

## Surgical Strategy to Prevent Pancreatic Leakage Following Left-sided Pancreatectomy

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Despite significant improvement in the safety and efficacy of pancreatic surgery, post-operative pancreatic fistulae (or leakage) remain an unsolved problem. Because the leading cause of death after the pancreatic surgery, still, has been pancreatic fistula. Furthermore, beyond mortality, pancreatic fistula is associated with other complications, particularly delayed gastric emptying, ileus, wound infection, intraabdominal abscess, hemorrhage and sepsis. The reported incidence of pancreatic fistula or leak, whether after distal pancreatectomy or pancreatoduodenectomy, ranges from 2% to 24%. This wide variation may be explained by the different definition used.

### Definition of Pancreatic Fistula

Definition of pancreatic fistula have been adopted

and modified by many investigators, most notably, the International Study Group on Pancreatic Fistula (ISGPF), a group of 37 famous pancreatic surgeons from 15 countries, developed and published a universal definition and classification scheme for pancreatic fistula as below Table in July 2005.

### Surgical Strategies Proposed in the Literature

Regarding how to manage the pancreatic stump to prevent pancreatic fistula after distal pancreatectomy, it still entails many difficulties and remains controversial. Especially, a soft pancreas with nonfibrotic panrenchymaa is associated with a high incidence of pancreatic fistula.

Even though there were several techniques and instruments proposed in many studies, we do not have

Criteria	No Fistula	Grade A Fistula	Grade B Fistula	Grade C Fistula
Drain amylase	<3 times normal serum amylase	>3 times normal serum amylase	>3 times normal serum amylase	>3 times normal serum amylase
Clinical conditions	Well	Well	Often Well	Ill appearing/bad
Specific treatment	No	No	Yes/No	Yes
US/CT (if obtained)	Negative	Negative	Negative/Positive	Positive
Persistent drainage (> 3 weeks)	No	No	Usually Yes	Yes
Signs of infection	No	No	Yes	Yes
Readmission	No	No	Yes/No	Yes/No
Sepsis	No	No	No	Yes
Reoperation	No	No	No	Yes
Death related to fistula	No	No	No	Yes

Signs of infection include elevated body temperature >38°C, leukocytosis, and localized erythema, induration, or purulent drainage. Readmission is any hospital admission within 30 days following hospital discharge from the initial operation. Sepsis is the presence of localized infection and positive culture with evidence of bacteremia (i.e., chills, rigors, elevated WBC) requiring IV antibiotic treatment, or hemodynamic compromise as demonstrated by high cardiac output and low SVR within 24 h of body temperature >38°C.

Adapted from Surgery 2005; 138:8-13.<sup>5</sup>

an ideal method to close the pancreatic stump.

#### 1. Anastomosis

Pancreaticojejunostomy in cases of proximal pancreatic duct obstruction.

#### 2. Hand–sewn closure

The most popular hand-sewn technique is stump closure with full-thickness mattress sutures and individual ligation of the pancreatic duct.

#### 3. Staple closure

Type of instrument, application technique and size of staple as well as staple line reinforcement with mesh may influence the surgical output.

#### 4. Seromuscular patch

Gastric wall or jejunum to cover the cut and closed edge of the pancreas.

#### 5. Other recommendations

Some surgeon recommended us to use ultrasonic dissectors and ultrasonically activated scalpels after ligation of main pancreatic duct.

Use of octreotide, omental plug and fibrin–glue sealing may have some role.

#### Conclusion

The optimal technique how to close the pancreatic

stump has not been conclusively established. But there is a trend in favor of the stapling technique with some modification. And we need to analyze the possible causes of pancreatic fistula and wait well designed prospective randomized studies.

#### References

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