

PANCREATITIS AGUDA

Clasificación Intervenciones



Ateneo bibliográfico
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Introducción

15-20% PANCREATITIS AGUDA SEVERA

MORTALIDAD 8-39%

FMO primeras 1-2 semanas

80% NPI

PANCREATITIS AGUDA SEVERA

Fallo de órganos

Complicaciones locales:

ATLANTA

PETROV

WORKING GROUP

Clasificación de la P.A.

ATLANTA (1992)

LEVE

SEVERA (edad, RANSON, APACHE II/complicaciones locales)

PANCREATITIS EDEMATOSA

PANCREATITIS NECORTIZANTE

- Estéril/infectada

ACUTE PANCREATITIS WORKING GROUP (2007)

P.A. SEVERA: Fallo de órgano > 48 hs de duración

- Fase temprana = parámetros clínicos
- Fase tardía = hallazgos morfológicos

< 4 semanas de evolución

- SIN N.P.: *Colecciones líquidas agudas peripancreáticas (APFC)*
 - Estéril/infectada
- CON N.P.: *Colecciones líquidas agudas post-necróticas (PNPFC)*
 - Estéril/infectada

> 4 semanas de evolución

- SIN N.P.: *Pseudoquiste*
 - Estéril/**infectado**
- CON N.P.: *Walled-Off pancreatic necrosis (WOPN)*
 - Estéril/infectada

WORKING GROUP

- APFC
 - Estéril o infectada

- PNPFC

- Estéril
 - Infectada

- Pseudoquiste

- Estéril
 - Infectado

- WOPN

ATLANTA

Colecciones líquidas

Necrosis Pancreática
NPI

Pseuquiste
Absceso

ORIGINAL ARTICLE

Classification of acute pancreatitis—2012: revision of the Atlanta classification and definitions by international consensus

Peter A Banks,¹ Thomas L Bollen,² Christos Dervenis,³ Hein G Gooszen,⁴
Colin D Johnson,⁵ Michael G Sarr,⁶ Gregory G Tsiotos,⁷ Santhi Swaroop Vege,⁸

Acute Pancreatitis Classification Working Group

DIAGNOSTICO

Dolor —→ *amilasa/lipasa* —→ *(-):TC*
—→ *(+): TC en 5/7 días*

- *El inicio de la pancreatitis se define el día del inicio del dolor*

- **PANCREATITIS ENFISEMATOSA**

- **PANCREATITIS NECROTIZANTE**

Pancreática, peripancreática, o ambas

COMPLICACIONES DE LA P.A.

LOCALES

- Colección líquida aguda peripancreática
- Colección necrótica aguda
- Pseudoquiste
- WON

SISTÉMICAS

- Fallo de órgano
- Exacerbación de co-morbilidad

FASES EN LA P.A.

PRECOZ

menos de 7 días

S.R.I.S. - fallo de órgano

Exacerbación de co-morbilidad

TARDÍA

más de 7 días

COMPLICACIONES LOCALES

PANCREATITIS AGUDA SEVERA

= fa

- ▶ Mild acute pancreatitis
 - ▶ No organ failure
 - ▶ No local or systemic complications
- ▶ Moderately severe acute pancreatitis
 - ▶ Organ failure that resolves within 48 h (transient organ failure) and/or
 - ▶ Local or systemic complications without persistent organ failure
- ▶ Severe acute pancreatitis
 - ▶ Persistent organ failure (>48 h)
 - Single organ failure
 - Multiple organ failure

Table 1 Mo

Organ system

Respiratory (PaO₂)

Renal*

(serum creati

(serum creati

Cardiovascular (

For non-ventilate

Supplemental o

Room air

2

4

6–8

9–10

A score of 2 or

4

≤101

>439

>4.9

<90, pH<7.2

Necrosis infectada???

Deterioro clínico
Gas en las colecciones
PAAF???

