

Whiplash: the evidence

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In response to government concerns about the rising cost of motor insurance, the Transport Select Committee met in October 2011 to explore the issue as to why the volume of claims for whiplash injuries in the UK, exceed those of other European Countries.

During the meeting evidence was given by the Rt Hon Jack Straw and, reading between the lines, the question that was really being asked was...does whiplash exist?

Is whiplash imaginary?

According to Gordon Bannister, a consultant orthopaedic surgeon at North Bristol NHS Trust and a professor of orthopaedic surgery at the University of Bristol, whiplash was first recognised in 1928 by Harold Crow who presented neck injuries sustained by eight car occupants to the Western Orthopaedic Association. These days it includes any indirect injury to the cervical spine other than fracture and is often referred to as a cervical sprain. It's the differential velocity of the head movement on the upper torso that causes the injury. If this is reduced then so is the severity of the injury. The injury is most commonly found in a rear end shunt collision, which accounts for approximately 50 per cent of all cases. In a [whiplash injury](#) the trunk of the neck is forced backwards, ramps up the back of the seat, the neck hyper extends and then recoils forwards. Factors which increase the displacement of the neck include being hit by a heavier vehicle and the thinner less rigid neck of females.

A summary of the risk factors:

The height of the individual: Shorter people are often protected by badly adjusted headrests. However, if you are taller and the headrest is not adjusted correctly, you may be more susceptible to suffering an injury.

Gender: Women are twice as likely to suffer from whiplash as men. A Swedish study found that women with whiplash injuries were more likely to develop long-term symptoms. Fifty-five percent of women who sustained whiplash injuries went on to develop long-term symptoms compared with 38 percent of men. The risk of disability for drivers has been shown to be three times higher for women than for men; in rear seats, a woman's risk is four times higher. One possible explanation is that men have more neck musculature than women for about the same size head. In an American study insurance data found that female drivers in a rear-end crash were more likely than male drivers to report a neck injury.

Vehicle size/weight: The size and weight of the struck and striking vehicle may influence the risk of neck injury. A study of American insurance claims found that drivers struck by vehicles heavier than the one they were driving were more likely to claim neck injuries than drivers struck by vehicles of approximately equal or lesser weight. Drivers of rear-struck cars were more likely to claim a neck injury than drivers of rear struck SUV's (similar to a station wagon).

Headrests: More elastic seat backs and high head rests positioned to reduce posterior excursion of the head contribute to a reduction of claims by approximately 50 per cent in vehicles fitted with such seats (Kullgren Report).

The Whiplash Book

This publication is issued by The Stationary Office (TSO) and is for general use by the public to advise them on the best way to deal with their whiplash injury.

This was first published in 2002 and last updated in May 2011. It is written by Professor Gordon Waddell, orthopaedic consultant in Glasgow, Prof Kim Burton, ergonomics expert, Huddersfield and Mr Tim McClune, osteopath.

The book sets out the various symptoms of whiplash and provides re-assurance that permanent injury, or serious damage, is rare. In terms of treatment, the advice is that prolonged inactivity is bad for whiplash and movement is good for you. It coins the phrase "use it or lose it!" and advises you to get active immediately after the injury and work through the pain.

Chronic pain

It is generally accepted that this is a psychological disorder. Of all whiplash claims, this is the area which often calls into question the legitimacy of claims and where exaggeration or malingering is raised. Cases of this nature often affect a client's ability to work and care for themselves and damages can amount to six figure sums. Compared to other injuries in this compensation bracket it can be appreciated why this injury, which has no physical findings, is so controversial.

There is a fairly critical publication by JMS Pearce on this subject, "The myth of chronic whiplash syndrome". He appears to blame lawyers and medical legal experts for prolonging or even causing such conditions. However, there has never been any reliable connection found between the timing of compensation and the recovery of symptoms.

One thing is for sure: whatever the cause, the symptoms of chronic pain can be crippling, disabling and life changing. Removing the ability of individuals who suffer from this condition following an accident to claim compensation, regardless of the evidence on causation, would be a draconian measure and have far reaching implications for injured people and for personal injury law.

No injury can be caused at less than 15mph?

Gordon Bannister discovered during his research that 90 per cent of road traffic accidents (RTAs) occur at speeds of less than 14mph and it is from these that whiplash injuries occur.

He states that since the subject in Mathewson's (1956) rear end crash test reported a "cracking sound somewhere in the vicinity of the cervical spine and suffered pain for some time afterwards" at a collision speed of just five mph, a number of studies on human volunteers (*Mertz & Patrick 1971, McConnell et al 1993, West et al 1993, Castro 2003*) have all produced neck pain in a proportion of their subjects. Davis (1998) concluded that a change in velocity of 2.5 mph was sufficient to cause symptoms and that 8.7 mph was required to cause vehicle damage.

