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Cross examining the biomechanics expert in a "minor impact" trial

When the defense is disputing causation, this is the expert you have to discredit

In a vehicular-collision case that results in anything less than complete destruction of your client's car, you can expect the defense to hire a biomechanics expert to opine that your client could not have possibly suffered the injuries claimed. Tom Schultz and I recently dealt with this in a trial and we were able to navigate the web of nonsense that the defense lawyers spun. This article discusses strategies we found helpful in battling the defense's biomechanics expert and proving injury causation to the jury.

Background research on the witness

Our trial was against the State of California (Department of Justice – Attorney General's Office), and involved a rear-end impact to our client's parked vehicle. Our client suffered cervical and lumbar pain, as well as left-shoulder and left-wrist complaints. He was unrestrained in his commercial truck while he was waiting to start a construction job. He was taken away in an ambulance, initially complained of back and shoulder pain, and was discharged from the E.R. with a diagnosis of cervical and lumbar strain.

After conservative chiropractic care, the Plaintiff ended up having a one-level cervical fusion C6-7, a left-shoulder labral-repair surgery, and two wrist arthroscopy surgeries. In trial we faced a biomechanics expert who opined that our client could not have possibly suffered any significant injury in the crash. The essence of the testimony was that our client, age 50, had a long history of chronic neck and back pain based on his pre-incident medical records, and any of his claimed injuries were likely "wear and tear" caused by his 30-year career as a concrete pumper.

The first step in preparation to effectively cross examine the defense biomechanics expert was to do our own research on the expert. This proved difficult at first because she appeared to have no record whatsoever. Zero hits came up on the internet, nobody had ever heard of her. It was discovered that this expert had recently undergone complete name and gender transformation. Upon discovering the witness's prior name, we were able to locate prior depositions and PowerPoints that committed the witness to certain opinions about cervical and lumbar injuries.

Through the research we learned that this witness did 95 percent defense work, and earns several hundred thousand dollars each year testifying on behalf of defendants. Even more so, her employer is a publicly-traded company with $300 million in annual revenue that does almost exclusively defense work. Their typical client assignments include working for huge companies to clean up disasters they have created like Exxon for the *Valdez* oil spill, Firestone for the Ford Explorer rollover cases, or tobacco manufacturers to perform studies denying the effects of second-hand smoke. The local office of this company displays in the lobby an 8-foot framed photograph of the *Exxon Valdez* oil spill. This background simply set the stage to later prove the tremendous defense bias that both the witness and the firm have.

Frequently, a biomechanics expert may have given prior opinions that can be used in your case to help establish a mechanism of injury. For example, the expert may say that spinal-injury threshold is in the range of 5 mph in terms of change of velocity (Delta V). Other times you may find that the expert has previously relied on your own biomechanics expert's published research. This happened to be the case in our recent trial.

Prior opinions

A key aspect in spinal-injury cases is looking at the earlier opinions of the defense expert to see what he or she has opined about before in terms of the minimum threshold for causing disc injury. This varies depending on the type of collision, whether frontal impact, rear-ender, or side-swipe. This also varies whether one is dealing with a cervical injury or lumbar injury. Generally speaking, it is easier to prove a cervical-disc injury in a rear-ender than a lumbar-disc injury in a frontal collision. The reason for this involves the whiplash mechanism of the cervical spine, which is not as prominent in the lumbar spine. In side-swipe cases, most biomechanics experts will testify that the forces imparted on the vehicle occupant are not as manifest as if it were a rear-ender or frontal impact.

Once you have a good understanding of the defense expert's prior opinions, you will be better prepared to keep her honest when she tries to destroy your case and call your client a fraud.

Accident reconstruction foundation for opinions

Before deposing the defense expert, it is critical to obtain all of the accident-reconstruction data from your expert and gain a clear understanding of the forces involved. This will enable you to poke holes in the defense expert's opinions if her analysis is based on a flawed reconstruction. This typically involves knowing the (1) speed of vehicles involved, (2) principal direction of force, (3) areas of impact, (4) evidence of vehicle damage, and (5) orientation of the injured occupant.

We learned that our reconstruction expert had the impact at 16 mph, which was close to the defense's impact speed. However the defense's Delta V (DV) was only 4 mph, where ours was 10-12 mph. This difference was enormous because most biomechanics experts would agree that someone can suffer a spinal-disc injury at DV 10-12, but not at 4. The critical issue became the analysis used by the defense accident-reconstruction expert that the biomechanics expert relied upon.

