

**1) In patients with alcohol-related chronic pancreatitis, what is the safety and efficacy of a) coeliac access block vs medical management b) thoracoscopic splanchnicectomy vs medical management c) coeliac access block vs splanchnicetomy, in improving patient outcomes?**  
**2) In patients with alcohol-related chronic pancreatitis, what is the safety and efficacy of a) surgery vs medical management b) endoscopic interventional procedures vs medical management c) surgery vs endoscopic interventional procedures?**  
**3) In patients with alcohol-related chronic pancreatitis, does early versus late a) coeliac access block b) splanchnicetomy c) endoscopic interventional procedures d) surgery improve patient outcomes?**

Reference	Study type Evidence level	Number of patients	Patient characteristics	Intervention	Comparison	Length of follow-up	Outcome measures	Source of funding
<b>Cahen DL, Gouma DJ, Nio Y et al. Endoscopic versus surgical drainage of the pancreatic duct in chronic pancreatitis.[see comment]. <i>New England Journal of Medicine.</i> 2007; 356(7):676-684. Ref ID: 2024</b>	1++ RCT	N=39  Lost to follow-up: One patient lost at 6 mths (surgery)  Study terminated early due to interim analysis reporting a significant difference favouring surgery	Patients with chronic pancreatitis  Inclusion criteria: diagnosis based on clinical symptoms and morphologic changes detected by imaging studies; pancreatic functional insufficiency; or both  Obstruction of the pancreatic duct as determined by imaging  Severe, recurrent pancreatic pain insufficiency relieved by non-narcotic analgesics or requiring opiates  Exclusion criteria Age < 18 or > 80 yrs Enlargement of the pancreatic head > 4 cm	<b>Endoscopic treatment</b>  Endoscopic transampullary drainage of the pancreatic duct  N=19  Median number of procedures 5  Pancreatic-duct obstruction was caused by a combination of strictures and stones in 15/19 (79%), by stones alone in 3/19 (16%) and by strictures alone in 1/19 (5%)	<b>Surgery</b>  Operative pancreaticojejunostomy  N=20  18 underwent a pancreaticojejunostomy.  1 patient had a Whipple procedure  1 patient underwent Frey's procedure for stone extraction  All anastomoses remained patent during follow-up (technical success rate 100%) as demonstrated by magnetic resonance cholangiopancreatography	Median 24 months	Pain Complications Exocrine and endocrine sufficiency Length of stay	AstraZeneca

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		<p>Previous pancreatic surgery Suspected pancreatic cancer Life expectancy &lt; 2 yrs</p> <p>Patient population: Endoscopy: mean age 52 yrs, male sex 58% alcohol abuse 47%, pain-continuous 63%, pain-intermittent 37%, Izbicki pain score mean 73 (range 0 to 100), duration of symptoms 16 mths, SF-36 quality of life scores: physical mean 31, mental health mean 33, exocrine insufficiency 68%, endocrine insufficiency 21%</p> <p>Surgery: mean age 46 yrs, male sex 15%, alcohol abuse 60%, pain-continuous 55%, pain-intermittent 37% Izbicki pain score mean 69, duration of symptoms 21 mths, SF-36 quality of life scores: physical mean 35, mental health mean 37, exocrine insufficiency 80%, endocrine insufficiency 20%</p> <p>At baseline, there were no significant differences between the two groups</p>	<p>16/18 complete stone extraction (89%), 11/16 multiple stones</p> <p>N=10 single lithotripsy session</p> <p>N=6 multiple session</p> <p>Median number of session per patient one</p> <p>16/19 (84%) pancreatic-duct strictures, all of which were distally located</p> <p>Balloon dilation 15/19</p> <p>Overall rate of technical success 53%</p> <p>The treatment of four patients was converted to surgery because of intractable pain; only one had relief after surgery</p>	<p>performed three months after surgery and during episodes of pain</p>			
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Effect				
	Endoscopy n-19	Surgery N=20	Endoscopic vs Surgical (95%CI)	P value
Izbicki pain score (0 to 100, 100 severe pain)	51±23	25±15	24 (11 to 36)	<0.001
Pain relief – no. (%)	6 (32%)	15 (75%)	-43 (-72 to -15)	0.007
Technical success	10 (53%)	20 (100%)	-47 (-70 to -25)	<0.001
Complications no. (%)	11 (58)	7 (35)	23 (-8 to 53)	0.15
Major	0	1 (5)		
Minor	11 (58)	6 (30)		
Death no. (%)	1 (5)	0	5 (-5 to 15)	0.49
Hospital stay – median no. days (range)	8 (0 to 128)	11 (5 to 59)	-3 (-9 to 4)	0.13
Procedures – median no. (range)	8 (1 to 21)	3 (1 to 9)	5 (2 to 8)	<0.001
SF-36 quality of life				
Physical	38±9	47±7	-8 (-13 to -3)	0.003
Mental	40±9	45±9	-3 (-8 to 1)	0.15
Exocrine function				0.05
Insufficiency persisted no. (%)	11 (61)	13 (65)		
Insufficiency developed no. (%)	6 (33)	1 (5)		
Insufficiency resolved no. (%)	1 (6)	3 (15)		
Sufficiency persisted no. (%)	0	3 (15)		
Endocrine function				0.48
Insufficiency persisted no. (%)	3 (17)	4 (20)		
Insufficiency developed no. (%)	3 (17)	1 (5)		
Insufficiency resolved no. (%)	1 (6)	0		
Sufficiency persisted no. (%)	11 (60)	15 (75)		

