

## CASE REPORT ΕΝΔΙΑΦΕΡΟΥΣΑ ΠΕΡΙΠΤΩΣΗ

# Vacuum-assisted closure in the treatment of peripancreatic fluid collection after pancreas transplantation

Following improvements in immunosuppressive therapy and the reduction of surgical complications, pancreatic transplantation has gained in popularity. The management of peripancreatic fluid collection (PPFC) is a major concern, especially in the case of retroperitoneal implantation. Percutaneous drainage catheters may be ineffective for clearing large pieces of pancreatic debris. The cases are presented here of three patients who were treated successfully with vacuum-assisted closure (VAC) for PPFC after pancreas transplantation.

Pancreas transplantation is performed to provide euglycemia in patients with type 1 diabetes mellitus (DM). Taking into consideration the side effects of immunosuppressant drugs, those patients who require renal transplantation because of diabetic nephropathy get the most benefit from pancreas transplantation. Following improvements in immunosuppressive therapy and the reduction of surgical complications, pancreatic transplantation has gained in popularity.<sup>1</sup> Vascular thrombosis, peripancreatic fluid collection (PPFC), pancreatic leakage, graft pancreatitis, with or without fistula, and infection are the main surgical complications following pancreas transplantation.

PPFC occurs frequently in the implantation site after pancreas transplantation, with a similar incidence (16%) in bladder (BD) and enteric drainage (ED).<sup>2</sup> Infection, lymphatic leakage, pancreatic leakage, with or without fistula, rejection and pancreatitis are among the causes of PPFC.<sup>3,4</sup> PPFC

is associated with increased graft loss, especially when it evolves secondary to pancreatic fistula.<sup>2</sup> Pancreatic fistula, although not frequent (9%), may require reoperation.<sup>2</sup>

Here we present 3 patients who were treated successfully with vacuum-assisted closure (VAC) for PPFC after pancreas transplantation. To our knowledge, this is the first report of successful use of VAC in the treatment of PPFC after pancreas transplantation. Informed consent was obtained from all 3 patients for presentation of their cases.

## CASE PRESENTATION

### Case 1

A 26-year-old female with complicated type 1 DM (nephropathy, neuropathy, retinopathy) had been monitored for 19 years. She underwent retroperitoneal pancreas transplantation with BD

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Υποβοηθούμενη με σύστημα κενού αναρρόφησης για τη συλλογή του περιπαγκρεατικού υγρού μετά από μεταμόσχευση παγκρέατος

Περίληψη στο τέλος του άρθρου

## Key words

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30 months after live kidney transplantation (LKT), following which the targeted blood glucose level was reached. At follow-up, she had mild neutropenia, cystitis and PPFC. As percutaneous drainage was ineffective for clearing the large pieces of pancreatic debris through the drainage catheter, a VAC (ATMOS S 042 NPWT) was applied (fig. 1). The VAC was started on postoperative day 24 and renewed nine times in 30 days, with intermittent negative pressure (35–65 mmHg). Urine culture specific antibiotic treatment was administered. The collection (0–400 cc/day) resolved completely, and the patient was discharged on postoperative day 59.

### Case 2

A 42-year-old male with complicated type 1 DM (nephropathy, neuropathy, retinopathy) had been monitored for 23 years. He underwent retroperitoneal pancreas transplantation with BD 5 years after LKT, and the targeted blood glucose level was reached. At follow-up, high amylase and lipase levels were detected in the drain fluid (6,493 U/L and 5,389 U/L, respectively). It was observed that the drains did not empty the pancreatic leak effectively, because of large pieces of pancreatic debris. A VAC (ATMOS S 042 NPWT) was applied (fig. 2) on postoperative day 14 and renewed eight times in 26 days with intermittent negative pressure (20–90 mmHg). The collection (10–460 cc/day) resolved completely, and the patient was discharged on postoperative day 46.

