BroadcastMed | Total Pancreatectomy with Islet Auto Cell Transplantation

DR. ANDRES GELRUD: Hi, good afternoon. I'm Andres Gelrud. I'm an associate professor at the University of Chicago. I'm the medical director of the Total Pancreatectomy Auto Islet Transplantation Program, and I work for the Center of Endoscopic Research and Therapeutics at the University of Chicago. Today, we're going to be talking about total pancreatectomy with islet auto cell transplantation. So today, we're going to be focusing our attention just in this radical surgery that we offer to patients that have bad chronic pancreatitis. Remember, pancreatitis comes in three different types. We have acute, a patient that has had one episode, never again. Patients that have recurrent acute, two or more episodes of pancreatitis. And then chronic pancreatitis. The subset of patients that are good candidates or candidates for this type of procedure are the patients that have recurrent acute pancreatitis that are spending most of their time in the hospital unable to work, unable to attend school, hospitalized because of their frequency of their pancreatitis, or patients with chronic pancreatitis with bad pain 24/7 that is having such a debilitating effect in the quality of life that one of the few options that we can offer is to remove the entire gland. So why a total pancreatectomy with islet cell transplantation? And again, auto islet cell? It's to prevent the development of diabetes and to prevent also the use of immunosuppression, which is something that you would need if you use an allo islet cell transplant, or if you use a pancreas from a cadaver. So in these patients, we're using their own pancreas in order to prevent the development of diabetes. As we all know, making the diagnosis of chronic pancreatitis, frequently, it's a very, very challenging. We use a combination of symptom, imaging, sometimes we use a secretin pancreatic stimulation test. And again, in a subset of patients-- which for this particular procedure are the ones that most of the series showed benefit the most-- are patients with genetic conditions. By the way, if you're doing genetic testing make sure that you get a genetic counselor involved so the patient understands what are the clinical implications of checking for genes. Making the diagnosis, again, can be very challenging. The gold standard is getting tissue. We rarely get tissue. And we use a combination of symptoms, radiology, endoscopic ultrasound, MRIs nowadays with gadolinium that has proven to be an excellent way to make the early diagnosis, again, in a subset of patients. Rarely we have tissue. We wish we did. It's a retroperitoneal organ frequently very difficult to access, which makes the diagnosis even harder to make in a subset of patients. Today, we're only talking about patients that have incapacitating chronic pain. And again, when we're offering this radical surgery to our patients are patients that can't work, they're missing school, they're missing whatever they do for life, whatever gives them pleasure. So it's a patient that is spending most of their time in the hospital or when they are at home they're getting so much pain medications that just makes it very hard for them to function, work, and in general, enjoy life. So what are the therapeutic options that we have? In general, for chronic pancreatitis, medical therapy, who, unfortunately, we frequently end up giving too much narcotics if any, enzymes, octreotide, antioxidant, stop smoking, stop drinking, and all of these things don't work in a subset of patients, but again, today we're concentrating on the ones that these don't work. I can tell you that the majority of our patients have already undergone endoscopic therapies and they got some degree of relief. But again, by the time that we see them and we're talking about this surgery they have bad pain and they have failed endoscopic therapy. If you are thinking about surgery for chronic pancreatitis, if your patient has a genetic mutation that has been documented we stay away from surgical decompression, and if any we try to do this surgery as the first option instead of removing or filet opening the gland that will lead to lower islet cell yields and that may lead to the rapid development of diabetes if we end up doing a total pancreatectomy. We know that the old teaching is that you have chronic pancreatitis because you are an alcoholic no longer stands. Very small percentage of alcoholics truly develop pancreatitis. So we know that it's a combination of alcohol with a pancreatic predisposition that by far these are different genes that have predisposed this patient to the developmental of pancreatitis with pain, pain, pain, again, that may very debilitating. Different genes may act in different areas, including the acinar cell up in the top, and in the right you can see the ductal cell like the CFTR mutation. That's the area where it affects. Again, I'm not going to go into details, but these are the different genes that we're checking and there are other genes to be discovered that as we're getting better with new techniques we're going to start to find them. So this is a great example of one of our clinic patients with familial hereditary pancreatitis. This patient had a PRSS1 mutation. You can see in the red upper boxes circle is female, square is men, these are all the family members with documented pancreatitis. You can see also in green or light blue the family members that have had pancreatic cancer. And then you can see the ones with the dot in the center that are silent carriers for the mutation. And these patients actually may develop chronic pancreatitis at any time. Again, total pancreatectomy-- it's an operation of last resort. When you remove the gland only and you don't do the islet auto cell transplantation, these patients may develop brittle diabetes, very, very difficult to control. They lose the control regulatory mechanism and it can be very difficult for the patient. This is actually a slide briefly, briefly depicting how the whole process goes. You can see the pancreas, its place in these chambers are exposed to collagenases, different solutions, different centrifuges. At the end, we end up with 10 to 30 mL of the islet prep, and that's what's going to be infused in the liver. And that's hopefully what's going to be the new habitat, the new house, for these better cells that are going to be producing insulin. Extremely important to have a very good conversation with the patient and the family members on what to expect. You need to talk to the family members-- actually, we always try to tell the patients to talk to other people that have undergone this surgery so they can understand not only our [INAUDIBLE] point of view, but the other side of the story that we really sometimes do a poor job telling the patients. So we always get them connected with different people that have had this surgery so they can understand what they're getting into. Always they meet an endocrinologist before surgery just in case they develop diabetes or they understand that in the future if they develop diabetes what they're going to need to do and how diabetes is treated nowadays. They need to understand that the day that we remove the pancreas from then on you're going to need to take pancreatitic enzymes for the rest of your life together with vitamin supplementation, low-fat diet. It's a little bit controversial. Most of us are given a regular diet, occasional high in fat or normal healthy diet, and others that are yet to be discovered and understood. Setting a realistic expectation. I always tell my patients you will become a diabetic later on. Hopefully you won't, but there's a high likelihood. Even if in the first year or second you're not, as time goes on you may develop diabetes and we're going to be looking for these as we go along with you. You may still have some pain. We know, based on different series, that up to 70% of patients are completely pain free. There's a 20% of patients that are going to have a substantial improvement, but still may need a little bit of pain medications. And there's another percentage of patients that they know they don't have a pancreas, but they still feel this pancreatic-type pain that we call it centralization of pain. Meaning the pain has stopped being visceral. They may have had it for so many years that now they may have central pain that may be very difficult to control. And they have to understand that we're replacing, in general, one condition for another, which may be diabetes in case they develop diabetes now or in the near future or in the years to come. With this, I'm going to stop and I'm going to take any questions that you may have regarding total pancreatectomy with islet auto cell transplantation. Thank you.