor N, Court C: Traumatic dislocation of the lumbosacral junction diagnosis, anatomical classification and surgical strategy Injury 38(2): 169-181, 2007

20- Fok and Cheung BMC Musculoskeletal Disorders

(2019) 20:558 Kevin Chi Him Fok and Jason Pui Yin Cheung

21- Zenonos GA, Agarwal N, Monaco EA III, Okonkwo DO, Kanter AS. Traumatic L4-5 bilateral locked facet joints. Eur Spine J. 2016;25(1):129-33.

 online ISSN 1858-6279 ISSN 1858-6155