ERAS protocol components beyond pain management aspects.

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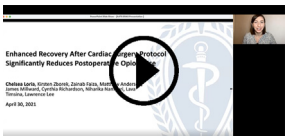

Conflict of Interest Statement

The authors reported no conflicts of interest.

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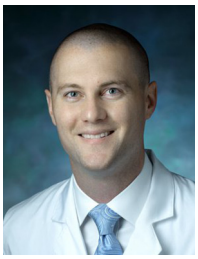
Key Words: perioperative care, cardiac surgery

Discussion

Presenter: Dr Chelsea M. Loria



Dr Michael C. Grant *(Baltimore, Md)*. I'm excited to get the opportunity to discuss what was a really wonderful presentation by Chelsea. This is quite an undertaking. Obviously, some of the things that you touched on are, I think, really important for everybody to hear about. Oftentimes, we read a study and it just says, "We implemented a bunch of these things, and then we have a certain outcome." But you did a nice job of outlining exactly how the institution went about this, devising the team, putting a protocol together, doing it all together. I think that's effective. One of the things that you obviously alluded to is that you're reducing the number of opioids after surgery. My first question to you is how did you measure opioids? Is this something you typically did on a regular basis? Is this something that you became aware of as part of this project? And then how has it informed your thinking about opioids each day since then?

Dr Chelsea M. Loria *(Indianapolis, Ind)*. Before we instituted the ERAS protocol, we were not routinely tracking how much opioids patients received. So, we had to really put our heads together with our pharmacy colleagues to see what the most effective way would be to track that in patients. What it really came down to was looking at the medication

administration record. Because it doesn't really matter what the patients are prescribed after surgery if they're not actually getting it. That was our way of kind of tabulating how much each patient got. Within the protocol and once people realized that things were being documented, the nursing staff and the prescribers were being more thoughtful about, "How can we really optimize this patient's pain?" And if they see they still have IV medications ordered that they haven't used for days, "Why don't we just go ahead and discontinue that if it's not benefiting the patient?"

Dr Grant. It seems like you touched on 2 really good pieces. One, this idea that there's this now common vernacular among you to think about opioid use and what MMEs actually are. And then maybe that second piece, in some ways a more important piece, that if you can stop the IV options and move to something for a longer duration, something oral, you might get more bang for your buck. I think that's great. You touched on IV drug users, obviously a really challenging group of patients to manage. The other group that we often think about, too, are opioid-tolerant patients, patients who came to surgery having been on opioids previously. Have you guys thought about looking at that subset of patients in the context of your study?

Dr Loria. We did specifically pull out patients who had a history of chronic opioid use for chronic pain, outside of patients with a history of IV drug use. I think that is an important factor because, obviously, they're going to be treated similarly because they are opioid tolerant. So, the management of their pain will be important. Something we found in the IV drug use group is that we need to be more aggressive with their pain control. We commonly involved our addiction colleagues and our palliative care colleagues who are more well trained at addressing chronic pain in patients who are opioid tolerant. That was an important factor, especially in patients with a history of IV drug use, reducing the number of patients who potentially leave against medical advice or have withdrawal symptoms in their postoperative period.

Unidentified Speaker 1. This talk highlighted some important parts. My thought is we need to have better situational awareness in real time of MMEs. We can't have a pharmacist calculating off a Medication Administration Record in real-time. You'll have no idea. We need active de-escalation of MMEs. We need to get rid of the ones that are on the Medication Administration Record but no one's actually taking, so that at 2:00 AM some nurse doesn't give someone a Percocet. We really need to focus on the discharge MMEs. Did you look at that in your study, comparing before and after, the amount of MMEs that were prescribed to that patient on discharge? Because the amount that's prescribed as shown by Dr Grant and associates was prescribed on discharge directly relates to the risk of that patient becoming a new persistent opioid user, which we know in cardiac surgery is up to 11%.