In our case the defense reconstructionist opined that the defendant's vehicle first hit our client's cement-pumper trailer

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and then hit the rear of our client's truck. He used a computer program that did two different reconstructions on the impact: (1) the impact to the trailer and (2) the impact to the truck. Upon reviewing his file after the depo it became clear he used two different methods to monkey the numbers to sway a lower change in velocity than reality. He used a momentum analysis for impact with the trailer and a damage analysis for the truck. While in and of itself this might not be fatal, the expert chose a stiffness value of the truck as 9999.99 which is the highest value the program allows. There was no basis for such a high value given the obvious deformation to the steel underride bar of the truck.

This knowledge enabled us to expose a faulty foundation in the defense theory of the reconstruction. If the basis of the biomechanics expert opinion is flawed then the entire opinion of the biomechanics expert is worthless.

Use medical records to your advantage

In virtually every case, the defense lawyers will fail to provide their experts some of the medical records. Sometimes this is harmless error, other times it is an overt attempt to improperly influence the witness.

In our recent trial it became apparent that the DOJ lawyers failed to provide their biomechanics expert with the records from the initial treating chiropractor, which proved that our client had complaints of pain to the areas of his body at issue within three days of the incident. The defense was so overzealous in trying to prove their point that our client wasn't injured that they wanted to hide the evidence from their own witnesses.

Medical records often discuss the positioning of the injured party as it pertains to the mechanism of injury. For example, if someone is unbelted the records will mention this and might further explain if your client "hit the dash." In our case, the plaintiff was unbelted and suffered a left-wrist and left-shoulder injury. The problem was that not a single medical record discussed "hitting the dash" or an "outstretched hand." When dealing with this situation, where the medical records don't mention a key aspect of the accident and injury, it is important to prove that collisions often happen in less than a matter of milliseconds. We countered this with testimony from both our expert orthopedic surgeon, who had biomechanical training, and also our biomechanics expert, who talked about how the human mind is not always able to interpret the specific kinematic movements of the body in a crash that happens in less than a half-second. There are published studies on this topic dealing with football players who do not recall which way their leg twisted resulting in knee tears.

Despite somewhat problematic medical records, in trial we were able to cross the witness by essentially blaming the lawyers for failing to provide the witness with the key records. This became a highlight of the cross and took any thunder they had away from them.

Use "Before and After" evidence to prove causation

Medical records can often establish the fact that your client was asymptomatic before the subject incident, and became symptomatic after. Biomechanics experts are typically not medical doctors qualified to give a diagnosis, so they are forced to admit what the records say on their face.

Even when your client has a prior history of neck or back pain, the likelihood is that the prior medical records are significantly outweighed by the treatment post-incident. This can be used to your advantage with the defense expert by establishing the timeline of before and after. Tally up the number of medical visits your client had in the five years before the incident, compared to the post-incident number of medical visits. Force the defense expert to admit that your client was asymptomatic on the date of the incident. Use the depositions, or declarations, of family members, co-workers, and friends to establish what your client could do physically without limitation before the incident. Force the defense expert to admit they have no evidence to contradict what the friends and family say.

Videotape the deposition

Tom Schultz of our office took the deposition of the defense biomechanics expert. She admitted that she had no idea which injuries were caused by the collision and which may have been pre-existing, if any. Obviously this was disturbing to the DOJ lawyer who had been working for several years to try to prove that all of our client's injuries were pre-existing. What happened next was by far the most amazing piece of videotape deposition evidence I've ever seen:

The DOJ lawyer writes out in huge block letters on a piece of paper "You do have the opinion that the plaintiff was not injured in the accident and that all of his injuries are pre-existing." He then slides this note over to the expert – which is visible in the video. The witness is looking over and reading it. You can see the arm of the defense lawyer sliding over the note. Tom, incredulous, says "What? Is he handing you a note? Did you just read a note from counsel?"

The witness herself can't really believe what is going on and chuckles and says "Well, yeah I guess so."

So after a big fight, Tom gets the note and marks it as an exhibit. Of course the note became an admitted exhibit at trial, and we played the clips from the videotaped deposition before the defense expert took the stand.

Key points for the deposition

As part of your outline, develop a list of concessions that you want the witness to make based on the evidence and materials you have. For example, if you are armed with prior-opinion testimony on issues relevant to your case about spinal injury threshold use this and force the expert to commit to their prior opinion. Then move factually to the specifics of your case and force the expert to admit anything that helps establish your theme. If there is helpful witness deposition testimony describing the seriousness of the collision, force the expert to acknowledge they cannot refute the eye witness account of what occurred. If there is frame or structural damage to your

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client's vehicle, force the expert to acknowledge that this was likely caused in the crash. Focus on your client's immediate onset of pain and make the expert admit that your client suffered injury in the collision. As discussed below, this will help you with a verdict form that avoids improperly getting defensed on causation.

