



# Tisseel® Fibrin Sealant for Management of Pancreatic Fistula Post Simultaneous Pancreas Kidney Transplantation

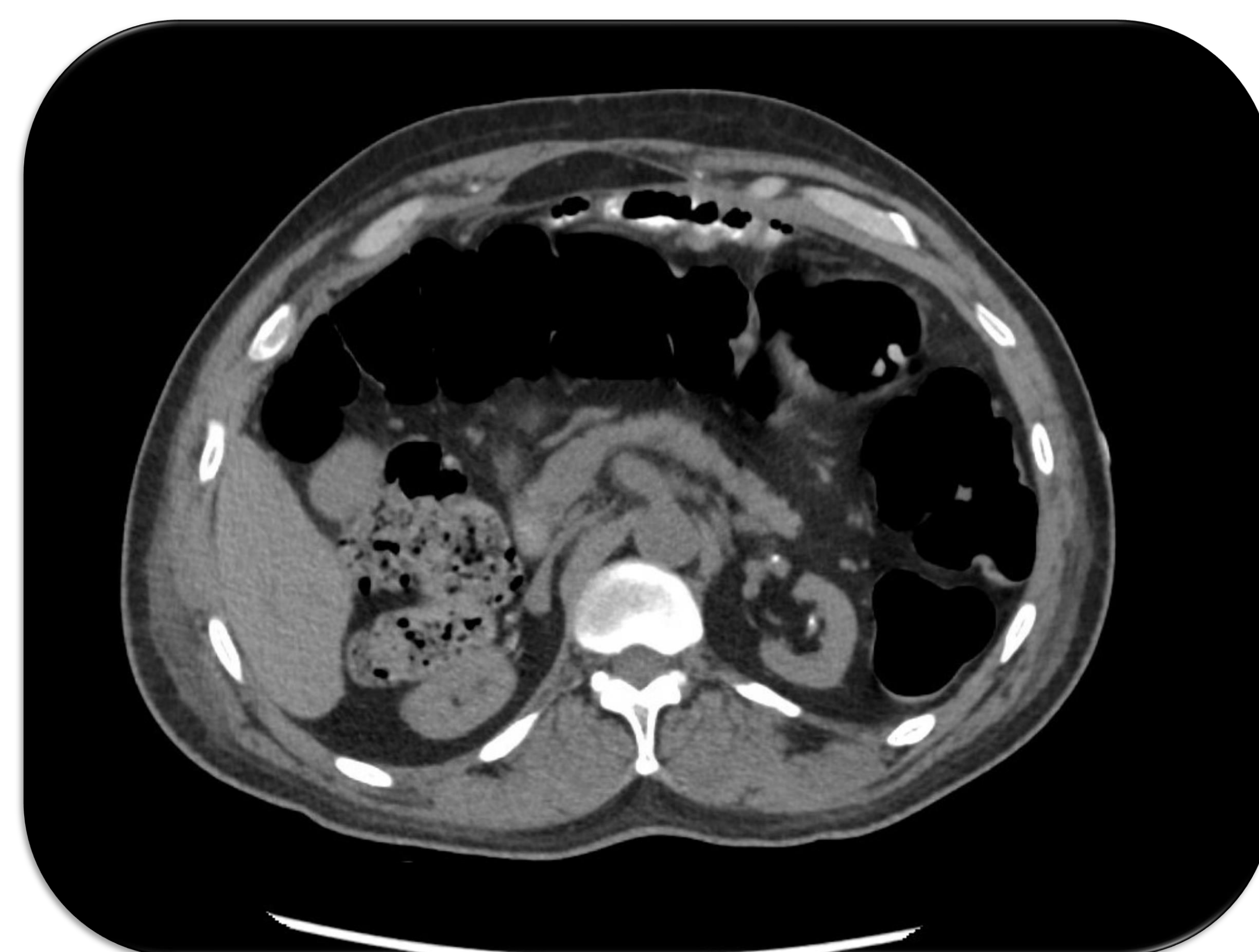
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## Introduction

Postoperative pancreatic fistulas after Simultaneous Pancreas-Kidney Transplant (SPK) can contribute to graft failure and prolonged hospital stays. Persistent high-output fistulas may require re-laparotomy for reinforcement of the anastomosis. Synthetic tissue sealants have shown increased efficacy in surgical wound hemostasis. This case reports the novel use of synthetic tissue sealants to repair pancreatic enteric anastomoses.