The following is an article obtained online from another source which mirrors the findings of Dr Bannister and refers to other studies which have been done which seems to support this view:

Three different studies (Panjabi, Panjabi and Cholewicki and Kaneoka) proved the mechanism by which the neck is injured by a rear impact force. The studies involved simulating a rear impact collision to live human test subjects and recording the results with cineradiography (high speed motion x-rays). The researchers found that the neck was injured by deforming into an "S-shaped" configuration. All three of these studies found that this physical event occurred at speeds as low as 2.5 mph.

The radiographically proven human threshold for injury in a rear impact collision therefore is 2.5 mph. Other authors have disputed these figures and some insurance company sponsored studies have found the threshold to be closer to 5 mph.

For the sake of avoiding argument, let's stipulate that the 5 mph threshold is correct. It still means that a collision of only 5 mph can cause damage to the neck.

Freeman et. al. in Spine, Vol. 23, Number 9, 1998, p. 1046 shows the damage thresholds for many cars. This is the minimum speed required to cause the car to show visible signs of damage. The smallest, lightest vehicle listed was the 1980 Toyota Tercel, which required a collision of 8.1 mph to become damaged. On the other end of the spectrum was the 1989 Chevrolet Citation, which required 12.7 mph. A Ford F-250 pick up required 11.7 mph.

Cars built today are equipped with rear bumpers designed not to show any damage below 5 mph. In an attempt to reduce repair costs shouldered by insurance companies, crash standards were adopted to mandate rear bumpers must withstand a 5 mph collision into a fixed barrier (wall, pole, etc) without any visible evidence of damage. It should be noted that this standard involves testing of "vehicle to barrier" crashes not "vehicle to vehicle" testing.

In "vehicle to vehicle" crashes where the bumpers line up well, it takes considerably more force to cause visible bumper damage than a 5 mph collision. Some tests have shown that cars could be crashed repeatedly at 20 mph and not show outer damage. In a "vehicle to vehicle" crash it is estimated that the minimum speed to cause visible damage is approximately 15 mph.

Another consideration is that while a bumper may look undamaged from the outside after a collision, inside under the skin, the foam or plastic may be crushed or cracked. This is not seen from the outside, so photographs would make it appear as if no damage was sustained. Still further, the bumper may appear intact, but on unibody vehicles, the unibody may be bent or deformed by a collision. This may not be apparent and some auto repair facilities may miss it.

So what does this mean? It means that if you are rear-ended and your bumper is cracked, dented, or misplaced at all, your collision involved speeds in excess of 15 mph. That's 3 times the human threshold for injury if we use the 5 mph figure. In reality, the proven threshold is only 2.5 mph, so a collision of 15 mph is 6 times the threshold for injury.

Now let's say your vehicle sustained no visible damage, but your neck hurts after the collision. Does that mean you weren't really injured? No. It means that the vehicle's threshold for damage was not exceeded. The impact could have been 10 mph. too low for bumper damage, but still 4 times the threshold for human injury.

In a low speed collision, the kinetic forces that are transferred from the other vehicle into your vehicle are not dampened or bled off by your bumper. Instead, the force is transmitted through the vehicle, into your seat and to your neck resulting in injury. If your body or neck are jolted or jerked by the impact, an injury could occur.

Another aspect to consider is if your vehicle is moved forward by the impact. An average car weighs close to 4,000 lbs. Let's say you are hit from behind and your car is pushed forward a few feet, but shows no signs of bumper damage. Is it possible to be hurt? Yes, of course. The force required to move a stationary 4,000 lb object is tremendous. Can you walk up to a car sitting at a red light with its brakes on and shove it forward even an inch? Not likely. A collision that is strong enough to propel a car forward by even inches is plenty enough force to cause a whiplash injury.

So, as you have now learned, there really shouldn't be any dispute on whether a low speed collision can cause injuries. It has been scientifically proven by several studies. It is also a fact that the speed required to cause bodily injury is quite low, a scant 2.5 mph. It has also been shown that any accident that causes damage to the rear bumper is likely to cause injuries and even in accidents where there is no outward physical damage to the vehicle; there may still be sufficient forces involved to cause bodily injuries.

Evidential concerns

One of the main difficulties with introducing this concept is how do you prove the speed of impact? You will see from the case study below that this is often a bone of contention between the parties in low velocity impact (LVI) cases. The use of expert evidence (accident reconstruction) is disproportionate to the claim being pursued and often does not add sufficient certainty in any event.

The increase in costs upon both parties when a whiplash case turns into a disputed LVI case, are significant. The principal of calling into question the impact speed on every single whiplash claim would be counter productive, resulting in more disputed litigation going before the courts and less use of the RTA Portal in resolving claims.

ABI stance

There are various studies which the insurance industry have used to target their campaign that whiplash is a behavioural phenomenon rather than a physical condition.

Below are some of these studies.

Gargan, Bannister, Main, Hollis of Southmead Hospital Bristol.

In 1991 the above studied 50 consecutive patients presenting at an A&E department after rear end collisions. They recorded symptoms and psychological test scores within one week of injury, three months and two years.

They posited that the pure organic component of neck pain cannot be measured. The range of active movement has been shown to predict the outcome of whiplash injury. Because the range of neck movement and psychological response were equally predictive at three months this suggested to them that a significant component of chronic disability after whiplash is psychological.

