PANCREAS

Pancreatic-head resection improves glucose control

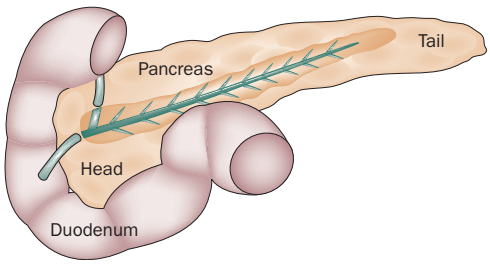
Changes in glycemic control after partial pancreatectomy are dependent on the part of the pancreas resected, according to a German research group. Menge and colleagues reported that removal of the pancreatic head transiently improved glucose control, whereas resection of the pancreatic tail did not, despite producing similar changes in insulin secretion. Furthermore, these authors identified obesity and high blood glucose levels before surgery as risk factors for developing postoperative hyperglycemia.

Previous studies on pancreatic samples from human autopsies demonstrated that symptoms of diabetes mellitus occur when approximately 65% of β cells are lost. Nevertheless, few data are available on the metabolic effects of 50% partial pancreatectomies, which are often performed in patients with pancreatic tumors or chronic pancreatitis.

Menge and colleagues assessed postoperative glucometabolic changes in 37 patients who underwent either pancreatic-head resection (duodenopancreatectomy or duodenum-preserving pancreatic-head resection) or pancreatic-tail resection. Of these patients, 14 had chronic pancreatitis and 10 had pancreatic carcinoma. A control group of 13 patients had benign pancreatic tumors or extrapancreatic masses, which do not have a major effect on pancreatic function.

All patients underwent 240 min oral glucose-tolerance tests before and after surgery. Partial pancreatectomy decreased postchallenge insulin secretion by 49% in patients with chronic pancreatitis, by 52% in those with pancreatic tumors and by 55% in the control group; however, no changes in insulin sensitivity were observed in any group. Postchallenge C-peptide levels after surgery were markedly lower in all three groups than before surgery. Surprisingly, pancreatic-head resection transiently decreased postchallenge glucose excursions, whereas pancreatic-tail resection resulted in elevated fasting and postchallenge glucose levels. High preoperative BMI and fasting glucose levels were strongly associated with poor glycemic control after surgery.

The unequal effect of pancreatic-head and pancreatic-tail resection on glucose control is unlikely to be explained by a different extent of β-cell loss, as the distribution of β cells within the human pancreas is relatively homogeneous, and the decrease in insulin secretion was similar after both types of surgical procedure. The authors posit that improvements seen after pancreatic-head resection result from a delay in gastric emptying. They point out that these improvements were observed immediately after surgery, but whether partial pancreatectomy causes long-term changes in glucose control is not known.



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Original article Menge, B. A. *et al.* Metabolic consequences of a 50% partial pancreatectomy in humans. *Diabetologia* **52**, 306–317 (2009).