

Seat Belt Syndrome: Must We Use Seatbelts in the 21st Century? A Case Report

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Abstract: Seat belt syndrome is a condition found amongst victims of motor vehicle injuries who were using seat belts at the time of the accident. It usually presents with bruises on the trunk, intestinal/ mesenteric tears, chest, pelvic and spine injuries. We present the case of a 25 year old female seat belted, front seat passenger of a vehicle which had a head on collision with an oncoming vehicle and sustained features of seat belt syndrome. She was resuscitated, and had serial surgeries. She recuperated and was discharged home 10 weeks after the accident.

Keywords: Seatbelt Syndrome, Motor vehicular Accidents, OAUTHC Ilesha.

I. Introduction

Road traffic injuries are a common cause of mortality in our environment mostly affecting males and youths generally because they are more exposed.¹ The importation and use of modern day vehicles coupled with the enforcement of the use of seat belts by the Federal Road safety Commission in the country has also reduce the number of deaths from motor vehicle injuries while excluding other factors.² However, the use of seatbelts to prevent severe injuries may cause seatbelt related injuries to the victim called seat belt syndrome. These features may include chest and abdominal injuries, seat belt marks, thoracolumbar injuries.³ We present the case of a road traffic accident victim who was using seatbelt and presented with features of seatbelt syndrome.

II. Case report

A 25 year old female front seat passenger of a salon vehicle moving at high speed who had her seat belt on. There were 8 passengers in the vehicle. The vehicle had a head on collision with an oncoming vehicle and 5 of the occupants died on the spot. Others were rescued and transported to the emergency department of our facility where they were resuscitated using the advanced trauma life support protocol. The lady was found to be restless, with a Glasgow coma score of 15, there was reduced chest movement on the left side and reduced air entry on the same side. Percussion note was stony dull on the same side. She had bruises on the anterior abdominal wall with the seatbelt sign, also had abdominal pain, moderately distended abdomen and a 4 quadrant abdominal tap revealed bloody fluid. She also had pain, tenderness and crepitus over the left shoulder. She was found to have inability to raise both lower limbs and complained of back pain. The power on both lower limbs was 2 and sensations were preserved globally. She also had hyporeflexia and hypotonia in both lower limbs. The motor level was at L1 dermatome. She also had a hard bony swelling at the midline of her back around T12/L1 vertebra. Following resuscitation, she had chest xray done which showed homogenous opacity of the left side with blunting of the cardiophrenic and costophrenic angles. There was also a mid-shaft undisplaced clavicular fracture Thoracolumbar spine xrays revealed burst fracture of T12 vertebra with retrolisthesis of T12. Abdomino- pelvic ultrasound done revealed haemoperitoneum from ruptured hollow viscus.

A diagnosis of multiple injured patient from trauma was made with the following:

1. Left haemothorax
2. Left clavicular fracture
3. Blunt abdominal injury with haemoperitoneum.
4. Traumatic kyphosis with paraparesis

These features in the background of the accident were in keeping with seat belt syndrome.

The patient subsequently had a closed thoracotomy tube drain inserted on the left side to treat the haemothorax and also had an exploratory laparotomy in which she was noted to have a mesenteric tear, ileal perforation about 15cm from ileocaecal junction and a sigmoid colon tear which were all repaired. She was also placed on a thoraco-lumbar corset for the spine condition while she recuperated from the aforementioned surgery. She subsequently had a thoracolumbar magnetic resonance imaging done (MRI) which revealed compression-distraction fracture (B1), spinal cord compression with retrolisthesis of T12 vertebra, disc

extrusion at T11-T12 disc space. She thereafter had T11-L1 spinal decompression with stabilization using Titanium rods and pedicle screws. She recuperated fully and was discharged home with full power in both lower limbs.



Fig 1; Chest xray of the patient showing features of left haemothorax and left clavicular fracture.