One (1/19, 5%) patient died of a perforated ulcer 4 days after the last shock-wave lithotripsy session. The patient was being treated with a non-steroidal anti-inflammatory drug, which

may have had a role in the development of the ulcer. However, given the interval between the treatment and death, a causative role of lithotripsy cannot be ruled out. There were no reported deaths associated with surgery

Complications

Endoscopic interventions

18 complications occurred in 11/18 (58%) patients. In one patient, shock-wave lithotripsy caused a skin wound that persisted for four months. Five patients had stent-related complications, all of which were treated by replacement of the stent. Pancreatitis occurred in four patients, and cholecystitis in one; all these patients were treated conservatively

Surgery

Seven patients (35%) had complications. One patient required a repeated laparotomy because of leakage of the anastomosis. In two patients, bleeding from the operative site was suspected but not confirmed. In addition, one patient had pneumonia, and three had wound infections

<p><b>Dite P, Ruzicka M, Zboril V et al. A prospective, randomized trial comparing endoscopic and surgical therapy for chronic pancreatitis.[see comment]. Endoscopy. 2003; 35(7):553-558. Ref ID: 226</b></p>	<p>1+ RCT</p>	<p>N=72 (randomised)  N=140 (total, including patients who 'chose' which treatment they underwent)</p>	<p>Patients with painful obstructive chronic pancreatitis</p> <p>Inclusion criteria: age &gt; 18 &lt; 70 yrs, diagnosis established by imaging, pain score of more than 3 on Melzack's score, failure of conservative management during three previous years, duration of clinical illness over five yrs</p> <p>Exclusion criteria: Previous interventional</p>	<p><b>Endoscopic therapy</b></p> <p>Randomised N=36</p> <p>Sphincterotomy, dilation or bougienage of strictures excluding extracorporeal shock-wave lithotripsy</p> <p>Total N=64</p> <p>All patients underwent sphincterotomy and 33/64 (52%) received additional stenting. Stone extraction was carried out in 15/64 (23.4%), six of whom had stents placed due to concomitant strictures and stones. Additional bile duct stenting was performed in 8/64 (12.5%)</p>	<p><b>Surgery</b></p> <p>Randomised N=36</p> <p>Surgery tailored to the individual and included resection procedures for localised disease with ductal dilation.</p> <p>In patients in whom chronic pancreatitis was limited predominately to the pancreatic head, either the duodenum and/or bile duct were also involved and stenosed – Whipple's resection was performed. Chronic pancreatitis predominately affecting the pancreatic tail was treated surgically by left pancreatic resection. A drainage procedure was used in patients with absence of focal pancreatic enlargement, grossly dilated pancreatic duct, and chronic pancreatic pseudocysts if present</p>	<p>5 yrs</p>	<p>Mortality Complications Pain Weight gain Diabetes mellitus</p>	<p>None reported</p>
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			<p>procedure for chronic pancreatitis including celiac access block, endotherapy or surgery</p> <p>Patient population: (Total N=140): 119/140 (85% male), mean age 41.7 yrs, alcohol-related 123/140 (87.8%), rate of diabetes at start of study 31/140 (22.1%)</p>		<p>Total population N=76</p> <p>61/76 (80%) underwent resection, including 33 duodenum preserving pancreatic head resection, 23 hemipancreatoduodenectomies, and five distal pancreatectomies. In 15/76 (15%) a drainage procedure was carried out</p>			
	Total group N=140				Randomised group N=72			
	Endotherapy n=64 (%)	Surgery n=76 (%)	P value	Endotherapy n=36 (%)	Surgery n=36 (%)	P value		
Mortality	0	0	NA	0	0	NA		
Technical success	62/64 (97%)	NR	NR	NR	NR	NR		
Complications	5 (8%)	6 (8%)	NR	NR	NR	NR		
Abdominal pain								
Complete absence	14.3	36.9	0.002	15	33.8	0.002		
Partial relief	50.8	49.3	ns	46.4	52.1	ns		
No success	34.9	13.8	ns	38.2	14.1	ns		
Body weight								
Increase	26.9	52.1	0.002	28.6	47.2	0.003		
Unchanged	23.9	19.1	ns	25.7	25.0	ns		
Decrease	49.2	28.8	ns	45.7	27.8	ns		

