

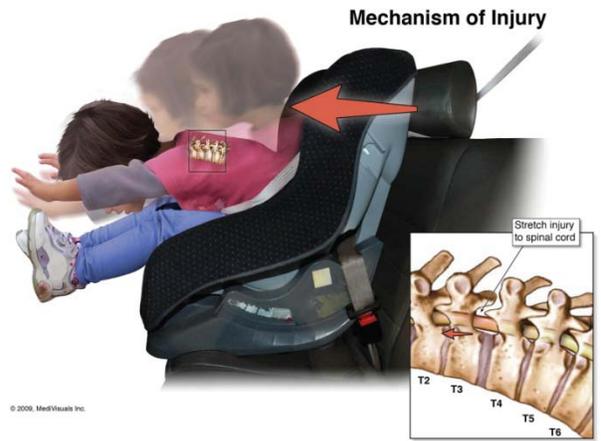
# THE CHILD SEAT CHEST CLIP: A HIDDEN HAZARD

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Until the late 1990's, some market leading child seats were manufactured with internal seat belt systems had single piece chest clips meant to connect the shoulder belts. This clip was crucial in preventing the shoulder belts from slipping off the shoulders of the child in the car seat. It provided important protection in a crash, and was vitally important in passing FMVSS sled testing requirements for child seats. Without the clip, in a frontal impact, the child could lose his shoulder belt protection and suffer a lap belt only injury. This could mean paraplegia in a severe frontal accident. The story of the single piece chest clip is one of manufacturing cost trumping the complaints of hundreds of frustrated mothers. Child seats with single piece chest clips should be recalled.



The most popular child seat sold in this country from 1994-2002 was the Smart Move, a seat made by Century Products. Century was purchased by Graco Children's Products, Inc. The problem with the single piece clip used in the Smart Move from 1994 until early 1998 is that children can easily unfasten it. Century/Graco received more than 800 complaints from mothers. Interestingly, Graco developed a fix for the problem: a two-piece clip that was virtually child proof. If a mother called to complain, the two piece clip would be offered for the charge of shipping. New Child Seats manufactured after 1998 all had the two piece clip. The problem: there were thousands of unsold child seats in store boxes with the old clip. And hundreds of thousands of child seats with the defectively designed clip on the market. Since the clip was what kept the seat belt on the shoulders of the child, it was an important safety feature in the child seat's harness system. The fact that no FMVSS standard requires a chest clip was the apparent excuse for the manufacturer to ignore the complaints and deny it involved a safety issue.



In an Orlando, Florida, frontal crash a two year old child was rendered a paraplegic when she received a lap belt only injury. The lap belt was the lap belt of the child seat. The shoulder

straps were off her shoulders and the clip was undone. This type of stretch injury to the thoracic part of the spinal cord is well documented in literature. See for example the 1993 paper, "Spinal Cord Injuries to Children in Real World Accidents," Society of Automotive Engineers paper 933100 by Richard Stalnaker of Ohio State University. In that paper, numerous case studies ended with the conclusion, "The child received a spinal cord stretch injury, due to being restrained at the pelvis and the stretching of the upper portion of his body by the crash forces."

In a surrogate study conducted for a case involving this issue, it took 26 seconds for another child about the same age to unfasten the single piece chest clip and release her shoulder straps. That same child could not unfasten the two piece clip because of the strength it took to push the button.

Federal Motor Vehicle Safety Standard 213, which is applicable to car seats, requires a 9 pound push button force (40 newtons) for seat belts on car seats. This regulation requires a force too large for small children to open the buckle, but small enough to allow adults to do so. Unfortunately, this standard is not directly applicable to chest clips. The safety principle should still apply, but didn't, with the design of the single piece clip, which has no push button and is constantly in the range of fingers of the seat belted child. In a deposition taken in the same case, one mother who had complained to the company about her child easily unfastening the clip testified that her daughter, not yet 2 years old, learned to unfasten the clip before she could unbutton her shirt!

If Graco knew about the 800 complaints, why did it not recall the clip? The corporate representative explained that the clip is not considered by the company to be a necessary safety feature. In Europe, he pointed out, child seats do not have chest clips. There chest clips are not allowed on child seats because they are considered a possible danger to the child's neck. European car seats, however, compensate for the absence of a chest clip by being designed with larger shoulder straps, and having shoulder belt routing slots that are so close together that there is no danger of shoulder straps coming off the child's shoulders. The European designs do not need a clip. By contrast, the Century SmartMove car seat relied upon them to pass Federally-required sled testing. Graco, which obtained the Century brand in the late 1990's, not only never issued a recall for the single piece clip, it delayed furnishing their new car seats with two-piece clips for several months until the inventory of single piece clips had been used up. Meanwhile, if a mother called Graco customer service to complain, Graco customers were instructed to offer the 2 piece clip for \$5 in "shipping cost". It was not a consistent practice. Some were sent free (to the loudest complainers) and one mother was told the cost was \$10.

The defense of these cases is always to point fingers at the parents. Here there was found a picture of the child in the car seat a year before the accident in which one shoulder strap appeared loose. Proof of the reason the injury happened? Stay tuned.