How to treat pancreatic injuries

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The treatment of pancreatic injuries is based on its severity classification by radiological evaluation and/or surgical exploration.
Diagnosis and grading

- preoperative evaluation
  - serial amylase measurement
  - CT (MRI)
  - ERCP
- during operative exploration for trauma
  - exposure
  - assessment of the severity of the pancreatic injury
Pancreatic injury - severity classification (AAST 1990)

- **Grade I and II**: hematoma or laceration, main duct intact
- **Grade III**: distal transection or parenchymal injury with duct injury at or to the left of the SMV
- **Grade IV**: proximal transection or parenchymal injury not involving ampulla
- **Grade V**: massive disruption of the pancreatic head with ampullary injury
Grade III
Grade III
Grade IV
Grade IV
Operative exposure
Assessment of the main pancreatic duct

- visual assessment of the pancreatic injury
- intraoperative pancreatography (or dye)
  - transduodenal or distal cannulation
  - distal cannulation
  - cholecysto- or choledocho-cholangiogram
  - intraoperative ERCP

- severity grading (AAST)
Surgical management
Surgical management of pancreatic injuries - options (Grade I-II)

- peripancreatic drainage ± hemostatic sutures
Selective nonoperative management (NOM) of low grade blunt pancreatic injury

- grade I-II, diagnosis based on CT
- 35 patients selected for NOM
- failed in 5/35
  - bowel injury 2
  - pancreatic abscess 3
    - 1 developed fistula
- no deaths among failed NOM

Duchesne et al. 2008
Surgical management of pancreatic injuries - options (Grade III)

- peripancreatic drainage  
  + hemostatic sutures  
- distal pancreatectomy  
  (<80%)  + splenectomy
Grade III
Endoscopic management of blunt pancreatic trauma grade I-III (n=132 with NOM)

- 74 observed without ERCP, 58 had ERCP → failures rates

<table>
<thead>
<tr>
<th>Grade</th>
<th>NOM</th>
<th>NOM+ERCP</th>
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<tbody>
<tr>
<td>Grade I</td>
<td>3/35 (9%)</td>
<td>0/19</td>
<td>0.49</td>
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<tr>
<td>Grade II</td>
<td>13/31 (42%)</td>
<td>3/24 (13%)</td>
<td>0.037</td>
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<td>Grade III</td>
<td>6/8 (75%)</td>
<td>5/58 (9%)</td>
<td>0.003</td>
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- if leak but contrast in main duct upstream → nasopancreatic drainage adjacent to disruption or cross if possible

- persistent duct disruption → **pancreatic duct stent**

Kong et al. Injury 2014;45:134
Grade IV pancreatic injury
Surgical management of pancreatic injuries - options (Grade IV)

- peripancreatic drainage ± hemostatic sutures
- pancreaticojejunostomy (Roux-en-Y)
  - distal (with proximal stump closure)
- subtotal or near-to-total pancreatectomy
- primary repair of the pancreas and main pancreatic duct (15 reports) (Aucar et al. 2004)
Fabian’s rule in pancreatic trauma

Suck the head and eat the tail!
Grade V pancreatic injury
Whipple?

- as a part of damage control surgery with delayed reconstruction (packing with drainage)  
  Seamon et al. 2008

- massive uncontrollable bleeding from the head of the pancreas, adjacent vascular structures, or both

- massive and unreconstructable ductal injury in the head of the pancreas

- combined unreconstructable injuries of:
  - duodenum and head of pancreas
  - duodenum, head of pancreas and CBD

  Asensio et al. 1999
Pancreatic trauma - outcome
(n=4134/3613/3898, collective series)

- mortality 19%
  - Whipple 31%
- morbidity 37%
  - fistula 14%
  - abscess 8%
  - pancreatitis 4%
  - pseudocyst 3%
  - hemorrhage 1%

Asensio et al. 1999