- Hello, my name is Kendra Grubb. I am the Surgical Director of the Structural Heart and Valve Centre at Emory University. Today I'll be presenting the Optimize PRO interim analysis of the first 400 patients treated in Canada and the United States.

Background of This Study

The background of the study is really looking at how to Optimise an existing valve platform in TAVR, and make the results better for our patients. So when you looked at the low-risk study, the Evolut valves had a very high pacemaker rate, unacceptably high, in excess of 17%, and also high paravalvular leak rates. Certainly suboptimal in a world when we're getting into low risk patients. So this trial decided that, the design of the trial decided that we would look at, if you keep the same valve, but you change the implant technique, and add a pre and post implant pathway, if we could improve results in paravalvular leak, as well as in pacemaker rates.

Patient Population and Study Design

The study design and patient population, is a non-randomized, all-comers study in the U.S., Canada, Europe, the Middle East, and Australia. The interim analysis is only on the U.S. and Canadian patients, the first 400, and the trial is ongoing in the rest of the world. The patients were selected based on inclusion and exclusion criteria. Inclusion criteria being New York Heart Association class two, or greater heart failure, as a result of severe symptomatic aortic stenosis. They also had to be candidates for transfemoral TAVI with the pro or pro plus delivery system and valve. The exclusion criteria are very important for this trial. One of the key exclusion criteria, is that patients who had existing pacemakers were excluded. And that's pretty unique. Oftentimes, the data that we see in other trials, you'll have patients who have pacemakers, and so the numbers are a little bit off. 100% of patients had no pacemaker to begin with. Now they could have conduction abnormalities, those were all-comers, but no preexisting pacemaker. In addition, the bicuspid valves were excluded, heavy LVOT calcification, and prior SAVR were all excluded.

Optimised Care Pathway for TAVR

So the Optimize TAVR care pathway, is really three components. Pre-operatively, the patients were assessed by a multi-disciplinary heart team, and had a baseline EKG. They were also counselled regarding early discharge. So we set the stage for patients coming in, getting the valve, and then being discharged home hopefully the very next day. The procedure itself was done using the cusp overlap technique. And in cusp overlap, we're really able to isolate the lowest point in the annulus at the non coronary cusp, open up the membranous septum so we understand where we are in space, and then deploy the valve with as much precision and control as possible. We advocated for the use of the Lundquist Guidewire, and in that implant technique, pre-dilation, pre-balloon dilation was optional. We recommended recovering the patients in a recovery unit and then transferring them to a step down, as opposed to an intensive care unit. We requested that they don't use any central lines or indwelling catheters. The final piece was the post procedure pathway, and this was a minimalist type or quick, or lean TAVI type pathway. So the patients were awake throughout the procedure. The preference was conscious sedation. They were recovered in a recovery suite, within four hours mobilised, and then the plan for home the very next day after they had an EKG and echocardiogram. So we were avoiding the ICU, and we were really trying to fast track these patients who were appropriate for discharge. Now in the conduction abnormality pathway, if you had no new conduction abnormality, then you went down this fast track pathway. If you had a pre-existing right bundle, or you had a new conduction abnormality, let's say a new left bundle, or any other new conduction abnormality, then there was a special pathway just for those patients. We would monitor them an additional day in the hospital, and they would go home with a monitor. So about 20, just over 20% went home with a monitor, because their new conduction abnormality did not resolve by the time of discharge.

Key Findings

Yeah, so the key outcomes of the Optimize Pro study, they're really exciting. So as I was mentioning, that we identified that the high pacemaker rate, and the high paravalvular leak rate were really unacceptable as we get into lower risk patients. Our goals were to see if we could, with this new technique, achieve surgery like results. And as a surgeon, this is something that's particularly important to me, and to my patients. And what we were able to do, just by changing this technique, is for paravalvular leak, there are no patients with moderate or severe paravalvular leak. Almost 80% had none or trace. And that's excellent results. Best in class for this device. In addition, the pacemaker rate was single digits, 9% for the "as treated" group. And we saw that those teams that followed the actual steps of the implant technique, they followed the six steps of cusp overlap, that the pacemaker rate was 8%. And again, in all comers, this is dramatic improvement, because the low risk study that I'm comparing it to, included patients with pre-existing pacemakers. So I would, I would guess that in reality, in a real world, if we would've included all TAVR candidates, those with or without pacemakers, the rate would be even lower. And for self-expanding platforms, for the Evolut platform, really this was best in class. Mortality, less than 1%. Disabling stroke, less than 1%. And the majority of patients went home the very next day. Median length of stay, one day. And so what you found was by using this technique, not only did you facilitate really best in class outcomes regarding pacemakers, and paravalvar leak, the patients were able to go home the very next day. The piece between what happened to these patients from the time of discharge to 30 days, was very important to us. There were a considerable number of people, that were keeping patients extra days because they had a self-expanding valve. Well, we only had eight patients that ended up with a pacemaker from discharge to follow-up at 30 days. So all of those concerns were unfounded. And most of those patients already had the monitor on. So we were able to identify ahead of time that they were having a problem. Have them come to the hospital and then receive a pacemaker.

Take-Home Messages for Clinicians

The key take-home messages for this particular study, is that using the Optimize clinical pathway, the pre and post pathway, as well as implanting the valve using the cusp overlap technique, results in the best outcomes we have ever seen for the Evolut platform.

Further Study Required

Well, as I mentioned, this is an ongoing trial. So this was an interim analysis. Certainly we will want to see these patients at one year, and be able to present that results. And, we also want to see if this is a global trend. We have the 200 patients in Europe, which is ongoing, as well as Europe and the Middle East actually, which is ongoing. And then we'll have a cohort in Australia. So is this, are these results reproducible around the world? And I think that's the next steps for this particular trial.