### Case 3

A 32-year-old male with complicated type 1 DM (nephropathy, neuropathy, retinopathy) had been monitored for 20 years. He underwent retroperitoneal pancreas transplantation with BD 8 months after LKT, after which the targeted blood glucose level was reached. He developed a surgical site infection with *Acinetobacter baumannii*, with mild neutropenia. A VAC (ATMOS S 042 NPWT) was applied on postoperative day 35, once in 6 days, with intermittent negative pressure (10–30 mmHg). Antibiotic treatment was



**Figure 1.** Pancreatic transplantation in a 26-year-old female: The vacuum-assisted closure (VAC) system was applied successfully for peripancreatic fluid collection.



**Figure 2.** Pancreatic transplantation in a 42-year-old male: The vacuum-assisted closure (VAC) system was applied successfully for peripancreatic fluid collection.

administered based on the wound culture specific antibiogram. The infection was resolved completely, and the patient was discharged on postoperative day 60.

### COMMENT

PPFC occurs secondary to lymphatic and or pancreatic leakage, with or without fistula, pancreatitis, rejection and infection after pancreas transplantation.<sup>3,4</sup> It is associated with increased graft loss, especially when it evolves secondary to pancreatic fistula, and early diagnosis and treatment are required to avoid graft loss.<sup>1</sup> Pancreatic fistulae are usually secondary to a duodenal stapler line disruption rather than anastomotic dehiscence, and can be managed conservatively with percutaneous drainage in both ED and BD transplants.<sup>1,2</sup> The solid content of pancreatic or peripancreatic necrosis may interfere with its drainage regardless of drain size.<sup>5–7</sup> Anastomotic dehiscence evolves to bacterial peritonitis and necessitates surgical exploration in ED transplants.<sup>1</sup> In spite of its high complication rate, we prefer retroperitoneal BD to ED because the complications are generally not severe and allow percutaneous management. Lack of peritoneal surface, however, leads to fluid accumulation by preventing fluid absorption, and the management of PPFC is a major concern for transplant surgeons.

Percutaneous drainage catheters were ineffective for clearing the large pieces of pancreatic debris, so VAC systems were applied for PPFC in the 3 patients presented here. To avoid the probable risk of pancreatic fistula due to

the VAC system, all of the applications were delayed for a few weeks after surgery. To our knowledge this is the first report of VAC being successfully used in the treatment of PPFC after pancreas transplantation with BD.

We conclude that VAC may be effective in controlling PPFC following pancreas transplantation with BD in cases where conventional methods failed, thus eliminating the risks of reoperation.

## ΠΕΡΙΛΗΨΗ

### Υποβοηθούμενη με σύστημα κενού αναρρόφηση για τη συλλογή του περιπαγκρεατικού υγρού μετά από μεταμόσχευση παγκρέατος

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Μαζί με τη βελτίωση της ανοσοκατασταλτικής θεραπείας, η μείωση των χειρουργικών επιπλοκών είχε κερδίσει ενδιάμεσο στην μεταμόσχευση παγκρέατος. Η διαχείριση της συλλογής των περιπαγκρεατικών υγρών αποτελεί βασική φροντίδα στη χειρουργική επέμβαση μεταμόσχευσης, ιδιαίτερα στην οπισθοπεριτοναϊκή εμφύτευση. Οι διαδερμικοί καθετήρες αποστράγγισης μπορεί να μην είναι αποτελεσματικοί για την απομάκρυνση μεγάλων παγκρεατικών θραυσμάτων. Παρουσιάζονται 3 ασθενείς οι οποίοι υποβλήθηκαν σε υποβοηθούμενη αναρρόφηση με σύστημα κενού για τη συλλογή περιπαγκρεατικού υγρού μετά από μεταμόσχευση παγκρέατος.

**Λέξεις ευρητηρίου:** Αρνητικό κλείσιμο πίεσης, Διαρροή παγκρέατος, Επιπλοκή, Μεταμόσχευση παγκρέατος, Φλεγμονή του παγκρέατος, VAC

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