Diabetes mellitus	35.9	43.4	ns	34.2 (n=12)	38.8 (n=14)	ns
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Technical success

A mean of two sessions of initial treatment (range one to four) was required to achieve 'technical success'. In the stented patients, the mean duration of stent treatment was 6 months (range 12 to 27) with a mean of six stent exchanges (range four to nine).

Prevention of acute exacerbations

During follow-up, three patients were hospitalised due to an acute exacerbations, one in the opioid group and one in the non-opioid use group

<p><b>Alexakis N, Connor S, Ghaneh P et al. Influence of opioid use on surgical and long-term outcome after resection for chronic pancreatitis. <i>Surgery</i>. 2004; 136(3):600-608. Ref ID: 2025</b></p>	<p>Prospective case series 3</p>	<p>N=112</p>	<p>Patients with chronic pancreatitis (N=231) who underwent surgery (112/231, 76%)</p> <p>Alcohol etiology: With opioid use 27/46 (59%) Without opioid use 31/66 (47%)</p> <p>Alcoholic chronic pancreatitis: A typical history (recurrent episodes of acute pancreatitis) and a history of excessive alcohol intake (usually &gt; 80 g/d for some years in males, less in</p>	<p><b>Surgery</b> <b>Previous opioid use</b> N=46</p> <p>Opioid use was defined as daily regular use of morphine salts, including slow-release preparations eg morphine, for at least 3 months</p> <p>Surgery included: Beger procedure 23/66, pylorus-preserving pancreatoduodenectomy 25/66 and duodenum-preserving and spleen preserving total pancreatectomy 6/66</p>	<p><b>Surgery</b> <b>No previous opioid use</b> N=66</p> <p>Surgery included: Beger procedure 24/46, pylorus-preserving pancreatoduodenectomy 0/46 and duodenum-preserving and spleen preserving total pancreatectomy 15/46</p>	<p>Non-opioid 12 mths (3 to 60)  Opioid 24 mths (3 to 60)</p>	<p>Mortality Pain Complications Work status Steatorrhea Activity</p>	<p>None reported</p>
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			<p>females) PLUS one or more of the following: calcification of the pancreas, moderate to marked ductal lesions, marked exocrine insufficiency</p> <p>Patient population: Opioid use: median age 48 yr, male:female 46:20, alcohol 47%, age at first symptoms 43 yrs, no. of hospitalisations median 3, mean duration of symptoms 2 yrs, median weight 65 kg</p> <p>No previous opioid use: median age 42 yr, male:female 31:15, age at first symptoms 35 yrs**alcohol 59%, no. of</p>					
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			hospitalisations median 10**, mean duration of symptoms 5.9 yrs**, median weight 74 kg  **denotes significant difference (see effect)					
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**Effect**

- With the exception of an enlarged head of pancreas (opioid use vs no opioid use 44 vs 24%; p=0.19) there were no significant differences between the two groups with respect to preoperative CT findings
- Patients not on opioids compared to those who were on opioids prior to surgery:
- Were significantly older (median 48 (18 to 79) vs 42 (21 to 63); p=0.001)
- Were significantly older when the first symptoms appeared (median 43 (9 to 77) vs 35 (8 to 59); p=0.004)
- Had significantly fewer hospitalisations (median 3 (0 to 42) vs 10 (1 to 30); p=0.001)
- Had a significantly shorter duration longer duration of symptoms (2 (0 to 40.5) vs 5.9 (0.1 to 22.1); p=0.038)
- Significantly more patients in the opioid compared to the non-opioid group underwent one or more types of total pancreatectomy (21 (46%) vs 19 (14%); p=0.0002)