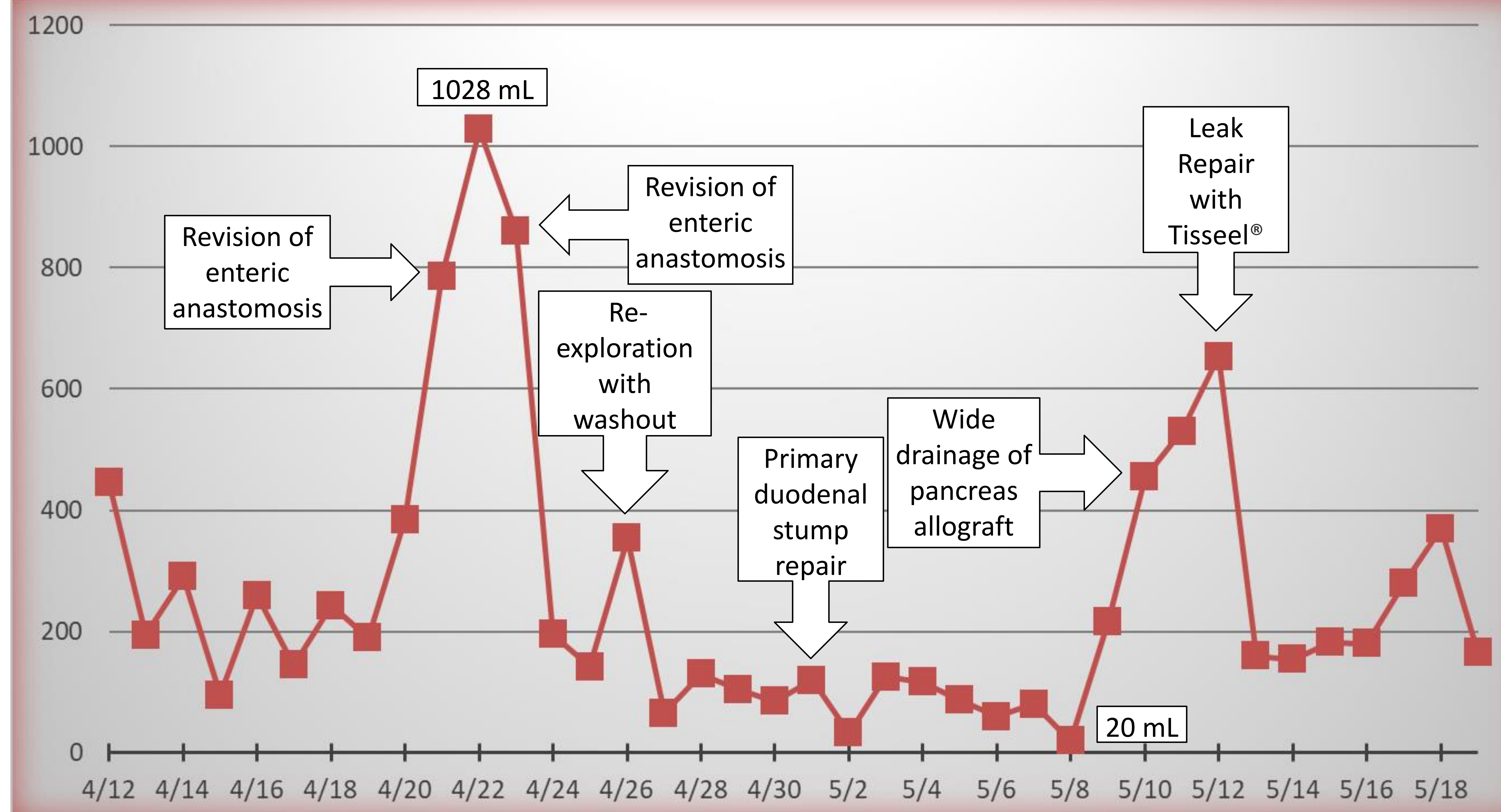
## Background

The pancreas has a very thin, delicate fibrous capsule, creating a challenge for transplant because it can be easily damaged by manipulation during surgery. Tisseel® Fibrin Sealant includes human-derived Sealer Protein (fibrinogen) with synthetic aprotinin (fibrinolysis inhibitor) and human Thrombin. When the components are combined, a fibrin clot is formed. This has been useful as a hemostatic agent and as a sealant of colonic anastomoses. We report the first successful use of fibrin sealant at the non-anastomotic sites on the body of the pancreas allograft to manage pancreatic fistula post SPK.