As you go into the deposition, you should have a list of records that you have provided to your expert. This can be used to examine the witness about all the missing records that the defense lawyer failed to provide their expert. This not only boxes them in on a *Kennemur* motion, it makes both the lawyer and the witness look unprepared. Biomechanics experts look for the initial-treatment records to determine at what point your client started complaining of the injuries at issue.

In spinal-surgery cases the experts look for complaints of radiculopathy. It is helpful to be armed with the initial- treatment records whether they be ambulance, E.R., chiro, P.T., or orthopedic records. In spinal surgery cases, you should have an understanding of the nerve distribution at issue. For example, C6-7 nerve distribution extends behind the scapula, down the arm (tricep) into the middle finger. A C6-7 nerve issue will typically create weakness in the wrist. Use anything in the record to help establish these facts. In our case even though the "radiculopathy" was not precisely identified until 18 months post-incident he had pain diagrams within a week of the incident circling the left scapula and left wrist which are consistent with the nerve distribution at issue.

After all the concessions have been made, and it is apparent she doesn't have the complete records, her confidence will be rattled and this is the point where you get her "opinions." Get the witness to provide all of her opinions, all the bases of her opinions, all assumptions she is relying upon, all research relied upon, all experts she spoke to, and all demonstratives she will use at trial.

Motion in limine re ultimate opinion on causation

Experts are precluded from offering an ultimate opinion that would invade the province of the jury. This is true for accident reconstructionists opining that a party was "negligent" and also true for biomechanics experts who are not medical doctors and who attempt to testify about "causation." All they can say is if there is a mechanism of injury or not. A medical doctor, whether a treater or expert, may be qualified to say if the collision caused the injury at issue. However, this is not the proper subject of expert opinion from someone without an M.D.

It is critical to meet and confer about this and get a stipulation and put it on the record during the Motion in Limine hearing. If the defense will not agree, file a motion.

Use the appropriate verdict form to avoid improperly getting defensed on causation

Once the defense expert admits that your client suffered a whiplash injury, or even a minor soft-tissue injury, the verdict form should be crafted to avoid confusion on causation. If the defense admits that the incident caused injury, and the dispute is only the extent of the injury, that issue is addressed in the damages section of the Verdict Form. Reference to the CACI Verdict Form 400 is helpful to persuade the judge to omit question #2 on: "Was defendant's negligence a substantial factor in causing harm to plaintiff?"

Sometimes the judge will require "substantial factor" language in the Verdict Form out of an abundance of caution. In our recent trial, the defense admitted liability after trial started and the court agreed to use the following language after we proved that the defense experts admitted Plaintiff was harmed. "What are Plaintiff's damages of which defendant's negligence was a substantial factor?" While not as straight forward as "what are plaintiff's damages" this at least correctly took out an opportunity for the jury to defense the case by answering "no" on a straight causation question.

Crossing the defense expert at trial

Begin your cross-examination preparation by creating impeachment video deposition clips. If you are going to spend the time and energy on any trial, it is worth the money to get the synchronized video deposition of the key defense experts (at least the orthopedic expert, accident reconstruction, and biomechanic). With the synched video, you can make your own impeachment clips and have them loaded onto a laptop ready to play for the jury when the witness tries to deny what they said in deposition. It is shocking how experts try to squirm out of what they testified under oath in deposition.

With your outline, start with proving the expert's bias, their defense-slanted nature, how much money they make doing defense work, and how much money they are making to provide the defense opinions in your case. Make sure even for the most basic concession that you have the video clip ready to play for when the witness goes sideways.

Then expose all the records that the defense lawyer never gave them. When the defense expert is a polished and likeable witness, I find it a useful strategy to focus the blame on the lawyers and their strategy to hide the truth.

Next go to the best points of your case on causation whatever they may be. This may be the idea that your client was asymptomatic on the date of the incident. It may be witness testimony explaining how active your client was before the collision at issue.

The "eggshell" plaintiff

Another key point for cross examination is aggravation of pre-existing condition. Often the defense biomechanics expert, along with the defense radiologist and orthopedic spine surgeon, will testify that your client suffered from a degenerated spine from aging and wear and tear. Force the defense expert to admit that she cannot state to a reasonable degree of scientific certainty that the collision did not exacerbate an underlying condition. CACI 3927 states "if plaintiff had a physical or emotional condition that was made worse by defendant's wrongful conduct, you must award damages that will reasonably and fairly compensate him for the effect on that condition." Put it in simple terms and

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just ask, "you can't rule out that my client's condition was made worse after the collision?" (i.e., He was an "eggshell" plaintiff.) This theme resonates with juries because everyone has some aging in the spine which pre-disposes us all to injury.

Faulty foundation

Finally, go to the faulty foundation in the biomechanics opinion based on the defense's accident reconstructionist. You will have already addressed this issue with your accident reconstructionist, poking holes in the defense theory.

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