**Pain**

- There was a significant difference in the non-opioid and opioid groups on the VAS score:
- Preoperatively (median 7 (0 to 10) vs 9 (7 to 10); p=0.001)
- 3 months (median 2 (0 to 7) vs 3 (0 to 9); p=0.030)
- There were no significant differences at 12 (no data) or 24 months (no pain 57 vs 49%; ns)

	Non-opioid group n=53	Opioid group n=35
Analgesia	36 (68%)	14 (40%)
Steatorrhea	17	9
Activity – normal	29 (55%)	16 (45%)
Working	18 (34%)	8 (23%)

		Patients without opioid use n=66	Patients with opioid use n=46	p
Patients with complications		34	27	0.56
Deaths		1	4	0.15
Pulmonary complications		8	12	0.079
Cardiovascular complications		6	3	0.73
Gastrointestinal fistula		12	10	0.63
Abscess/collection		6	8	0.24
Delayed gastric emptying		4	2	0.99
Haemorrhage		2	8	0.015
Early reoperation		3	11	0.003
Other complications		6	2	0.46
Hospital stay		20 (19 to 38)	24 (23 to 47)	0.34

  

<p><b>Basinski A, Stefaniak T, Vingerhoets A et al. Effect of NCPB and VSPL on pain and quality of life in chronic pancreatitis patients. <i>World J Gastroenterol.</i> 2005; 11(32):5010-5014. Ref ID: 2070</b></p>	<p>2+ Non-randomised case control (two studies)</p>	<p>N=48</p>	<p>Patients with small duct chronic pancreatitis</p> <p>Inclusion criteria: chronic pancreatitis diagnosed by CT scan and endoscopic retrograde cholangiopancreatography , persistent pain for three months or more, and scoring at least 66.7% on the pain visual analogue scale</p> <p>Exclusion criteria: Patients with pancreatic inflammatory tumours or pseudocysts</p>	<p><b>Patients chose the procedure according to their needs</b></p> <p><b>Neurolytic coeliac plexus block (NCPB) n=30</b></p> <p><b>Videothoroscopic splanchnicotomy (VSPL) n=18</b></p>	<p>Controls</p> <p><b>Conservative treatment</b></p> <p>N=32</p>	<p>8 weeks</p>	<p>Pain (VAS) EORTC, QUALITY OF LIFE QLQ C-30, functional assessment of chronic illness therapy (FACIT)</p>	<p>None reported</p>
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			<p>No patient had structural lesions</p> <p>Patient population: Coeliac plexus block: mean age 50 yrs, male:female 3:1, etiology (alcohol vs other ratio) 6.5, period from the symptomatic onset of the disease 6 yrs, 17/30 (58%)</p> <p>Splanchnicectomy: mean age 48 yrs, male:female 3.51, etiology 8.0, onset 11.5 yrs, opioid use 11/18 (61%)</p> <p>Control: mean age 52 yrs, male: female 3.34, etiology 7.0, onset 7 yrs, opioid use 18/32 (56%)</p>				
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Effect

Opioid use

There was no statistical difference when comparing the proportion of patients who underwent NCPB and VSPL for:

- Opioid withdrawal (47 vs 36%; ns)
- Reduction in opioid dose (53 vs 45%; ns)

Mortality and morbidity

- There were no cases reported

Orthostatic hypertension was observed for three days in 9/30 (30%) from the NCPB group and in 1/18 (5.5%) patients in the VSPL group

Intermittent intercostals pain was treated with paracetamol for two weeks in 4/18 (22%) patients in the VSPL group. In one of these, an intercostals nerve block was performed and in one patient a classic thoracotomy was performed due to massive adhesions (excluded from study)

