Islet cell autotransplantation and chronic pancreatitis – still options

Michael B. Farnell

Department of Surgery, College of Medicine, Mayo Clinic, Rochester, MN, USA

Historically, total pancreatectomy was reserved as a last resort for patients in whom all other options for managing intractable pain caused by chronic pancreatitis had been exhausted. Typically, completion pancreatectomy was employed in patients in whom either a drainage procedure or a pancreatic resection had failed. Islet autotransplantation has made total pancreatectomy a more attractive primary surgical option because it both preserves endogenous insulin production and removes all of the chronically inflamed and fibrosed pancreatic parenchyma. Moreover, although it does not necessarily prevent any future need for exogenous insulin, the diabetic state that results is less ‘brittle’.

Billings et al.1 reported that quality of life following total pancreatectomy with longterm follow-up is decreased compared with that in age- and gender-matched controls, and noted a 3% mortality rate from hypoglycaemia. Islet autotransplantation helps to avoid the dangerous problem of hypoglycaemia unawareness experienced by many patients who undergo total pancreatectomy without it. The durability of islet autotransplantation following total pancreatectomy has been previously reported.2,3-4

In August’s issue, Morgan et al.5 presented 36 patients who underwent total pancreatectomy and islet autotransplantation over a 15-month period. Although follow-up was limited, the main thrust of the authors was that the mode of islet autotransplantation has implications with regard to the overall cost of the procedure.

Three techniques have been used to infuse islets into the portal circulation following the obligate delay (approximately 4 h) from harvesting to the completion of islet processing: (i) maintaining the patient under general anaesthesia, with the abdomen open, until the processed islets are returned to the operating room (OR) for infusion into the portal circulation; (ii) postoperative percutaneous transhepatic infusion utilizing interventional radiologic techniques (the procedure used in the present report), and (iii) operative placement of a catheter in the portal circulation via a colic vein or the recanalized umbilical vein, as reported by Ong et al.,6 with autologous islet infusion conducted via the catheter in a monitored setting (intensive care unit) postoperatively.

They report an estimated saving per patient of approximately US$20 000 in decreased OR time, and an opportunity cost-saving of US$12 871 represented by the additional surgeon productivity engendered by more efficient use of the OR and surgeon availability. The authors conclude that postoperative percutaneous transhepatic islet autotransplantation is safe and more cost-effective than either intraoperative or percutaneous transhepatic infusion. More recently, we have utilized intraoperative catheter placement into the portal vein via either a colic vein branch or the recanalized umbilical vein. This method of securing the mesocolon or the round ligament to the undersurface of the abdominal wall and bringing the catheter out percutaneously allows the catheter to be removed from the low-pressure portal venous system after islet infusion without the need for an additional surgical procedure.

Total pancreatectomy and islet autotransplantation will be offered increasingly to patients with chronic pancreatitis and intractable pain in whom medical and interventional endoscopic management have failed. Although Morgan et al.5 have shown that postoperative percutaneous transhepatic islet autotransplantation after total pancreatectomy for chronic pancreatitis is safe and more cost-effective than intraoperative infusion, all three methods of accessing the portal circulation should remain in the armamentarium of centres performing total pancreatectomy and islet autotransplantation for chronic pancreatitis.

Conflicts of interest
None declared.

References