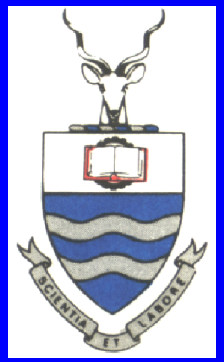
Chronic Pancreatitis: Management of Pain

MD Smith

Department of Surgery,

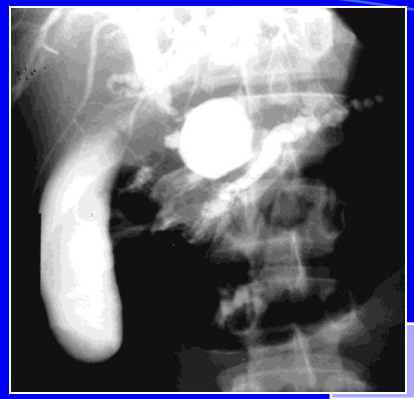
Chris Hani Baragwanath Academic Hospital

The University of the Witwatersrand



INTRODUCTION

- Treatment of pain in chronic pancreatitis is still a challenge
- Pathophysiology of pain in chronic pancreatitis is better understood
- Large menu of operations to choose from
- Pancreatic “burn out”does not support a nihilistic approach to surgery in the treatment



Presentation

	n = 99
Pain	96
Jaundice	23
Biliary Obstruction	26
Pseudocyst	15
Mass in HOP	14
Ascites	8

Smith : Abstract 2005

Pain presentation

- Median duration; 84 months (2-480 months)
- Prior diagnosis of PUD 40%
  - Intermittent nature of pain
  - Poor access to routine endoscopy for recurrent PUD

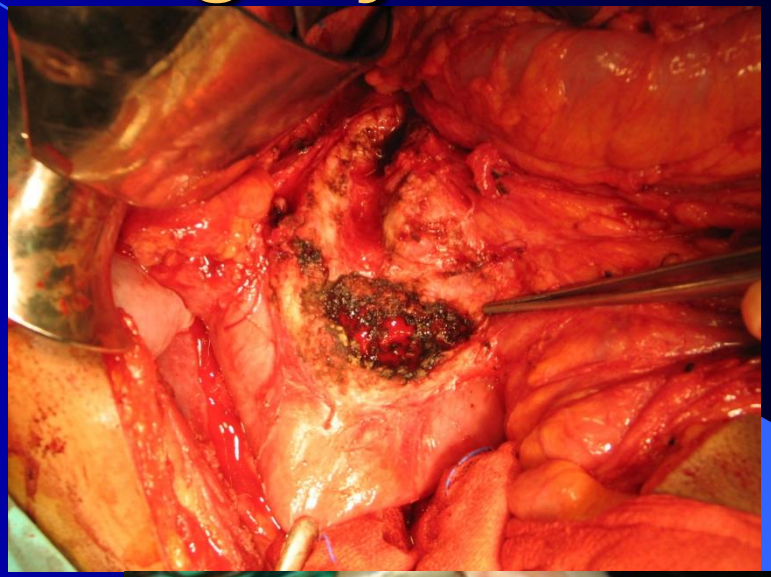
    - Poor recognition of the disease by health workers especially at Primary Care level (including GP's)

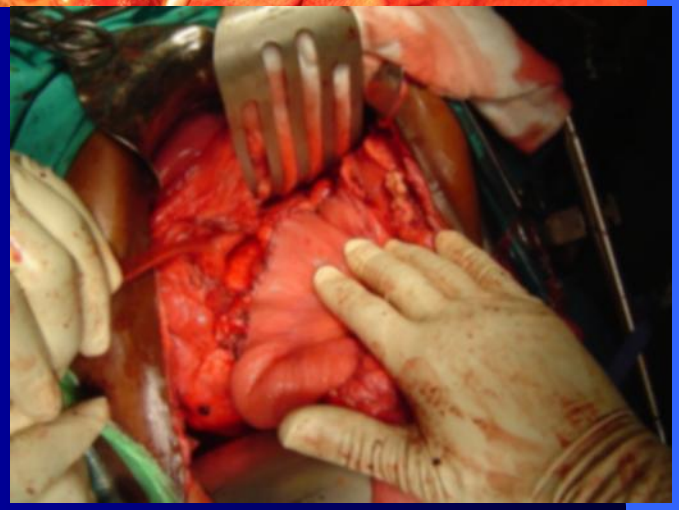
GOALS OF TREATMENT

- Pain relief
- Control of local complications
- Preservation of function
- Social and occupational rehabilitation
  - Focus only on pain relief is not always appropriate
- Improved quality of life
- Exclude malignancy

