

Motorcycle fuel tanks and pelvic fractures: A motorcycle fuel tank syndrome

Abstract

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Objective:

Pelvic injuries are a serious and commonly occurring injury to motorcycle riders involved in crashes, yet there has been limited research investigating the mechanisms involved in these injuries. This study aimed to investigate the mechanisms involved in pelvic injuries to crashed motorcyclists.

Method:

This study involved in-depth crash investigation and 2 convenience-based data sets were used. These data sets investigated motorcycle crashes in the Sydney, Newcastle, and Adelaide regions. Participants included motorcycle riders who had crashed either on a public road or private property within the study areas. The mechanism of injury and the type of injuries were investigated.

Results:

The most frequent cause of pelvic injuries in crashed motorcyclists was due to contact with the motorcycle fuel tank during the crash (85%). For riders who had come into contact with the fuel tank, the injury types were able to be grouped into 3 categories based on the complexity of the injury. The complexity of the injury appeared to increase with impact speed but this was a nonsignificant trend. The pelvic injuries that did not occur from contact with the fuel tank in this sample differed in asymmetry of loading and did not commonly involve injury to the bladder. They were commonly one-sided injuries but this differed based on the point of loading; however, a larger sample of these injuries needs to be investigated.

Conclusion:

Overall improvements in road safety have not been replicated in the amelioration of pelvic injuries in motorcyclists and improvements in the design of crashworthy motorcycle fuel tanks appear to be required.