It was expected that those patients who were predisposed to psychosomatic reaction or low threshold for anxiety would display these symptoms early. This was not borne out by the research.

Reference was made to research in Australia where back in 1986 *Mills and Horne* compared findings from one year of RTAs in New Zealand with those in Victoria, Australia. The size of the state and accidents were comparable between the two states but Victoria had 3.5 more rear end shunts, ten times as many patients claimed compensation, five times as many were off work for more than two months and litigation cases were settled for three times as much. Litigation was often instigated to pay medical bills in Victoria at that time whereas in New Zealand medical bills were covered by the state. In 1987 legislation was introduced in Victoria requiring patients to report all whiplash injuries to the police and pay the first \$317 of medical expenses. Claims fell by 68 per cent. The conclusion to be drawn might reasonably be that the cost, which would be significant to most, does lead to a reluctance to proceed. It does not however follow that this means the injury is fabricated.

Schrader et al (1996) compared neck pain in car occupants involved in motor vehicle accidents in Lithuania and found that there were far less reported injuries than those in western countries due to their lack of awareness of litigation.

The *JMS Pearce* report referred to above is likely to be used by insurers to reinforce their position on whiplash.

The ABI stance is not supported by the evidence.

Conclusions

Whiplash itself appears to be an injury sustained in low impact RTAs. There is clear evidence that such an injury exists evidenced in many studies. The question in every case, unless fraud is suspected, should simply be the extent of the injury and compensation awarded according to the severity. This of course is the current state of play.

The term “whiplash” is defined by reference to there being no visible damage having been caused to the neck. This is often referred to as a sprain. To artificially prevent claims from being brought by virtue of an accident speed would be to do away with the “thin skull” principal for RTA cases i.e. “you take your victim as you find them” and if they are susceptible to some injury/pain/psychological reaction, then you are liable for the entire injury and resulting loss. Legislation would be needed to force the courts to disregard medical opinion on causation in such cases. This would affect mostly those with pre-existing problems (i.e. the elderly) and women, who appear to be more susceptible to whiplash injury especially severe injury, than men.

In addition, those with smaller cars appear to be more vulnerable to suffering whiplash (and those in smaller cars may well be those who are also less affluent).

The question beckons, would this be a policy decision based on the volume of RTA cases which have to be settled each year compared to any other kind of injury, or would it be a decision to remove soft tissue neck injuries from the spectrum of injuries capable of receiving a compensation within UK law, irrespective of whether the injury was sustained in an RTA?

If the former, then the government would have to be pretty certain that insurance premiums would fall considerably as a result of the introduction of this law. I cannot see any other benefit to the public at large if this were not to be the case, although considerable detriment is inevitable, preventing access to justice for accident victims.

If the latter, then to my knowledge it would be the first injury of it's kind to be restricted in this way. This would almost demand a new definition for the word “injury”. If this did happen, where do we go from here...preventing compensation for sprained ankles, wrists? I would advocate this as being the start of the erosion to the law of tort in this country and our civil rights.

You will note from the Victoria/Australia example above that claims were reduced by 68 per cent by imposing a financial consequence upon claimants rather than eroding the general principal of law, or by insulting accident victims by calling into question the legitimacy of their symptoms.

There is one study which is often bandied about by insurers concerning the prevalence of whiplash injuries in bumper car participants compared with rear end shunt accidents in domestic cars. Unsurprisingly there are considerably fewer injuries sustained by bumper car participants.

A bumper car is a completely different vehicle to a domestic car. Today's cars are designed with comfort in mind and being stationary in a comfortable seat listening to the radio does not prepare you for being struck from behind, having to absorb the kinetic energy which is transmitted from one vehicle to another. In a bumper car situation all vehicles are usually moving and, in any event, the participants are prepared for a collision (muscles tensed/rigid). The outlook for these individuals in terms of suffering an injury is therefore entirely different and cannot accurately be compared on a like for like basis.

From the general research I have considered there is a strong suggestion that the outcome for whiplash sufferers is influenced by what happens within the first three months of the injury. There is evidence that there is both a physical and psychological component. Getting the best medical advice for clients as to what is best for them to do, could greatly affect their overall outcome and prognosis.

I can appreciate the argument that by lawyer's sympathising with client's and explaining that it can take months to recover and that they may need assistance around the house and treatment, this could actually hinder the outlook a client may have upon their own recovery. This could potentially set them up for suffering chronic symptoms in the long term.

It would perhaps be prudent of the government to first evaluate the progress that has been made in recent years in the delivery of a fast, efficient and cost effective claims process (the RTA Portal System) before pandering to the ABI lobbyists by implementing further changes to our PI legal system, to the unquestionable detriment of many deserving claimants.

About Spencers Solicitors

Spencers Solicitors are a specialist claimant [personal injury solicitors](#) practice based in Chesterfield, Derbyshire. Craig Gravid is a solicitor and the section head of Spencer's complex injury team.