Indications for surgery

- Pain
- Local Complications
  - Pseudocyst
  - Obstructive Jaundice
  - Visceral organ obstruction
  - Vascular complications
  - Malignant transformation





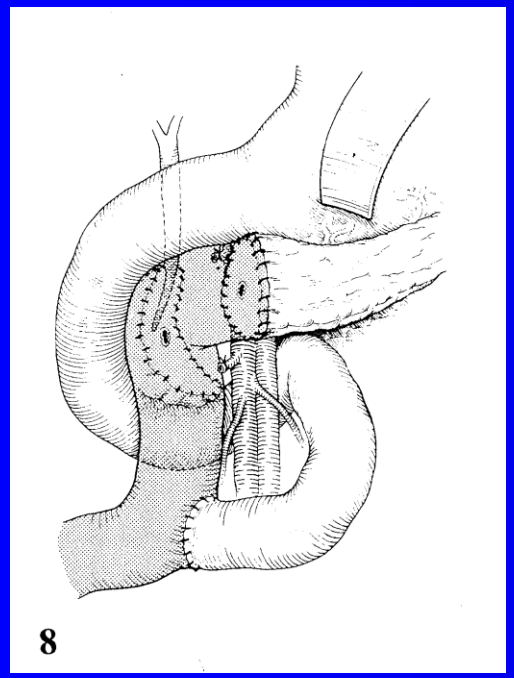
How do they work?
theoretical considerations

- Pathophysiology of pain in CP
  - ductal hypertension
  - parenchymal calcification
  - parenchymal hypertension (compartment syndrome)
  - neuronal neoproliferation
- Pathology in the head - “pacemaker”

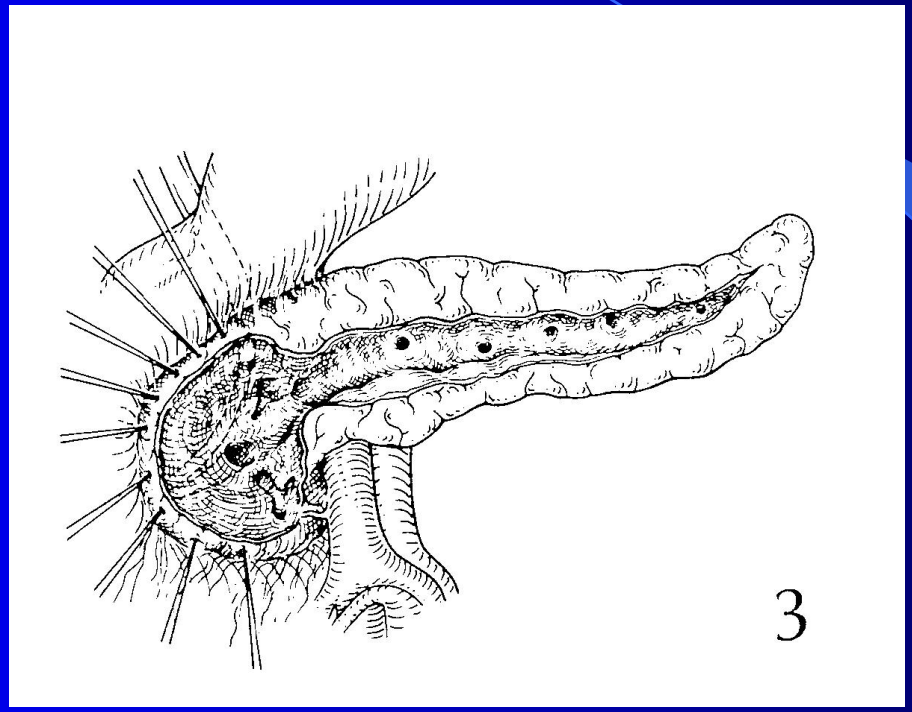
Options

- Pancreatic head resection
- Duodenal preserving head resections
  - Beger
  - Frey
  - Izbicki V Plasty
  - Hamburg modification
  - Berne Modification
- No evidence to suggest that the morphology of the CP should influence the choice of procedure