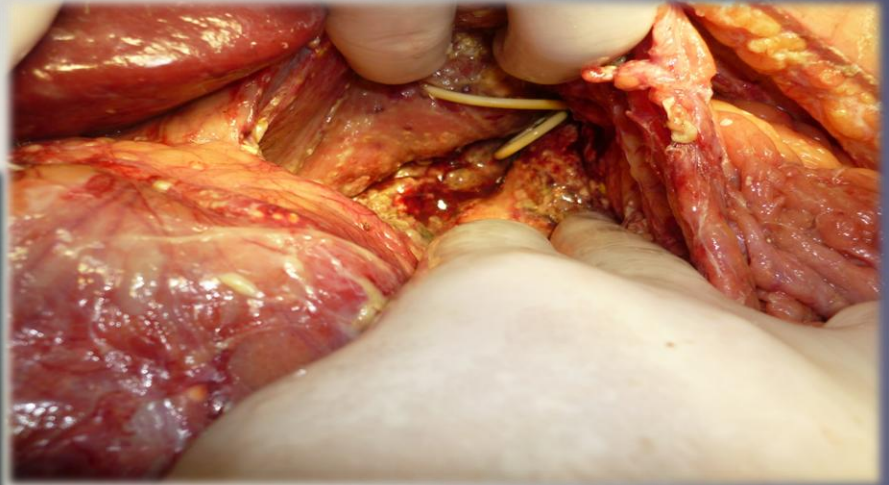
F.O. en 50% de N.P.
F.O. en 2/3 de N.P.I.!
Mortalidad 15 a 30%

Banks PA, y col. Am J Gastroenterol 2006;354:2142-50.

Besselink MG, y col. Br J Surg 2009;96:267-273.

Intervenciones en P.A.

¿Que?



¿Cuándo?

NECROSECTOMIA ABIERTA

G.S. hasta '90

MORBILIDAD 34-95%

MORTALIDAD 11-39%



J Clin Gastroenterol • Volume 45, Number 7, August 2011

Década '90 técnicas invasivas mínimas:

Control de la sepsis

Electivizar cirugía

Joris y col. 1992

Percutaneous CT-guided catheter drainage of infected acute necrotizing pancreatitis: techniques and results.

[Freeny PC](#), [Hauptmann E](#), [Althaus SJ](#),

AJR Am J Roentgenol. 1998 Apr;170(4):969-75.

Control de la sepsis 74% de los pacientes

Tratamiento definitivo 47%

Minimally invasive 'step-up approach' versus maximal necrosectomy in patients with acute necrotising pancreatitis (PANTER trial): design and rationale of a randomised controlled multicenter trial

BMC Surgery 2006, 6:6doi:10.1186/1471-2482-6-6

In conclusion, intensive medical treatment, including drainage procedures, is very effective and safe for patients with IPN and can delay or eliminate the necessity for surgery. This approach can lower the high rate of complication and mortality associated with immediate surgery.

ORIGINAL ARTICLE

A Step-up Approach or Open Necrosectomy for Necrotizing Pancreatitis

< significativa de complicaciones (FMO, fístula, sangrado, hernia incisional, DM)

Mortalidad 16 vs. 19%

35% sólo tratamiento percutáneo

van Santvoort, , Besselink, y col. N Engl J Med. Volume 362:1491-1502 [April 22, 2010](#)

CLINICAL—PANCREAS

A Conservative and Minimally Invasive Approach to Necrotizing Pancreatitis Improves Outcome

HJALMAR C. VAN SANTVOORT,* OLAF J. BAKKER,* THOMAS L. BOLLEN,[†] MARC G. BESSELINK,*
USAMA AHMED ALI,* A. MARJOLEIN SCHRIJVER,* MARJA A. BOERMEESTER,[§] HARRY VAN GOOR,^{||}
CORNELIS H. DEJONG,[¶] CASPER H. VAN EIJCK,** BERT VAN RAMSHORST,[#] ALEXANDER F. SCHAAPHERDER,**
ERWIN VAN DER HARST,^{§§} SIJBRAND HOFKER,^{|||} VINCENT B. NIEUWENHUIJS,^{|||} MENNO A. BRINK,^{¶¶}
PHILIP M. KRUYT,^{##} ERIC R. MANUSAMA,*** GEORGE P. VAN DER SCHELLING,*** TOM KARSTEN,§§§
ERIC J. HESSELINK,^{||||} CORNELIS J. VAN LAARHOVEN,^{¶¶¶} CAMIEL ROSMAN,^{###} KOOP BOSSCHA,****
RALPH J. DE WIT,⁺⁺⁺ ALEXANDER P. HOUDIJK,^{§§§§} MIGUEL A. CUESTA,^{|||||} PETER J. WAHAB,^{¶¶¶¶} and
HEIN G. GOOSZEN* for the Dutch Pancreatitis Study Group

tients with necrotizing pancreatitis. **METHODS:** We collected data from 639 consecutive patients with necrotizing pancreatitis, from 2004 to 2008, treated at 21 Dutch hospitals. Data were analyzed for disease severity, interventions (radiologic, endoscopic, surgical), and outcome. **RESULTS:**

Fewer complications occurred in patients undergoing catheter drainage as first intervention than in patients undergoing primary necrosectomy (42% [54/130] vs 64%

[22/130] vs 31% [24/78], $P = .02$). There was no difference in mortality (20% [26/130] vs 18% [14/78], $P = .71$).