CT Abdomen - May 11, 2023

## Pancreatic Fistula Output

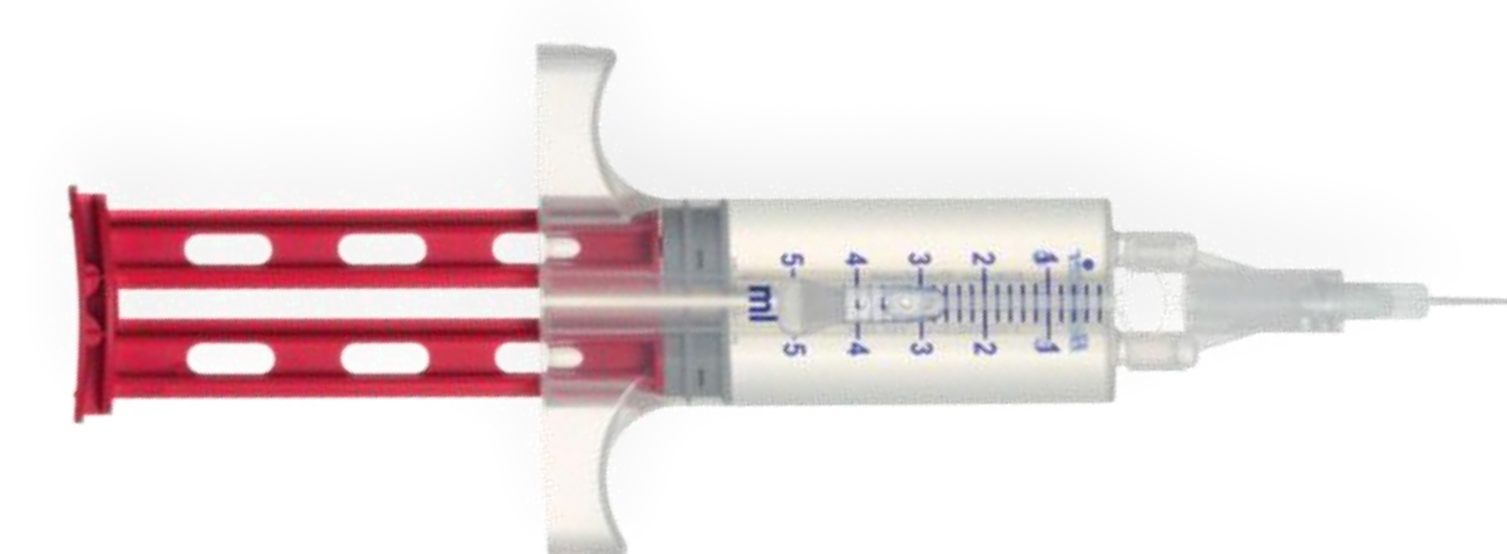


## Case Description

A 55-year-old Type 1 diabetic patient with ESRD on peritoneal dialysis underwent a SPK transplant on 4/12/23. The patient had good renal and pancreatic function postoperatively, however he developed acute graft pancreatitis associated with high serum and drain amylase/lipase levels on 4/17/23. Despite decreasing serum levels, drain output persisted. Exploratory laparotomy revealed a pancreatic leak posterior to the enteric anastomosis on 4/21/23, and the patient underwent surgical repair with creation of a new anastomosis site. Subsequently, there was persistently high output from the pancreatic fistula at different locations, despite multiple surgical repairs. On 5/12/23 an enteric leak from a 0.5 cm defect at the upper lateral portion of the revised pancreas allograft enteric anastomosis was found.

## Case cont.

The patient underwent one single layer repair since the tissue was friable and a second layer repair would create more tension. No omentum was available for patching; therefore, Tisseel® was sprayed over the enteric repair. Postoperatively, the drainage volume decreased, and the patient was doing well. Serum amylase and lipase were within normal limits, and drain output was decreasing. Serum glucose was normal without use of exogenous insulin. The kidney allograft functioned normally with serum creatinine of 0.9mg/dL. The patient was discharged with a drain to allow slow healing of the fistula.



Tisseel® Fibrin Sealant  
<https://advancedsurgery.baxter.com/tisseel>. Accessed October 11, 2023

## Discussion

Pancreatic fistulas are a significant complication of SPK, occurring in approximately 30% of cases. They present a risk for infection, hemorrhage, and malnutrition. High output fistulas which are refractory to drain placement require relaparotomy. Persistent leaks after surgical revision are uncommon. The pancreas is a fragile, glandular organ with an areolar capsule, prone to subtle injury during surgery. Tisseel® forms a fibrin capsule around the pancreas, thereby sealing enigmatic leaks. In our case, after Tisseel® use, fistula output decreased enough to start oral feeding, and the patient was discharged home in a timely manner.

## Conclusion

Application of fibrin gel products may be an additional option for conservative management of post-pancreas transplant leaks. This is particularly beneficial when there is no evidence of a focal anatomical leak point. Prompt and effective management of pancreatic fistulas with fibrin products may reduce the number of surgical revisions and prevent prolonged hospital stays.

## References

Dintzis SM, Liggitt D. 14 – Pancreas. In: Treuting PM, Dintzis SM, eds. *Comparative Anatomy and Histology*. Seattle, WA: Academic Press; 2012: 203-209. <https://doi.org/10.1016/B978-0-12-381361-9.00014-7>.

Lindahl JP, Hartmann A, Horneland R, et al. Improved patient survival with simultaneous pancreas and kidney transplantation in recipients with diabetic end-stage renal disease. *Diabetologia*. 2013;56(6): 1364-1371. doi:10.1007/s00125-013-2888-y

Nahm CB, Connor SJ, Samra JS & Mittal A. Postoperative pancreatic fistula: a review of traditional and emerging concepts. *Clinical and Experimental Gastroenterology*. 2018, 11: 105-118. DOI: 10.2147/CEG.S120217

Tisseel fibrin sealant. Prescribing information. Baxter; 1998. Accessed October 10, 2023. [https://baxterpi.com/pi-pdf/Tisseel\\_PI.pdf](https://baxterpi.com/pi-pdf/Tisseel_PI.pdf)

Woeste G, Moench C, Hauser IA, Geiger H, Scheuermann E & Bechstein WO. Incidence and treatment of pancreatic fistula after simultaneous pancreas kidney transplantation. *Transplantation Proceedings*. 2010; 42(10): 4206-4208, <https://doi.org/10.1016/j.transproceed.2010.09.027>.