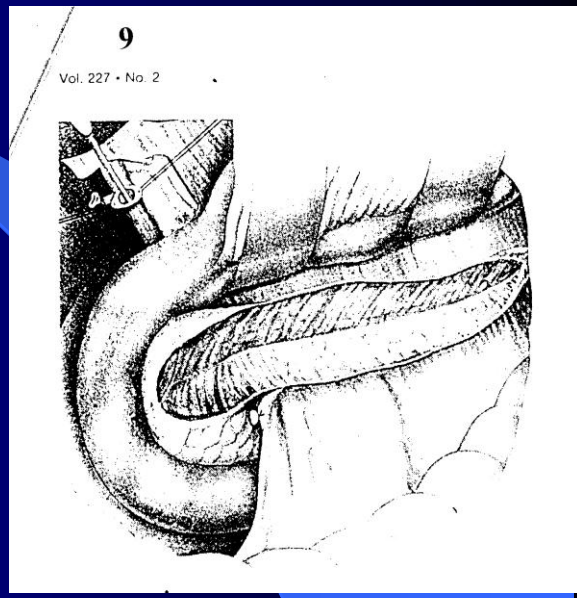
DPPHR



Beger

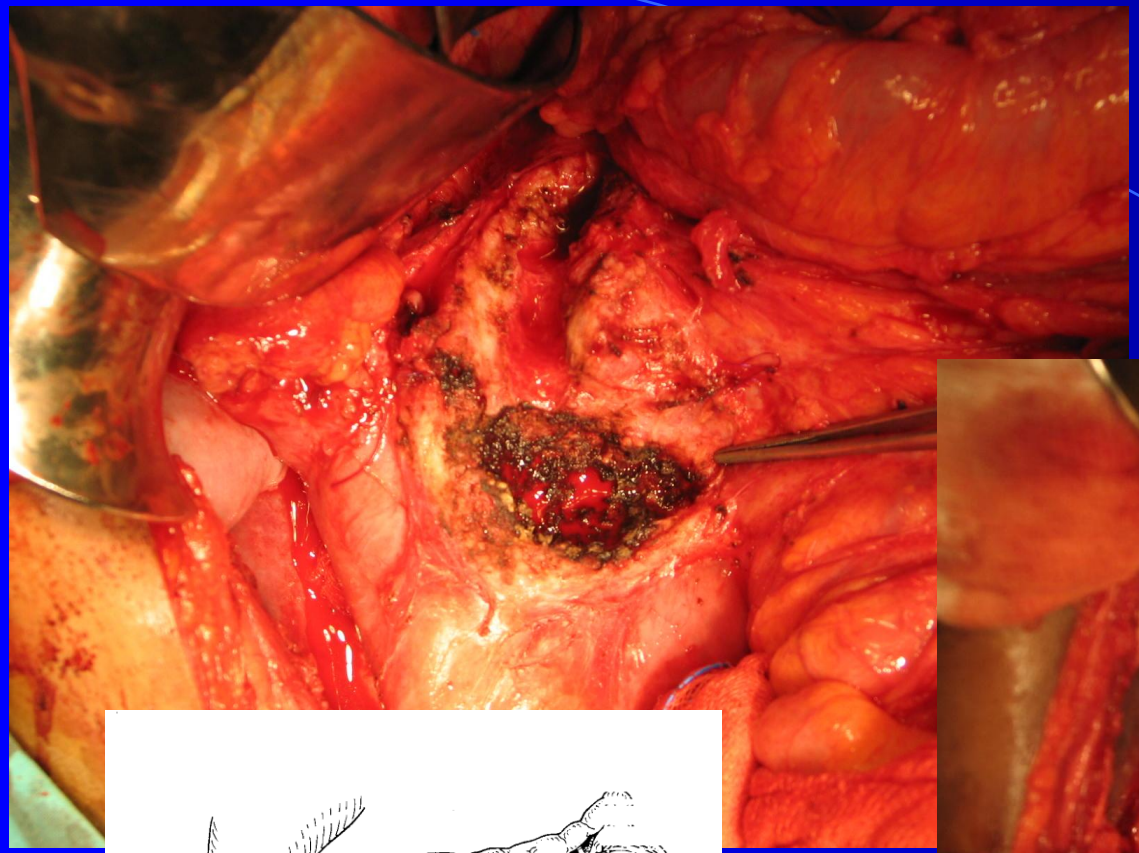


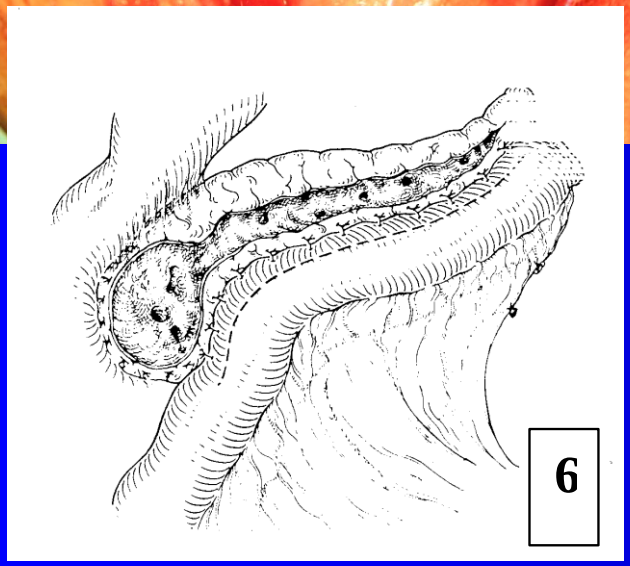
Frey Procedure

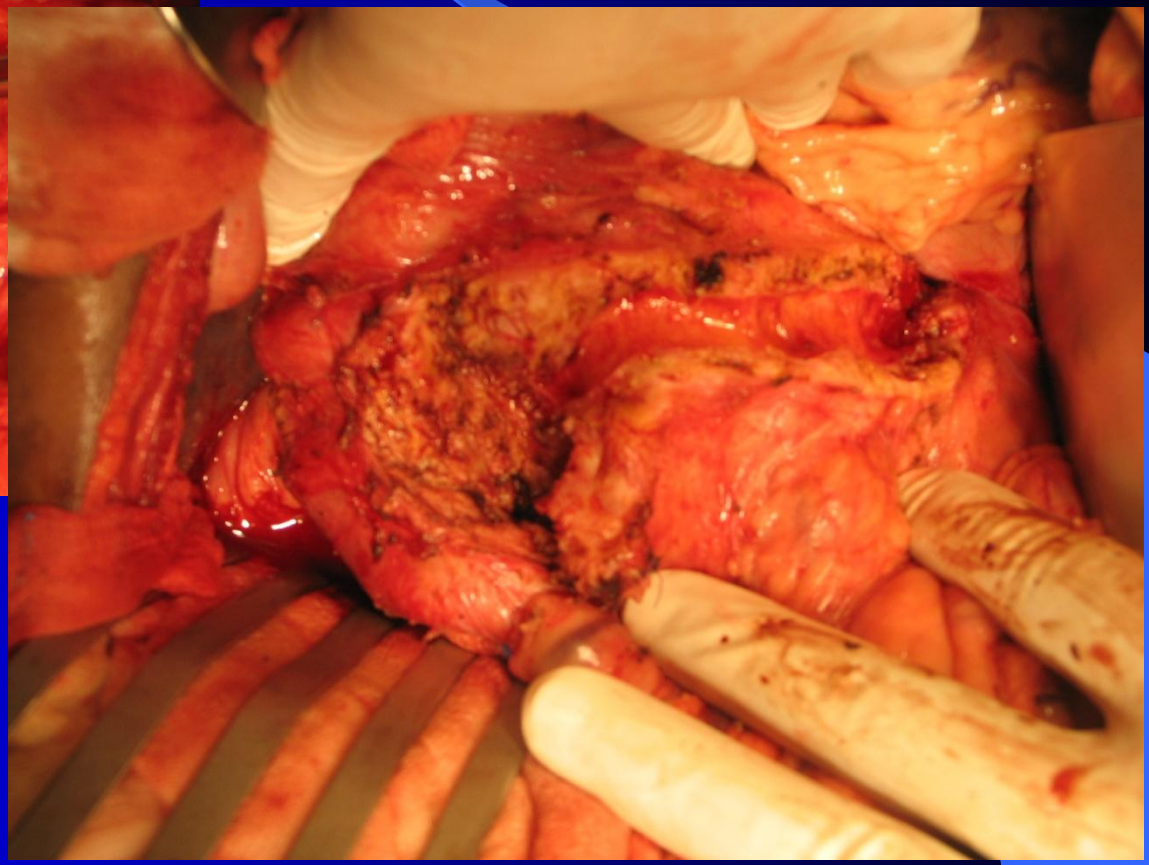


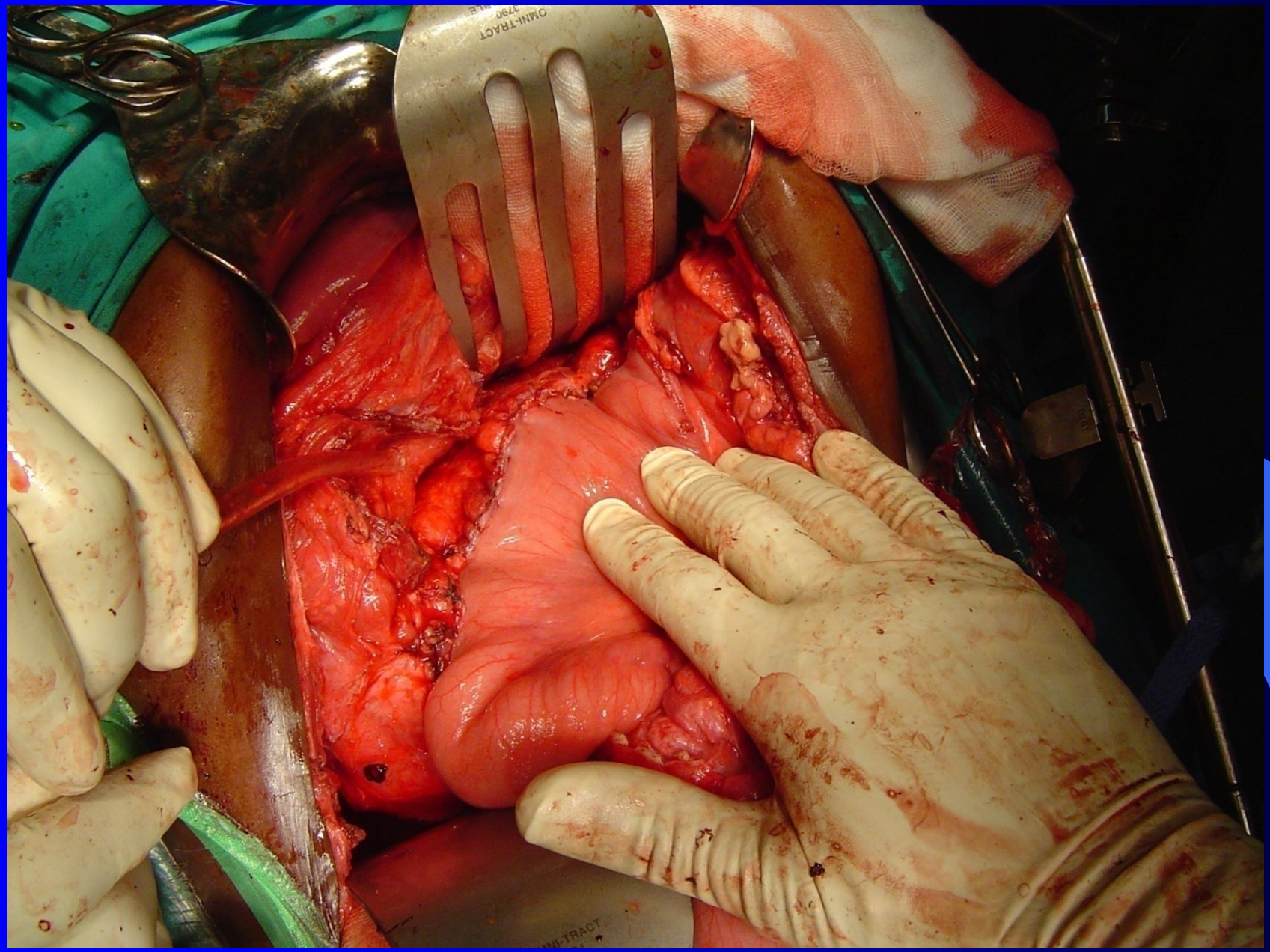
Izbichi V plasty

Frey Procedure









UP Contorversies

6 RCT DPPHR vs DP with medium term outcomes