Organ failure. Organ failure during admission occurred in 240 of 639 patients (38%). Mortality occurred almost exclusively in patients with organ failure as compared with patients without organ failure (35% [85/240] vs 2% [8/399], $P < .001$).

of a visceral organ in 35 of 208 patients (17%). The longer the time between admission and intervention, the lower the risk of complications: 0 to 14 days, 72% (13/18); 14 to 29 days, 57% (53/93); and >29 days, 39% (38/97) ($P = .007$). This did not change when adjusted for baseline

Percutaneous Lavage as Primary Treatment for Infected Pancreatic Necrosis

Danny Sleeman, MD, FACS, David M Levi, MD, FACS, Michael C Cheung, MD, Amir Rahnemai-Azar, MD, Sonja Parisek, MD, Victor Casillas, MD, Anna Echenique, MD, Jose Yrizarri, MD, JJ Guerra, MD, Joe U Levi, MD, FACS, Alan S Livingstone, MD, FACS

(J Am Coll Surg 2011;212:748–754.

Between 1993 and 2009, a prospective nonselected series of 63 consecutive patients with microbiologically confirmed IPN were enrolled with the intent of treating them nonoperatively, and they

CONCLUSIONS: Percutaneous catheter drainage and serial lavage are an effective alternative to open surgical debridement in patients with IPN. Overall survival is excellent, and most patients avoid the morbidity of open debridement. A minority of patients deteriorate, but most of those can be salvaged with open drainage. (J Am Coll Surg 2011;212:748–754. © 2011 by the American College of Surgeons)

[Br J Surg.](#) 2011 Jan;98(1):27-8.

Systematic

review of percutaneous catheter drainage as primary treatment for necrotizing pancreatitis (Br J Surg 2011; 98: 18-27).

11 estudios incluyeron un total de 384 pacientes sometidos a DPC como tratamiento primario

En los datos recogidos en esta revisión sistemática, el 21,2% de los pacientes tuvo una o más complicaciones, con sólo nueve complicaciones reportadas relacionadas con el procedimiento. Las series de necrosectomía quirúrgica reportan tasas de complicaciones considerablemente más altas, yendo del 34% al 68% [62,63]. Asimismo, en el presente estudio, sólo el 15,0% de los pacientes desarrollaron una fístula pancreática, comparado con el 22-47% en los estudios sobre necrosectomía quirúrgica [64,66]. Sin

La tasa global de mortalidad fue de 17,4% (67 de 384 pacientes).

MANEJO PERCUTANEO DE LA NECROSIS PANCREATICA INFECTADA: EXPERIENCIA INICIAL HMALL

- MORTALIDAD: 1 (12.5%)
- DIAS INTERNACION: 72.1 (45-96)
- DIAS DE UTI: 25 (4-60)
- DRENAJES AL ALTA: 4 pacientes (50%)
- DIAS TRATAMIENTO AMBULATORIO: 63 (30-120)
- TOTAL TC: 7 (5-10)

BRIEF ARTICLE

Percutaneous ca

choledochoscop

perin pancreatic is
J Gastrointest Surg (2012) 16:248-257
DOI 10.1007/s11605-011-1759-4

2011 SSAT PLENARY PRES

Dual Modality Dr
Pancreatic Necros
Radiological Proce
Compared to Star

[Gastrointest Endosc.](#) 20

Wide percutaneous ac
application

[Navarrete C](#), [Castillo C](#), [Caracci M](#), [Vargas P](#), [Goberlet J](#), [Robles I](#).

PMID: 20951985 [PubMed - indexed for MEDLINE]



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REVIEW

Interventions for Necrotizing Pancreatitis

Summary of a Multidisciplinary Consensus Conference

Martin L. Freeman, MD, Jens Werner, MD,† Hjalmar C. van Santvoort, MD, PhD,‡
Todd H. Baron, MD,§ Marc G. Besselink, MD, PhD,|| John A. Windsor, MD,¶ Karen D. Horvath, MD,#
Eric vanSonnenberg, MD,** Thomas L. Bollen, MD,†† Santhi Swaroop Vege, MD,§
and An International Multidisciplinary Panel of Speakers and Moderators‡‡*

(Pancreas 2012;41: 1176–1194)

TABLE 1. Classification of Interventions for Pancreatic Necrosis by Visualization, Route, and Purpose

