



## DUMPING SYNDROME

Under normal physiologic conditions, the stomach and pylorus (the opening of the stomach into the small intestine), control the rate at which the gastric contents leave the stomach. That is, the stomach, pancreas and liver work together to prepare nutrients (or sugar) before they reach the small intestine for absorption. The stomach serves as a reservoir that releases food downstream only at a controlled rate, avoiding sudden large influxes of sugar. The released food is also mixed with stomach acid, bile, and pancreatic juice to control the chemical makeup of the food that goes downstream and avoid the *“dumping syndrome”*.

Dumping syndrome is usually divided into early and late phases. The two phases have separate physiologic causes and will be described separately. In practical fact, a patient usually experiences a combination of these events and there is no clear-cut division between them. Rapid gastric emptying, or early dumping syndrome, happens when the lower end of the small intestine (jejunum) fills too quickly with undigested food from the stomach. After the dumping syndrome, patients can develop abdominal bloating, pain, vomiting, and vasomotor symptoms (flushing, sweating, rapid heart rate, lightheadedness). Finally, some patients have diarrhea.

Since with the Roux-en-Y Gastric Bypass the stomach is not being used (hence the name) and a new small pouch that directly connects to the small intestine is created there may be dumping. **Early dumping syndrome** is due to the now rapid gastric emptying causing bowel distension plus movement of fluid from the blood to the intestine to dilute the intestinal contents. These symptoms usually occur 30 to 60 minutes after eating and are called the early dumping syndrome. **Late dumping syndrome** has to do with the blood sugar level. The small bowel is very effective in absorbing sugar, so that the rapid absorption of a relatively small amount of sugar can cause the glucose level in the blood to rise rapidly. The pancreas responds to this glucose challenge by increasing the insulin output. Unfortunately, the sugar that started the whole cycle was such a small amount that it does not sustain the increase in blood glucose, which tends to fall back down at about the time the insulin surge, really gets going. These factors combine to produce hypoglycemia (low blood sugar) which causes the individual to feel weak, sleepy and profoundly fatigued.

Restricting simple carbohydrates (rice, pasta, potatoes and other sweet-tasting foods), eating more protein and not drinking liquids during a meal can reduce the symptoms of dumping. Further, avoid foods that are very hot or very cold. These can trigger symptoms.

Obviously, surgeons consider dumping syndrome to be a beneficial effect of Gastric Bypass Surgery. It provides quick and reliable negative feedback for intake of the “wrong” foods. In practice, most patients do not experience full-blown symptoms of dumping more than once or twice. Most simply say that they have lost their taste for sweets.

**Warning:** *Late dumping is the mechanism by which sugar intake can create low blood sugar, and it is also a way for patients to get into a vicious cycle of eating. If the patient takes in sugar or a food that is closely related to sugar (simple carbohydrates like rice, pasta, potatoes) they will experience some degree of hypoglycemia in the hour or two after eating. The hypoglycemia stimulates appetite, and it's easy to see where that is going.*

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