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POSTER 3

Title: Pain and Blood Glucose Control after Total Pancreatectomy and Islet Autotransplantation in Patients with Chronic Pancreatitis- 9 year follow up.

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INTRODUCTION

The hallmark of chronic pancreatitis is a progressive inflammatory destruction of the pancreas leading to exocrine pancreatic deficiency, chronic severe abdominal pain and eventually diabetes. The nflammatory process is irreversible despite medications or endoscopic procedures as it is often driven by genetic mutation in an affected individual. Surgical excision of the entire pancreas (total pancreatectomy, TP) is the last resort treatment reserved for patients with intractable abdominal pain compromising the patient's daily personal and professional life. However, the utility of TP has been hampered by post-surgical diabetes and risks related to this major surgical procedure. Transplantation of the pancreatic islets isolated from the excised own pancreas back to the patient aims to restore optimal blood glucose control and to prevent diabetes. In this study, we present clinical outcomes of 9-years after combining Total Pancreatectomy and Islet Transplantation (TPIAT) procedure in patients with chronic pancreatitis.

METHODS AND PROCEDURES

Forty-two patients with chronic or recurrent acute pancreatitis were treated with TPIAT over the last 9 years at the University of Chicago Medical Center. There were 14 males and 28 females in a median age of 33 (6-65) and with median BMI of 25 (17-39). Five (12%) patients were diabetic prior to surgery. Islet isolation was performed at our local laboratory compliant with the current Good Manufacture Practice regulations. Islet purification was implemented in 4 (10%) cases to reduce islet pellet volume below 20mL for intraportal infusion.

RESULTS

Prior to the surgery, all patients experienced significant impairment in their daily activities due to chronic pancreatitis and relied on opioids for pain control. Most of the patients (93%) reported resolution of pancreatic-type abdominal pain by the postoperative year one. The rate of patients requiring opioids for different types or locations of pain declined over time from 31% at 1-year to 12% at 5-year and 9-year follow-up after the surgery. Patients received on average 211,000±111,000 islet equivalents (IEQ), (2,500±1,600) during the islet transplant procedure. The majority of patients (95%) maintained endocrine beta cell function during the follow-up (serum c-peptide >0.5ng/ml). Overall, one third of patients were able to maintain long-term insulin independence after the islet transplantation. Insulin independence rate was 50% at 1-year follow-up, remained stable at 33-36% during first 7 years after TPIAT, which then declined to 27% and 17% at 8 and 9-year follow-up. Additional one third of patients benefited from partial islet function maintaining stable long-term blood glucose control (HbA1c 7.0) with some insulin supplementation. All six diabetic patients who were diabetic prior to surgery continued to have diabetes after the procedure.

CONCLUSIONS

TPIAT successfully provided the resolution of pancreatic pain and preservation of the endocrine beta cell function in over 90% of the patients with no mortality. Islet autotransplantation allowed for long-term insulin independence in one third of the patients and provided stable blood glucose control in another third of them.