Visualization	
V1 Radiological	Using only radiological modalities (e.g. fluoroscopy, CT, ultrasound, MR) to visualize and assist entering the target
V2 Endoscopic	Using any white light endoscopic instrument (e.g. flexible, or rigid endoscope, urological endoscope) to visualize
V3 Hybrid	Using an endoscopic technique as the primary mode of visualization, assisted by a real time radiological modality
V4 Open	Using any method where skin and any other body layers are cut to expose the site of the procedure
Vx	Insufficient information
Vz	Other visualization technique
Route	
R1 Per-os transpapillary	External orifice entry point, internal route traversing duodenal papilla to enter pancreatic duct
R2 Per-os transmural	External orifice entry point, internal route traversing gastrointestinal wall
R3 Percutaneous retroperitoneal	Skin external entry point, internal route traversing retroperitoneum
R4 Percutaneous transperitoneal	Skin external entry point, internal route traversing peritoneum
R5 Percutaneous transmural	Skin-external entry point, internal route traversing gastrointestinal wall
Rx	Insufficient information
Rz	Other route
Purpose	
P1 Drainage	Letting out fluid and/or solid material, externally out of the body or internally into the gastrointestinal tract
P2 Lavage	Flushing away solid matter with fluid to facilitate external or internal drainage
P3 Fragmentation	Breaking down solid matter by instrumental or mechanical disruption to facilitate external or internal drainage
P4 Debridement	Taking or cutting out solid matter with either sharp or blunt dissection
P5 Excision	Cutting out all or part of the pancreas, with the intention to fully remove all necrotic tissue
Px	Insufficient information
Pz	Other purpose

Consensus questions (CQs) 1 to 19 (some of the questions were combined and reorganized after the original conference) were as follows:

CQ 1 and 2: What are the main points in the revision of the Atlanta classification with regard to pancreatic and peripancreatic necrosis?

CQ 3 and 4: What is the diagnostic role of computed tomography, magnetic resonance cholangiopancreatography, and endoscopic ultrasound in management of necrotizing pancreatitis?

CQ 5: How is infected necrosis diagnosed, and is fine needle aspiration still required?

CQ 6: When is intervention indicated for sterile and infected necrosis, and is there a role for medical management alone?

CQ 7: What are the available methods for intervention in pancreatic and peripancreatic necrosis?

CQ 8: When is open surgical debridement indicated for treatment of necrotizing pancreatitis and which technique has the best results?

CQ 9: What are the currently available minimally invasive approaches to necrosectomy?

CQ 10 and 11: What are the results with a laparoscopic approach to necrosectomy?

CQ 12: What are the results with a minimally invasive retroperitoneal approach to necrosectomy, including video-assisted retroperitoneal debridement?

CQ 13: What are the results of an image-guided percutaneous-only approach to debridement of necrosis, and when is it indicated?

CQ 14 and 15: What are the various techniques of endoscopic necrosectomy, including the endoscopic ultrasound-guided technique?

CQ 16: What are the outcomes of multicenter studies on endoscopic necrosectomy?

CQ 17: What are the results of a combined endoscopic and percutaneous approach?

CQ 18: What are the results with the "step-up" approach?

CQ 19: What are the outcomes of endoscopic, percutaneous image-guided, and surgical management of disconnected pancreatic duct and recurrent fistula?

TABLE 3. Outcomes of Various Open Surgical Necrosectomy Techniques for Necrotizing Pancreatitis

First Author (Year)	No. Patients	Patients Infected, n (%)	Timing of Intervention (Days After Presentation)	Morbidity, %	Reoperations, % or n/Patient	Mortality, n (%)
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1990

1997

Farkas

TABLE 6. Outcomes of Endoscopic Management With or Without Adjunctive Techniques for Necrotizing Pancreatitis

