

## BroadcastMed | Stomach function focus of obesity research

I'm Michael Camilleri, I'm a consultant in gastroenterology and hepatology at Mayo Clinic. And I want to talk to you today about our obesity research, or other research in obesity. We have a major interest in how the stomach works in patients who have upper-gastrointestinal symptoms. And it wasn't a stretch to think about what is it that makes people who are obese able to continue to eat, even though they might still be feeling full?

And as a result of that, we have identified that the rate at which the stomach empties as well as the size of the stomach, are two important determinants of the sensation of fullness and bloating after people eat. This is rather than because we know that among people who have obesity, particularly those who are binge eaters, the volume of the stomach is larger. And therefore, when food enters the stomach they do not get signals to suggest that they are feeling full or uncomfortable, and we know that it is those signals which stop people from eating more.

If they don't get the signals that suggest that they are full, then obviously they're going to continue to eat. While this may be only a subset of patients who have obesity, it is nevertheless an important group in whom targeting the stomach may be very important as part of the effective treatments for obesity.

We know many medications have been tried for the treatment of obesity and regrettably, their track record has not been very successful. In recent years, many medications have been proposed to the Food and Drug Administration, and yet they have not been approved, mainly, because these medications have targeted mechanisms in the brain, such as the hypothalamus area.

And as a result of the effects on hormones or peptides in the hypothalamus, there may be a reduction in appetite and therefore a positive effect on obesity. However, at the same peptides and hormones may also be present in other parts of the brain and by targeting those other parts of the brain, we have side effects like depression, anxiety and in some occasions, even seizures that results from those medications.

It is for that reason, that we are focusing our research attempts mostly at changing stomach function. And in fact, we know that if we study restrictive operations down on the stomach, we know that certain types of operations are more likely to be effective in the long term treatment of obesity.

That's for example, vertical banded gastroplasty and even gastric banding, do not appear to be very efficacious in the long term. And studies show that there has to be a very prominent behavioral psychology and dietetic treatment of patients who have those simpler operations, for patients to lose weight in the long term.

On the other hand operations like Roux-en-Y gastric bypass and the more recent, sleeve gastrectomy have been much more effective in the treatment of obesity. And we believe that the main reason for that is that the volume of the stomach is curtailed, the amount of food that can be eaten is obviously reduced, and the patients start to feel fullness very soon after the meal that is ingested.

When we did studies in our clinical research center, we were able to show that the stomach enlarges even in healthy people, three to five-fold after we eat a meal. Therefore, we can put a lot of food in the stomach before we feel full.

The operations of Roux-en-Y gastric bypass, and the simpler operation of sleeve gastrectomy provides an opportunity to reduce the amount of food that can be accommodated in the stomach, and therefore patients develop fullness and a message goes to the brain to stop eating.

We believe that these are examples that might be applied in the future with endoscopic therapy. For example, there are attempts to reduce the size of the stomach through endoscopic approaches that reduce the ability to accommodate food.

We also have initial research going on using an internal sleeve, which is passed into the small intestine, and anchored in the duodenal bulb. And this sleeve prevents the mixture of digestive enzymes with food, until the food has been passed well down into the small intestine. And therefore, it induces a malabsorptive process, just like a Roux-en-Y gastric bypass does.

So in summary, the research going on at Mayo Clinic's Digestive Diseases Division provides new opportunities to change the way in which we can treat patients with obesity. We believe that understanding the function of the stomach and the small intestine is critically important in order to devise and optimize surgical, as well as endoscopic treatments for the future.

And we perceive that this is very relevant because the medical and pharmacological management of obesity seems to be lagging behind because of the side effects that are associated with the medications that have been proposed to date. Thank you.