Level I Studies

First Author	Reference Number	Procedure	N	Operative Mortality (%)	Perioperative Morbidity (%)	Leak (%)	LOS (d)	Pain Relief* (%)	New DM† (%)	EXO Def‡ (5)	Weight Gain (kg)	QOL§ Score	RTW (%)
Klempa	154	DPPHR	22	1	54	0	16	100	12	20	6.4	82	—
		WHIP	21	0	51	5	22	70	38	100	4.9	67	—
Buchler	16	DPPHR	20	0	15	0	13	94	—	100	4.1	—	—
		PPPD	20	0	20	5	14	77	—	100	1.9	—	—
Izbicki	166	LR-LPJ	31	3	19	3	—	80	0	58	6.7	86	—
		PPPD	30	0	53	7	—	75	10	83	1.9	57	—
Farkas	162	OPPHR	20	0	0	—	8	100	0	—	7.8	—	78
		PPPD	20	0	40	—	14	100	15	—	3.2	—	65
Izbicki	167	DPPHR	20	0	20	5	—	70	0	50	6.7	86	70
		LR-LPJ	22	0	9	0	—	70	0	50	6.4	86	68
Kroninger	164	DPPHR	32	0	20	7	15	—	—	—	—	66	—
		OPPHR*	33	0	21	3	11	—	—	—	—	71	—