First Author (Year)	No. Patients	Patients Infected, n (%)	Timing of Intervention (Days After Presentation), Mean (Range)	Technique	Endoscopic Reinterventions, Mean (Range)	Clinical Success of Endoscopic Management Plus Any Adjunctive PCD, n (%)	Morbidity, %	Mortality, n (%)
Baron (1996) ⁵⁸	11	3 (27)	50	Transmural stents plus nasocystic or per gastrostomy lavage ± transpapillary stenting	2.7 (2–4)	9 (82)	45	0
Seifert (2000) ⁵⁹	3	1 (33)	14–64	DEN (first report)	NA	3 (100)	0	0
Park (2002) ⁶⁰	9	9 (100)	42	Transmural stents ± nasocystic lavage	0.3	8 (89)	11	0
Seewald (2005) ⁶¹	13	13 (100)	NA	DEN ± nasocystic lavage, ± transpapillary stenting, sealing of pancreatic duct fistula	15	10 (77)	30 (mild)	0
Charnley (2006) ⁶²	13	11 (85)	27	DEN	4	9 (69)	NA	2 (15)
Papachristou (2007) ⁴²	53	26 (49)	49 (20–300)	Transmural stenting ± DEN ± transpapillary stenting ± PCD	3 (1–12)	43 (81)	26 (49)	3 (6)
Voermans (2007) ⁶³	25	19 (76)	84 (21–385)	DEN plus nasocystic lavage	NA	23 (92)	40 (7 severe)	0
Hocke (2008) ⁶⁴	30	30 (100)	NA	DEN	2.7 (1–16)	27 (90)	10 (all severe)	2 (7)
Escourrou (2008) ⁶⁵	13	13 (100)	28 (21–32)	DEN ± PCD	1.8 (1–3)	13 (100)	46 (15 severe)	0
Seifert (2009) ⁶⁶	93	50 (54)	43	DEN	6	78 (84)	26	7 (8)
Ross (2010) ⁶⁷	15	9 (60)	29 (4–207)	Transmural stenting plus PCD in all	1.4	100 (100)	13	0
Gardner (2011) ⁶⁸	104	40 (39)	63	DEN	3 (1–14)	95 (91)	14 (4 severe, 2 fatal)	2 (2)
Bakker (2012) ⁵⁶	10	10 (100)	59 (29–69)	DEN ± PCD or VARD	3 (2–6)	10 (100)	20 (10 severe, fatal occurring in treatment group, not procedure related)	1 (10)

Fr indicates French; NA, not available; PC, pseudocyst.

CONCLUSIONS

Many different interventions in varying states of evolution and with varying evidence to support their use are available for the treatment of pancreatic and peripancreatic necrosis. It is well accepted that these interventions should be offered in the context of optimal intensive care and medical management and that a multidisciplinary approach is required in a center with specialized expertise in interventional radiology, interventional endoscopy, intensive care, nutritional support, and surgery.

Intervention is required primarily in patients with infected pancreatic or peripancreatic necrosis, for those with clinical deterioration despite maximum medical support (ie, suspected infection), for symptomatic patients and especially those with obstruction of a viscus, and possibly for patients with septic syndrome in the absence of another explanation. Specific scenarios such as abdominal compartment syndrome or perforated necrosis are generally associated with poor outcomes and should be reserved for infected necrosis in a severely deteriorating patient. Poorly organized necrosis is more difficult to manage by any method than partially liquefied and walled off necrosis.

Traditionally, the most widely used approach to infected necrosis has been open surgical necrosectomy. Most cases can now be managed using minimally invasive techniques in specialized centers with the appropriate expertise. Percutaneous catheter drainage, endoscopic, laparoscopic and rigid videoendoscopic methods are all feasible approaches for treating infected necrosis. Combination approaches may be useful in selected patients with extensive peripancreatic necrosis. Laparoscopic approaches are technically demanding but allow for simultaneous cholecystectomy when indicated.

Current evidences favors endoscopic necrosectomy or percutaneous catheter drainage followed by minimally invasive necrosectomy as the preferred routes for intervention for infected necrosis. The step-up approach involves percutaneous or endoscopic transmural drainage for sepsis control followed by minimally invasive or open necrosectomy as indicated. In a multicenter randomized controlled trial, short-term and long-term outcomes using the step-up approach have been shown to be superior to immediate open surgery for patients with infected necrosis.³⁵ Further, a multicenter randomized controlled trial from the same group showed that endoscopic necrosectomy is superior to VARD.⁵⁶

The overriding principle of interventions for necrosis is that no single approach is optimal for all patients. The best approach is multimodal and adaptable to the individual patient. Multidisciplinary management of these patients by specialists with specific expertise in management of necrotizing pancreatitis is essential to achieve the best outcomes. Patients with severe necrotizing pancreatitis are best served at specialized centers with teams dedicated to management of this disorder. Further research, preferably randomized trials or prospective collaborative studies are required to improve current techniques and to define optimal approaches to intervention for necrotizing pancreatitis.

Conclusiones

	Menos de 4 semanas	Más de 4 semanas
SIN NECORSIS	COLECCIÓN LIQUIDA AGUDA	PSEUDOQUISTE
CON NECORSIS	COLECCIÓN NECRÓTICA	W.O.N.

- ▶ Mild acute pancreatitis
 - ▶ No organ failure
 - ▶ No local or systemic complications
- ▶ Moderately severe acute pancreatitis
 - ▶ Organ failure that resolves within 48 h (transient organ failure) and/or
 - ▶ Local or systemic complications without persistent organ failure
- ▶ Severe acute pancreatitis
 - ▶ Persistent organ failure (>48 h)
 - Single organ failure
 - Multiple organ failure

¿Que?

¿Cuándo?

