

[MUSIC PLAYING]

**STACY** In the last 10 years, there's been a movement towards providing surgery, specifically for diabetes in patients with  
**BRETHAUER:** lower BMIs. And there have been several international summits looking at this. There have been international guidelines developed. And now, we have 12 randomized controlled trials that have compared surgery versus medical therapy for the treatment specifically of diabetes. Not just weight loss. But many of these patients are lower BMI patients with poorly controlled diabetes, type II diabetes, who get surgery. And in every one of those 12 randomized trials, we've seen that surgery outperforms even intense medical therapy in the long term in terms of control of diabetes, managing other comorbidities that contribute to cardiovascular risk.

In general, if you take all comers who get bariatric surgery who have diabetes, about 80% to 85% will be in remission within a year or two, meaning they're normal glucose, off their medication. When we do the sleeve gastrectomy, which is a partial gastrectomy, or we do the gastric bypass, where we reroute the nutrient flow downstream, that has some effects on the gut in terms of producing an increased level of specific hormones-- gut hormones, or things we call incretins-- that stimulate the pancreas to produce insulin. And when we study these things, we see that patients who have had bariatric surgery have a early and exaggerated spike in these gut hormones, and we think that that's a big driver of the diabetes remission as well. And it probably contributes to some of the recovery of the pancreas function after these surgeries.

And it's pretty dramatic. If you think about a disease like diabetes, that's basically a chronic, unremitting disease that's just going to continue to require more and more medicine, and eventually, it's going to lead, for most patients, to microvascular disease. You know, kidneys and eyes and nerves, or macrovascular disease, with stroke and heart attack and an early death. Being able to change the trajectory of that chronic disease is really important.

I think, whether we achieve remission, meaning they're off their medication, or not, we're going to have better control-- glucose control-- in those patients who undergo surgery. I think there will be a further paradigm shift in terms of what we do in surgery as a treatment for diabetes. So the term diabetes surgery was not generally accepted 10 years ago. It didn't seem to make sense that we're operating on what's historically been a medically managed disease. But there's a long history of other diseases that were medically managed and then ultimately were able to be better treated with, in some patients, with surgery.

And I think this is no exception. I think that as a newer generation of primary care and endocrinology physicians and cardiologists who kind of go through their training seeing the benefits of bariatric surgery, who understand that it can change the trajectory of these chronic diseases, and actually, it can help them in their practice because it makes their disease processes easier to treat and more responsive to therapy, in many cases. I think, as time goes on, we see a new generation of surgeons who are familiar with it, and the current evidence around bariatric surgery, I think we'll see more and more patients being offered therapy.

And right now, if you look at the number of bariatric procedures performed in the United States, it's about 250,000 a year. And that represents about 1% of the patients who would be eligible for surgery, based on their BMI. So we're just scratching the surface in terms of patients who would be eligible and might benefit from bariatric surgery in the United States. And there's lots of reasons for that, and not every patient who is eligible should get bariatric surgery. It has to be a well-informed decision and they should want to have the operation and do well long term.

But I think, as time goes on and the criteria potentially expanding to lower BMI patients and specifically focus on diabetes surgery, I think the pool of patients who would be interested in treating those chronic diseases is going to grow. I think there'll be more patients asking their doctors about bariatric surgery and asking for a referral. And as I said, I think there'll be more physicians over time understanding that, while surgery has some risks, the risks of continued medical therapy long term probably is greater for that patient's long-term health than the episode of surgery.