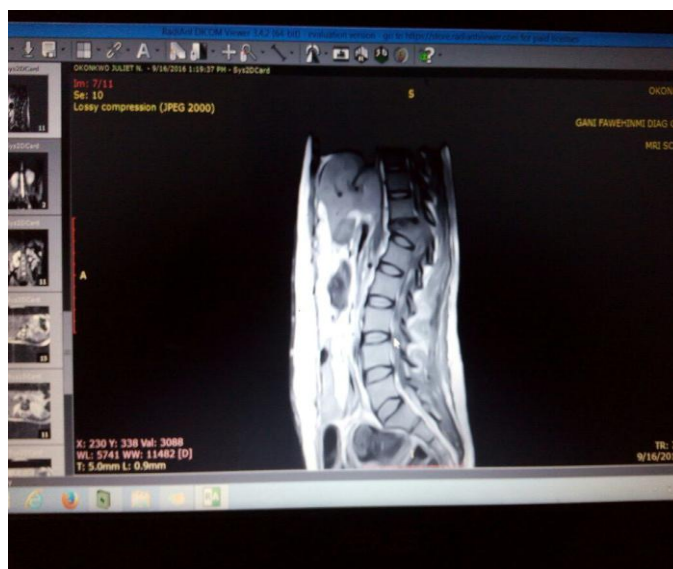


Fig 2: Magnetic resonance imaging showing features of spinal cord compression.

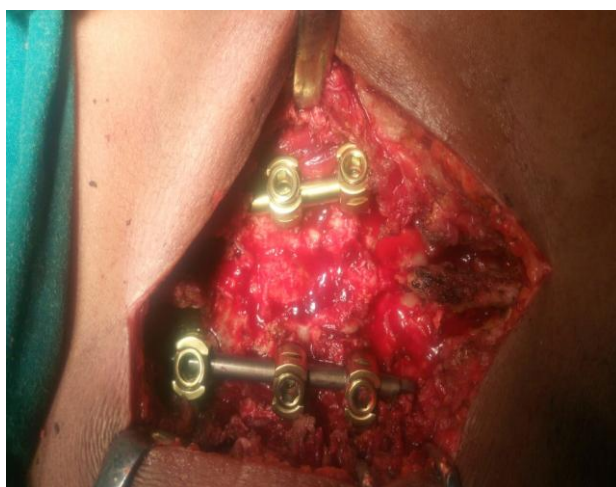


Fig 3: Intraoperative clinical photograph following decompression and instrumentation.



Fig 4: Post operative radiograph following decompression and stabilization.

III. Discussion

Road traffic accidents are a common epidemic in our environment and mostly affecting the young age group and males. This is because they are the more active set of the population.¹ Deaths from road traffic accidents may result from collisions, summersaults and factors implicated include lack of use of seatbelts, burst tyres, over speeding, bad roads, lack of clear vision.⁴ In a study carried out in 2010, it was noted that majority of travellers do not use seatbelts, and those who used were mainly females.⁵

The use of seat belts, airbags and danger sensors in modern day vehicles has reduced the deaths resulting from motor vehicle accidents.^{6,7} This case report highlights the injuries which may be caused by the use of seatbelts. There are two major types of seatbelts, the lap belts which cause injuries in children, and the three point belts used in adults.⁸ The lady seated on the front seat beside the driver had her seatbelt strapped across the right side of the chest and spanning the anterior abdominal wall from right to left. The seatbelt also has a lap component which strides the lower abdomen and pelvis. When a vehicle is on motion, the occupants are travelling at the same speed with the vehicle. During a head on collision, the vehicle suddenly stops but the occupants still moving are suddenly restrained by the seatbelt torque which is activated and prevents the victim from having severe injuries.⁹ The force of restraint is distributed across the chest and anterior abdominal wall which is responsible for the right sided clavicular fracture, haemothorax,¹⁰ and intra abdominal injuries sustained by this lady.¹¹ The collision also caused a flexion distraction force on the spine (type B1) which resulted in the affectionation of the 3 columns of the spine thus presenting with traumatic kyphosis and paraparesis which is highly unstable.¹² The seatbelt syndrome is thus explained with the above features and treatment is tailored towards stabilising the patient, and treating each of the injuries they present with as has been done for the index case.

It is expected that with the increase in the use of seatbelts, more victims may present with this syndrome, thus a high index of suspicion followed by prompt and adequate treatment is required as was done for the index case to prevent untoward outcomes.

To this end, all victims of road traffic accidents who used seatbelts and present with either of or a combination of chest injuries, clavicular fractures, shoulder dislocations, skin abrasions on the trunk, blunt abdominal injuries, spine injuries and pelvic injuries should not be treated as just multiply injured patients with individual injuries but rather as a constellation of injuries called seatbelt syndrome. We therefore recommend a standard protocol and possibly introduction of pads within the seatbelt for this emerging syndrome in our environment so that seat belt syndrome will not become a cause of more deaths compared to lack of its use.

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