Follow up at 7 and 14 years :No statistically significant difference in outcome for pain relief, new onset of endocrine and exocrine function

BJS 2008

DDPHR vs PD

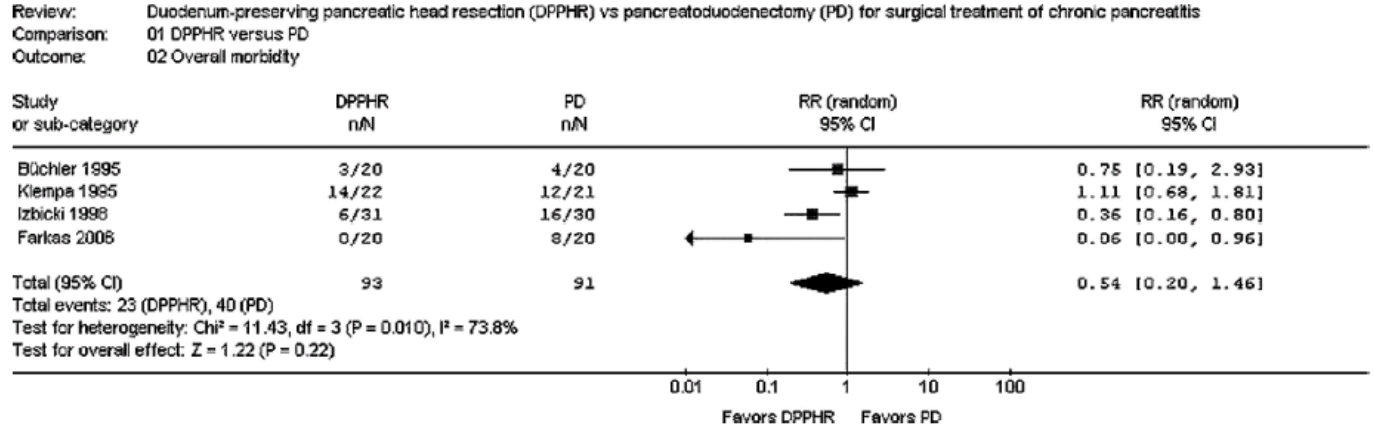


FIGURE 3. Meta-analysis of overall postoperative morbidity.

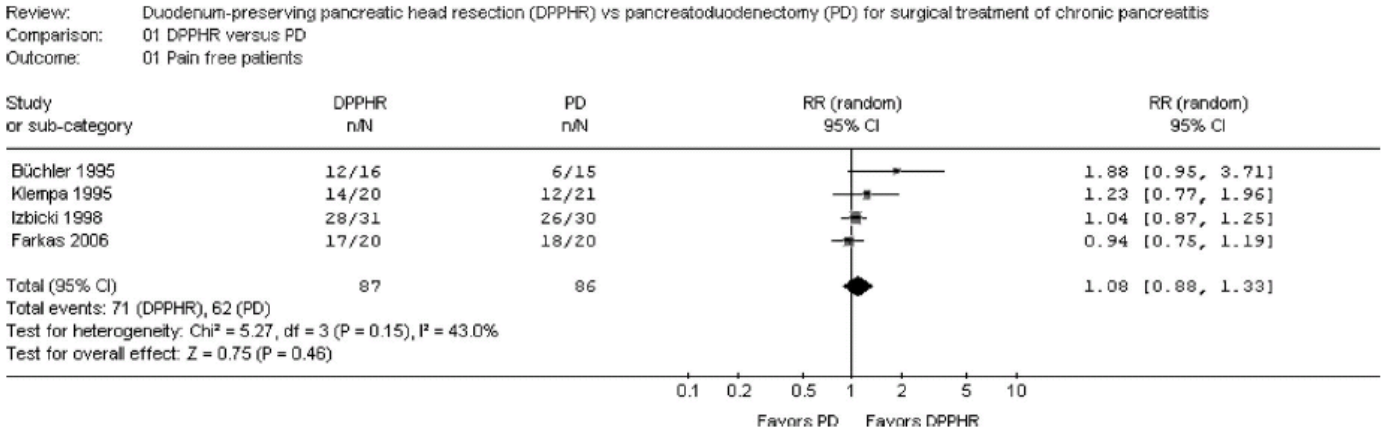


FIGURE 2. Meta-analysis of complete pain relief.

