

Lap-belt injuries: A view from the bedside

A beautiful Sunday afternoon in the fall and then, a phone call. "Are you the mother of _____? I am calling from the emergency department at _____. Your daughter has been in a car crash. She was wearing her lap belt but has serious injuries. Can you come immediately?"

So began my up-close and all too personal real-life, "case-based" tutorial on lap belt-associated car crash injuries. We worked our way through the diagnosis and management of the fracture of the second lumbar vertebrae (initially missed), the bowel obstruction and infarction (requiring resection of 10 cm of the jejunum due to loss of blood supply), body casts, superior mesenteric artery syndrome (requiring central total parenteral nutrition and flat in hospital bed for over nine weeks), drug complications, nosocomial infection, eventual rod placement for stabilization of the spine, 10 weeks in hospital, 22 weeks off school and long term intermittent chronic abdominal pain. We are, however, deeply grateful. She is one of the fortunate ones. She is not paralyzed from the waist down.

Case series studies such as the ones presented by Lapner et al (1) from Ottawa and Ball et al (2) from Philadelphia, while emphasizing the higher frequency of flexion distraction spinal injury and life threatening intra-abdominal injuries with two-point (lap belt) versus three-point (shoulder lap belt) restraints, do not give the full extent of the impact of these types of injuries (the prevalence, the costs and the long term sequelae).

Here in Canada, we have no national data on the prevalence, range and severity of injuries, outcomes and costs for lap belt-associated car crash injuries in children. This new Canadian Paediatric Surveillance Program study, led by Claude Cyr and Miriam Santschi, will provide data for informed decision making for seat belt policy (three- versus two-point restraints), and for the education of public and health care professionals. This study has the potential for forming the foundation for improvements in diagnosis and management of these injuries, and more importantly, may provide sufficiently compelling data to speed up the shift to requiring all car restraints to be three-point.

Having walked with my daughter through her lap-belt injury journey, I await the results of this new CPSP study with great interest. These reports may lead to changes to improve children's safety.

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REFERENCES

1. Lapner PC, McKay M, Howard A, Gardner B, German A, Letts M. Children in crashes: Mechanisms of injury and restraint systems. *Can J Surg* 2001;44:445-9.
2. Ball ST, Vaccaro AR, Albert TJ, Cotler JM. Injuries of the thoracolumbar spine associated with restraint use in head-on motor vehicle accidents. *J Spinal Disord* 2000;13:297-304.

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Survey on lap-belt syndrome: Results and next steps

Traffic safety legislation mandates specific restraints for toddlers and infants, but there are no lap belts or three-point restraints (lap-shoulder belts) designed specifically for older children. School-age children have to use the standard restraints designed for adults. The lap-belt syndrome — an association of abdominal, lumbar spine (fractures, dislocations and subluxations) and spinal cord injuries — occurs in victims of motor vehicle crashes wearing improperly fitted lap belts or three-point restraints with the shoulder belt behind the back. Earlier this year, the Canadian Paediatric Surveillance Program (CPSP) undertook a survey to determine the number of CPSP participants who would care for a child with lap-belt syndrome, the type of specialists who would care for the child during hospitalization, and where final care would be provided. The results indicated that 150 respondents (23%) treated a child in a motor vehicle crash who had been wearing a seat belt or a three-point restraint and 47 respondents (7%)

reported that the child suffered from lap-belt syndrome (42 abdominal injuries, 23 lumbar spine injuries and nine spinal cord injuries). Almost all respondents indicated the injured child would see an emergentologist, 89% a surgeon, 56% an anesthetist, 53% a paediatric intensivist and 75% a paediatrician. The majority (62%) of respondents indicated that the child would remain at their institution. The results of the survey are sufficient to allay initial concerns of the CPSP Steering Committee that program participants would not see any cases of lap-belt syndrome. As a result, lap-belt syndrome will be added to the monthly initial reporting form in September 2003. The study is supported by the Canadian Paediatric Society's Injury Prevention Committee. The study data may substantiate the need to develop motor vehicle restraints appropriate for school-age children and, in turn, may lead to an expansion of the current legislation to mandate specific restraints for school-age children.

LEARNING POINTS

- Motor vehicle crashes are a leading cause of death in North American children aged four to 14 years.
- For young children, wearing motor vehicle restraints is still two to 10 times safer than being unrestrained.
- Age- and size-appropriate motor vehicle restraints, when used properly, save lives daily.
- There are no lap belts or three-point restraints (lap-shoulder belts) designed specifically for this age group.
- Lap-belt syndrome, an association of abdominal, lumbar spine and spinal cord injuries, occurs in victims of motor vehicle crashes wearing improperly fitted lap belts or three-point restraints with the shoulder belt behind the back.
- Children between the ages of five and 12 years are at the highest risk for lap-belt syndrome.
- Nearly one-third of survey respondents treating a child in a motor vehicle crash wearing a seat belt or a three-point restraint reported that the child suffered a lap-belt syndrome.
- Paediatricians need to alert parents to the proper use of appropriate motor vehicle restraints.

The Canadian Paediatric Surveillance Program (CPSP) is a joint project of the Canadian Paediatric Society and Health Canada's Centre for Infectious Disease Prevention and Control that undertakes the surveillance of rare diseases and conditions in children. For more information visit our Web site at <www.cps.ca/english/cpsp> or <www.cps.ca/francais/pcsp>.