

Announcer: Welcome to the interview with the Experts podcast series. My name is Allen Luis and I'm the co-director of the Pericardial Clinic here at the Mayo Clinic in Rochester. It's my pleasure today to be joined by our colleague, Dr. Kevin Greason, who's one of our cardiac surgeons for the real expertise in pericardial disease. In fact, Kevin does the bulk of our patients with Pericardiectomy, and so it's my pleasure to be joined by him today. We are gonna be speaking today about surgical considerations of Pericardiectomy in patients with constrictive pericarditis. Thank you very much for joining us today, Kevin.

Dr. Kevin Greason: Oh, great. Glad to be here. Allen. Thank you for having me.

Dr. Allen Luis: I thought Kevin, maybe we will start with speaking about when should we be doing Pericardiectomy and when is Pericardiectomy indicated?

Dr. Kevin Greason: Were the patients that have constriction. I think operation is really the only definitive treatment. There is a differentiation between patients that may have constrictive physiology after a heart operation. We would give them some time to get better, but I think if you have a truly modified diagnosis of constriction, you should start thinking about operation.

Dr. Allen Luis: That makes complete sense. You are absolutely right that the only real fix is, is being able to remove the pericardium in someone with fibrous pericardiectomy. I was wondering if you could just walk us through the different kinds of pericardiectomy out there, the different surgical approaches, and what do you do?

Dr. Kevin Greason: So that's a great question because there's a lot of controversy in how to do a pericardiectomy. A lot of people will remove just the - anterior pericardium from phrenic nerve to phrenic nerve, and from the great vessels to the diaphragm. That's what we call an anterior pericardiectomy. But that leaves a very large area of pericardium on the diaphragm and posterior to the left phrenic nerve that can also result in constriction. My take on Pericardiectomy is to remove as much pericardium as is safely possible. Having said that, when dealing with constriction, it's imperative that you decorticate the right and left ventricle. So that's from AV groove to AV groove. If there is super dense calcification growing it to the heart of the AV groove, I'll leave that behind. But short of that, I try to take as much of the pericardium as I safely can.

Dr. Allen Luis: And Kevin, is this an off pump procedure or an on pump procedure? What do you typically do and how do you decide?

Dr. Kevin Greason: So it often starts as an off pump procedure, but to really remove the pericardium off of the diaphragm and posterior to the left heric nerve, you have to elevate the heart up quite a bit. And the heart doesn't really tolerate that unless you're on cardiopulmonary bypass. So I usually make a decision within the first five minutes of the Pericardiectomy how this is gonna go. If I can free up the heart from the pericardium all the way back to the pulmonary veins, then I probably could do it off bypass. But short of being able to do that, and I would say that in the majority of cases you cannot do that. I go on bypass. It's much safer for the patient. It's a much more relaxed procedure, and I think it's probably a much more effective procedure because it really allows you to get to pericardium behind that left phrenic nerve and off the diaphragm all the way down towards the IVC.

Dr. Allen Luis: That sounds great. I know most people are fearful of going on bypass in this group of patients, but as you indicated in your experience, you've found this to be safer and more effective. Is that right?

Dr. Kevin Greason: That's correct. We'll see these patients in the operating room with a right atrial pressure of 30, and when we go on cardiopulmonary bypass, we drain all that blood off, we do the pericardiectomy, and then we come off bypass and give back the blood they need. But oftentimes we'll have two liters of blood in the venous reservoir after coming off cardiopulmonary bypass. So this is just extra blood volume that the patients are carrying around. And with that blood being off, their hemodynamics are much better, and we can send that blood to the cell saver and make pack red cells for us in the future if we need them. But you know, patients usually do better with a CVP of 10 versus 30.

Dr. Allen Luis: Makes complete sense. Just to ask Kevin, you know, these are patients that are at a higher risk in the operation. Constriction operations aren't necessarily always easy. Can you tell us a little bit about complications related to this procedure? What happens, what should we be watching out for and things like that?

Dr. Kevin Greason: Well, I think probably the first complication to avoid is an inadequate pericardiectomy. So you have to make the decision that if you're going to the operating room, you're gonna do everything that you need to do to affect a good operation. And in my opinion, that usually includes going on cardiopulmonary bypass, but can also include cross clamping the aorta. If you have densely scarred hard to the pericardium, it's much easier to separate the two with the heart rested and the heart's soft and flay. So usually it takes about 20 minutes of cross clamp time to completely free the heart all the way back to the pulmonary veins, and that's what the patient needs. So that's where I start in my complication avoidance scheme. But as far as postoperative complications, probably the most common one we see is postoperative atrial fibrillation, which is very common to any open heart surgery procedure for standard coronary bypass operation or a valve replacement or repair. Our prevalence of atrial fibrillation is probably 30 to 50%, but with Pericardiectomy, it's actually less than that. In our 20 year series that we reported, it was like 13%. So that would be probably the most common complication of surgery. And following that would be a prolonged intubation. A lot of these patients are quite sick with

their heart failure and their constriction, and it takes a while for the heart to kind of get its mojo back and get back to a well-functioning organ. And that can result in several days of intubation. Then we have the usual suspects of bleeding, maybe 3% kidney failure, two or 3% return to the operating for bleeding, maybe 2%. Stroke is uncommon, 1%. So those complications are low. But I would tell a patient the chance of major badness is probably on the order of five to 10%.

Dr. Allen Luis: That sounds very reasonable there. And then I guess people in patients often wonder what happens after their pericardiectomy. Do you mind running us through that?

Dr. Kevin Greason: That's a nice, that's a good question because patients will often say, can I live without my pericardium? And my answer to that is, you all live a lot better without your pericardium. So the pericardium in this situation, it's a detriment to the patient, and by removing it, hopefully we can relieve their heart failure and then they'll return to a normal life expectancy and quality of life without the heart failure. You know, many of these patients have had constriction in heart failure for several years by the time they come into operation, and the heart is not gonna bounce back right away. But in due time, I would say usually within a month or two, they should notice a considerable improvement in their heart failure symptoms and how they feel. And I think that six months after operation, they're probably back to feeling quite normal. Kind of a humorous story in that regard, in that sometimes we'll see patients six to eight months after the Pericardiectomy, we won't even recognize them because they've lost all the heart failure, fluid edema, things of that nature.

Dr. Allen Luis: That's fantastic. You know, this really does make quite a big difference to the patients and you, you're absolutely right. You see them and they're a completely new person, and they've got their quality of life restored and things like that, especially if you catch this early and don't delay your operation. So that that's, that's absolutely wonderful.

Dr. Kevin Greason: That's a great point. I think the earlier we intervene on constriction, the better. It's quite satisfying to see a patient lose 40 pounds of water in the hospital such that their clothes don't even fit when they go home. They're really happy in that regard.

Dr. Allen Luis: That's great. Someone has to bring them a new wardrobe is what you forgot to mention after, after Pericardiectomy, so, or

Dr. Kevin Greason: Or punch a few holes in their belt, you know, for 'em. So.

Dr. Allen Luis: Well, Kevin, I'd like to thank you very much for joining us and for all your input and expertise here on the surgical management of Constrictive Pericarditis. Thank you so much.

Dr. Kevin Greason: My pleasure, Allen. Have a good day.