Outcome		VSPL (n=18) mean effect (95%CI)		NCPL (n=30) mean effect (95%CI)				
Pain (VAS) 0 to 100% severe pain		15.82 (14.68 to 16.96)		8.89 (8.30 to 9.48)				
Physical well-being		1.81 (1.57 to 2.06)		2.19 (2.96 to 2.42)				
Emotional well-being		0.08 (-0.11 to 0.29)		3.55 (3.27 to 3.84)				
Fatigue		2.52 (2.25 to 2.79)		6.87 (6.39 to 7.34)				
Ailments typical for the illness		0.05 (-0.14 to 0.26)		0.64 (0.45 to 0.83)				
<b>Nealon WH, Townsend CM, Jr., Thompson JC. Operative drainage of the pancreatic duct delays functional impairment in patients with chronic pancreatitis. A prospective analysis. <i>Annals of Surgery.</i> 1988; 208(3):321-329. Ref ID: 514</b>	2+ Prospective cohort	N=85	Patients with chronic pancreatitis.	<b>Surgery</b>	<b>No surgery</b>	Operated mean 14.8 months (10 to 15 months) Non-operated 14.1 Months (9 to 15 months)	Mortality Complications Clinical features Weight	National Institute for Health, American Cancer Society
		N=68 follow-up	79/85 (93%) alcohol-related	N=41 N=30 (follow-up)	N=44 N=38 (follow-up)			
		Lost to follow-up N=3	Grading system based on ERCP, two exocrine and two endocrine tests. Score 0 to 5. 0 – mild; 1 to 2 moderate; 3 to 5 severe	Puestow 44%, Puestow plus pseudocyst 20%, Puestow plus biliary bypass 17%, Puestow plus pseudocyst plus biliary bypass 20%	Reasons for not operating: 18/44 non disabling pain, small main duct 17/44, patient refusal 7/44, cirrhosis 2/44			
		Data not available (appropriate follow-up time not reached N=14)		Grade: 25/41 (61%) mild to moderate; 16/41 (39%) severe	Grade: 26/44 (59%) mild to moderate and 18/44 (41%) severe			
<p>Effect Surgery (N=41) Mortality No deaths occurred Complications. Three patient had wound infections Grade changes Surgery vs non surgery At follow-up There was a significant difference between the surgery and no surgery groups for the proportion of patients who remained at the same grade of mild to moderate (sustained pancreatic function) (16/19 (84%) vs 7/24 (29%); p&lt;0.05) or who progressed to 'severe' (3/19 (16%) s 17/24 (71%); p&lt;0.05)</p>								

**Clinical features**

Surgery vs no surgery

There was no significant difference between the surgery and no surgery group for:

- Disabling abdominal pain (28/44 (64%) vs 41/41 (100%); ns)
- Weight loss (32/44 (73%) vs 34/41 (83%); ns)
- Steatorrhea (10/44 (23%) vs 11/41 (27%); ns)
- Insulin-dependent diabetes mellitus (9/44 (20%) vs 8/41 (19%); ns)

**Weight gain**

Surgery vs no surgery

There was no significant difference between the surgery and no surgery group for:

- the proportion of patients with a history of weight loss 23/30 (77%) vs 31/38 (82%)

A significantly higher proportion of patients who underwent surgery compared with those who did not:

- gained weight (25/30 (87%) vs 5/38 (13%);  $p < 0.05$ ) and the mean weight gained was significantly higher (4.2 kg (1.4 to 12.7) vs 0.50 kg (-3.6 to 2.7);  $p < 0.05$ )

<p><b>Lankisch PG, Lohr HA, Otto J et al. Natural course in chronic pancreatitis. Pain, exocrine and endocrine pancreatic insufficiency and prognosis of the disease. Digestion. 1993; 54(3):148-155. Ref ID: 474</b></p>	<p>2+ Prospective cohort</p>	<p>N=335</p>	<p>Patients with chronic pancreatitis (based on clinical history and at least one abnormal secreting-pancreozymin test. Faecal fat analysis was also used)</p> <p>Excluded: patients with painless chronic pancreatitis (7%)</p> <p>Alcoholic</p>	<p><b>Surgery</b></p> <p>90/335 (27%)</p> <p>70/90 (78%) alcoholic pancreatitis</p> <p>Surgical procedures included: 68% drainage procedures</p>	<p><b>No surgery</b></p> <p>245/335 (73%)</p> <p>No further details reported</p>	<p>Mean 11.3 yrs</p>	<p>Pain</p>	<p>None reported</p>
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			<p>pancreatitis was defined as admitted regular drinking of more than 2 liters of beer a day or 80 g pure alcohol a day for more than 2 yrs</p> <p>230/335 alcoholic pancreatitis (69%)</p> <p>Excluded: 8/230 with painless chronic pancreatitis</p>					
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**Mortality**  
 Three patients died within 8 weeks of surgery. Three further patients died of hypoglycaemia.

**Pain**  
 Surgery vs no surgery  
 Pain disappeared or distinctly subsided immediately after operation in 62 (89%) of 70 patients with full documentation of the postoperative course: 40 had pain relief for mean 6.3 ( $\pm$  4.5 yrs), but pain relapse occurred in 22 (36%) patients 1.6  $\pm$  2 yrs after operation. There was no significant difference in the pain course between operated and non-operated patients (p=0.6096)