Dr Loria. That's an excellent point. We didn't look in particular at the amount of opioids that patients were prescribed after surgery, but I think that is an important component especially because we obviously have a high percentage of patients with a history of opioid abuse. I think it's important to look at not only the amount that patients are being prescribed after surgery but also what strength and what dose. So, patients going home with tramadol might be a lower risk for addiction than patients going home with a high dose of oxycodone.

Dr Grant. Alex, you have thoughts?

Unidentified Speaker 2. Just quickly with the perspective of someone who has run an acute and a chronic pain in inpatient service. I almost wanted to say that your results on the IV drug users, you might be able to look at those as successful because we all know that both IV drug users and, as Mike alluded to, the chronic opioid users will always have a baseline requirement of opioid needs for pain reasons. So the fact that you didn't see a rebound of extra opioids in days 2 and 3, and those stayed low relative to the NVIDU population, and you showed that the multimodal approach you took actually just kept them at their baseline opioid needs, and then their surgical pain was well controlled by what you had done. That might be successful.

Dr Grant. Tom, other thoughts?

Unidentified Speaker 3. That was a great talk and comment by Alex because those patients usually have a lot of pain. My question is, when you did your ERAS bundle, did you rigid–just to our earlier discussion, were you plating everybody, and did everybody get the [inaudible]—

Dr Loria. Oh, yeah, that's—

Unidentified Speaker 3. –as part of the [inaudible]?

Dr Loria. Yeah, that's [inaudible].

Unidentified Speaker 3. Is that routine?

Dr Loria. We don't routinely do rigid sternal fixation. Most of our staff use traditional sternal wires. I've only seen the rigid sternal fixation in patients who they think are at high risk for sternal wound infections or who have a history of poor external healing if it's a redo. The use of liposomal bupivacaine or Exparel was routine. Toward the beginning of the study, it wasn't something that the surgeons were used to incorporating on a routine basis, but by the end of the study, everyone was routinely making it a habit that, "Hey, we're getting ready to close. Is the Exparel on the field? Can we go ahead and administer that?" Anecdotally this isn't something that we looked at, but as someone who is a bedside provider, I found that a lot of times the first day after surgery, patients weren't reporting incisional pain. They're reporting back pain associated with their chest tubes. I thought that was kind of a testament to using that local anesthetic.

Unidentified Speaker 3. Yeah, we [infiltrate?] with Marcaine, and I just have been battling with the pharmacy to get

liposomal Marcaine. I'll go back to the battle. I think if you could publish your results, that might help. The more literature we get out there about that will help.

Dr Grant. Couldn't agree more with that.

Unidentified Speaker 4. Same thing with Exparel. It's hard to get it on formulary.

Dr Grant. I think Exparel in many ways is going to go the route that we've seen with dexmedetomidine. The idea that perhaps we're waiting for the day when the costs just simply come down. But the data on this right now are still limited to small case studies, case series, some randomized data, but this is a real challenge. Amanda, thoughts?

Unidentified Speaker 5. I have one comment regarding pain and chest tubes. You had commented that once you use the Exparel. You noticed that maybe they were expressing more about back pain related to chest tubes. Typically, in your practice, when do you normally take out chest tubes? The ERAS protocols clearly outline early removal of tubes. I think that helps with ambulation and getting patients up quicker, as well as reduction in pain. Some of the caveat to that is potentially more plural effusions that could crop up if you're getting them out sooner. I'd like to hear your comments on those questions.

Dr Loria. I think an important point is that chest tube removal enhances patients' recovery: They get up faster and have less pain, and they're taking less pain medications. They obviously benefit from that because they're less sedated and have early return of bowel function. At our institution, primarily the chest tube management, a lot of it is staff dependent. We're trying to go toward more of a protocolized system where especially if chest tube output is frankly serous that they're discontinued at that time. I don't want to say regardless of the output, but if they're higher output and serous, we are more comfortable pulling them. In our study, I didn't present this, but we did find that chest tubes were removed earlier, which was a significant difference from before we instituted our ERAS protocol. I think that also could have contributed to the reduction in postoperative opioid requirement.

Dr Grant. I'll admit we could talk about this for a longer period of time, but we should turn it back over for the rest of the session to Helen-Marie and Thomas.