

## Seat Belt Sign and its Significance

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### KEY POINTS FROM THIS ARTICLE:

- 1) "Safety belts are the most important safety system in motor vehicles."
- 2) Safety belts prevent serious injuries when they are worn properly. "Seat belts reduce the severity of injury caused by restraining vehicle occupants and thus preventing them from hitting objects or being ejected through windows."
- 3) It is estimated that 50-80% of all motor vehicle collision deaths could be prevented by properly using a seat belt.
- 4) In some circumstances seat belts "can be the source and cause of serious injuries."
- 5) Seat belt *injuries* were first described in 1956. The seat belt *syndrome* was first described in 1962. The term "seat belt *sign*" was not used until 1968.
- 6) The seat belt sign is the abrasion and/or bruising of the skin along the course of the seat belt or shoulder harness. "The seat belt sign is characterized by patterned bruising on the chest or abdominal wall corresponding to the position of the diagonal or horizontal strap of the seat belt and can extend to the neck indicating underlying vascular injury."
- 7) Many studies have demonstrated the association between the seat belt sign and injuries to the neck, chest, lumbar spine, and the abdominal organs including the mesentery.
- 8) Emergency medical personnel should be aware of the seat belt sign and that there is a higher index of suspicion of underlying visceral injury when the seat belt sign is seen. Seat belt sign is associated with an increased risk of underlying visceral injuries.
- 9) Front seat passengers presenting with seat belt signs are more than twice as likely to have sustained an intra-abdominal injury.
- 10) The presence of the belt sign should "alert the physician to the high likelihood of specific internal injuries."

11) About 64% of those who have an abdominal seat belt sign will also have abdominal injuries.

12) Cervical spine shoulder harness seat belt sign after motor vehicle collision can be an indicator of injury to cervicothoracic vessels.

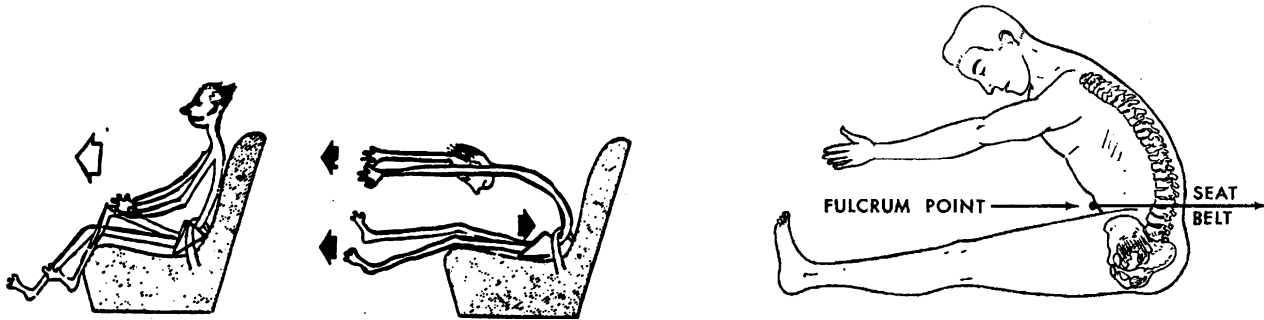
13) "Seat belt signs remain an important physical finding following motor vehicle crashes. Medical personnel involved in emergency care of trauma patients should be aware of seat belt sign and there should a higher index of suspicion to rule out underlying organ injuries."

#### COMMENTS FROM DAN MURPHY

Spinal seat belt injuries were actually first published in 1948:

**[Chance GQ; Note on a type of flexion fracture of the spine; British Journal of Radiology; September 1948;21(249):452].**

The fact that seat belts and shoulder harnesses can actually increase spinal injuries has been documented for decades, primarily as a consequence of the belt acting as a fulcrum:



"A seat belt, if in proper use, will prevent the forward propulsion of the body to some extent and will lessen the possibility of serious injuries of most of the body from sudden deceleration of the vehicle, but the belt has very little, if any, deterring effect on the cervical spine as the head and neck continue in forward motion. Even the addition of a shoulder harness will not relieve, but will only increase, the forces which must be absorbed by the head and neck, although such harness may prevent contact injuries." (Ruth Jackson; The Cervical Syndrome, 1978, p. 103).

Following the compulsory use of seat belts, "we predicted an increase in the case of two injuries-sprains of the neck and fractures of the sternum. Both were confirmed. The other apparent increase in a major injury which was not predicted was abdominal injuries of organs."

(William Rutherford, The Medical Effects of Seat Belt Legislation in the United Kingdom; H.M. Stationery Office, 1985, p. 87).