CHBAH series

- 99 patients
  - Males 83/Females 16
  - Median age: 47 years (r 19-71)
- Aetiology
  - Alcohol: 92 (93%)
  - Idiopathic: 4
  - Pancreas divisum: 2
  - Hyper-parathyroidism: 1
- Duration of alcohol intake: 216 months (r 60 – 600)

Operative Results

- Morbidity 42 (42%)
  - Major 18 (18%)
- Mortality
  - Early 5 (5%)
  - Late 12 (12%)
    - Median survival 20 months (r 2 -64)

Follow-up data

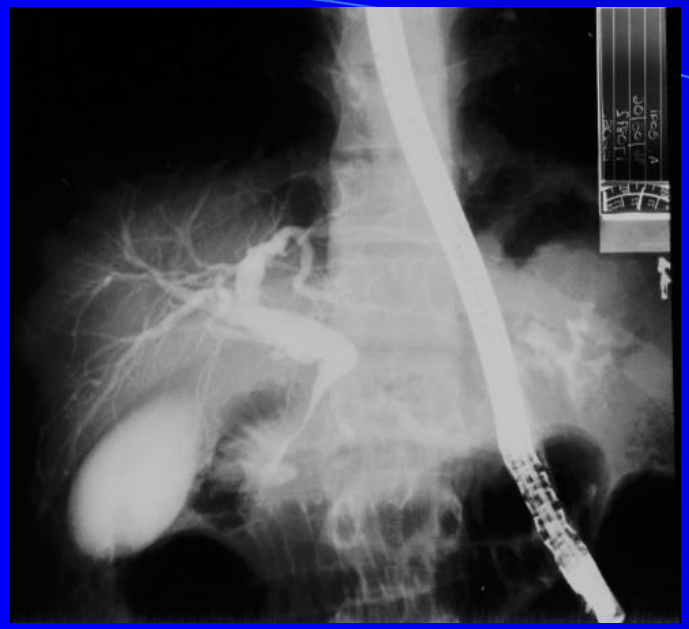
- Follow up 85 patients (85%)
- Median follow-up: 67 months (r 6 – 135)
- Median pain scores (VAS):
  - pre-op: 9.7
  - post-op: 1.7
- Pain relief:
  - Absent-low (VAS 0-3): 68 (80%)
  - Moderate (VAS 4-6): 12 (14%)
  - Nil relief (VAS unchanged or ↑): 5 (6%)

Late morbidity after duodenum-preserving pancreatic head resection with bile duct reinsertion into the resection cavity

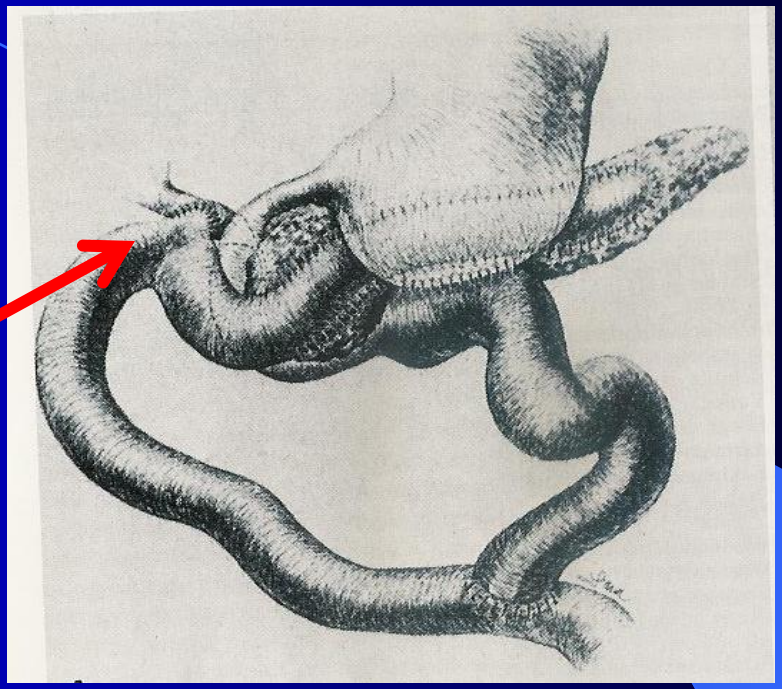
G. Cataldegirmen, D. Bogoevski, O. Mann, J. T. Kaifi, J. R. Izbicki and E. F. Yekebas

British Journal of Surgery 2008; ***95: 447–452***

- **82 DDPHE and reinsertion of distal CBD**
- **Follow up 70 months (6-144)**
  - **18% recurrence of jaundice**



Chronic Pancreatitis and Biliary Stricture



Frey procedure with biliary bypass

- 27/86 patients : Jan 1991 –Feb 2007
- Recurrent Obstructive jaundice: 0 pts (mean 7 years)
- The procedure is recommended as the alternative to re-insertion of the distal CBD into the cored-out cavity of the LPJ

ORIGINAL ARTICLE

Post-Frey Procedure Quality of Life in South African Patients with Painful Chronic Pancreatitis

Cara Yvonne Jeppe[1], Piet Becker[2], Martin Derrick Smith[1,3]

TABLE 1. QLQ-C30 pre-operative and last visit GHS[a] scores (No. = 32).

