- My name is Parikshit Sharma. I am an associate professor of medicine at Rush University Medical Centre. I'm also the section chief of cardiac electrophysiology, and the director of the Rush Arrhythmia Centre and the Rush EP lab, in Chicago Illinois.

Please summarise the aim, study design and endpoints?

So the study was aimed to evaluate clinical outcome differences between left bundle branch area pacing as compared to traditional right ventricular or atypical pacing. The end points that we evaluated, the primary composite endpoint was that of a combination of mortality, or the first hospitalisation for heart failure, or need for upgrade to bi-ventricular pacing. The secondary end points we evaluated were the primary composite endpoint in patients with greater than 20% and greater than 40% ventricular pacing burden, as well as individual co-primary end points that were individually evaluated. The study was a non-randomized prospective observational evaluation of 703 patients at two sides, which was the Geisinger health system, as well as the Rush University Medical Centre cohort. And we compared about 703 patients with 321 patients in the left bundle area branch pacing arm, and about 382 patients in the right ventricular or conventional pacing arm.

What were your key findings?

So the findings of this study were very interesting as we have known from observational data in the past, his bundle pacing has demonstrated a better clinical outcomes when compared to traditional RV pacing. Left bundle branch pacing was along the same lines. The primary composite endpoint was much lower in the left bundle branch pacing arm, as compared to the RV pacing arm with the outcome of 10% in the left bundle branch pacing arm, versus 23.3% in the right ventricular pacing arm with a p-value of less than 0.001 and a hazards ratio of 0.46, suggesting that left bundle branch pacing does overall better in this cohort of patients, further evaluation of patients with pacing burdens greater than 20% and 40% suggested similar findings with a statistically significant difference in the primary composite outcome between left bundle branch area pacing and right ventricular pace with a p-value of less than 0.01 and hazards ratio of 0.32. When we looked at individual endpoints of mortality, heart failure, and need for upgrade to biventricular pacing, to our surprise, there was a significant difference in the mortality, whether we looked at the entire cohort or in subsets of patients with a higher burden of ventricular pacing with left bundle branch area pacing doing much better as compared to right ventricular pacing. Similarly, when looking at heart failure hospitalizations as well, left bundle branch pacing, area pacing, did much better than traditional right ventricular pacing with a lower incidence of heart failure hospitalisation in the left bundle branch area arm. In the entire cohort, as well as in the subsets of patients with a higher burden of ventricular pacing. So overall, left bundle branch area pacing did much better than right ventricular pacing when it came to the primary composite end points, as well as individual co-primary end points based on our evaluation in this cohort of patients.

How should your findings impact practice and influence further research?

I think that's very interesting, it's important to take the findings of this study with a caveat that this was a non-randomized clinical evaluation. Given the fact that this was non-randomized, it has its inherent challenges and biases, such as selection bias that may be associated with the selection of this patient cohort. Although the groups were fairly evenly matched with each other. Before we can make this a mainstream strategy for ventricular pacing, I would think that more detailed evaluation in the form of a randomised control multi-center study would be necessary to further confirm these findings and make this part of routine practice. The findings of the study do provide a very strong signal that suggests that left bundle branch area pacing may be a much better alternative to pace the ventricles in patients with need for pacemaker implantations for bradycardia indications. But like I said, this needs further evaluation in large care, randomised controlled trials. It is important to bear in mind that the two sites that included patients as part of this study were sites that have been considered centres of excellence for conduction system pacing, whether it is his bundle pacing or left bundle branch area pacing. So it's very important that individuals and operators that are going to perform these procedures really do this the right way for their patients before it becomes mainstream. That's really critical. The other, the other question that we don't really have an answer to just yet is with regards to the ability for lead extractions, with leads implanted in the left bundle branch area. And until we have more data on that, we have to still be a little bit careful with long-term performance of this particular technique when compared to traditional RV pacing, where we have information, the lead extraction ability, and safety.