QoL scales	Pre-operative score Mean (SD)	Last visit score Mean (SD)	Difference Mean (SD)	p-Value*
Overall health rate	2.58 (1.41)	4.16 (1.88)	1.58 (1.85)	p < 0.001
Overall QoL[b]	2.71 (1.74)	4.32 (1.64)	1.61 (2.50)	p = 0.002
Overall GHS[a]	27.42 (23.2)	54.03 (27.11)	26.61 (33.3)	p < 0.001

* Because of large standard deviation the p-values for the nonparametric sign-rank test were reported

JOP. J Pancreas (Online) 2013 Jan 10; 14(1):21-30.

Table 1. QLQ-C30 pre-operative and last visit scores (n=32).

EORTC QLQ-C30 scores	Pre-operative	Last visit	Difference	P value [a]
Symptom scores				
- Fatigue (FA)	70.0±24.7	56.8±30.4	-13.2±30.2	0.004
- Nausea and vomiting (NV)	54.7±33.1	35.9±37.7	-18.8±44.4	0.023
- Pain (PA)	80.2±24.1	55.7±33.8	-24.5±34.9	0.001
- Dyspnea (DY)	50.0±37.9	37.5±39.5	-12.5±44.6	0.267
- Insomnia (SL)	56.3±38.3	42.7±39.9	-13.5±48.5	0.066
- Appetite loss (AP)	69.8±34.3	37.5±40.4	-32.3±48.3	0.004
- Constipation (CO)	64.6±38.8	29.2±32.5	-35.4±43.1	<0.001
- Diarrhea (DI)	13.5±25.2	27.1±34.3	13.5±40.5	0.068
- Financial difficulties (FI)	74.0±37.6	55.2±43.7	-18.8±43.9	0.026
Overall symptom score	***59.2±18.4***	***42.0±24.8***	***-17.3±21.4***	***<0.001***

[a] Wilcoxon matched pairs test

TABLE 6. Comparison of overall QLQ-C30 functional scale scores: within 6 months and at a minimum of 6 months post-operatively (No. = 25)*.

< 6 months post-op. Mean (SD)	>= 6 months post-op. Mean (SD)	p-Value
62.57 (19.53)	62.74 (20.73)	p = 0.967

*There was information for both time periods for only 25 participants.

JOP. 2013; Jan14(1) :21-30

Pre-operative and final visit GHS and functional scale scores

(N = 32) Mean f/u 24.8 months (range 2 – 83)

Functional scales	Pre-operative score mean(SD)	Final visit score mean(SD)	Difference mean(SD)	p-Value
GHS	27.42 (23.2)	54.03 (27.11)	26.61 (33.3)	$p < 0.001$
Physical	65.02 (24.9)	64.17 (19.21)	0.85 (24.70)	$p = 0.847$
Role	48.91 (35.35)	64.07(29.05)	15.16 (52.29)	$p = 0.112$
Emotional	34.11 (25.44)	49.51 (27.49)	15.39 (33.71)	$p = 0.015$
Cognitive	47.41 (27.79)	55.73 (33.50)	8.32 (39.72)	$p = 0.245$
Social	50.00 (37.86)	71.34 (31.46)	21.35 (31.18)	$p < 0.001$

JOP. 2013; Jan14(1) :21-30

- Significant improvements in most QLQ-C30 domains after surgery
  - LR-LPJ benefits mostly made manifest within six months and sustained

Pseudocysts

- Indication for surgical treatment
  - Failed endoscopic therapy
  - Complications that cannot be treated any other way
    - heamorrhage with failed interventional therapy

Role of laparoscopic drainage is poorly defined

Does size matter?

	CP (91- 96)	Yeo*
Cyst > 6cm	87%	67%
Cyst < 6cm	64%	40%

Bigger pseudocysts require surgery more often but not an indication for surgery

*Yeo CJ; Surg Gynae Obstet 1990

Treatment results

	Sherman* Endoscopy	Tun Endoscopy	Vermaak Surgery
success	89%	80%	100%
trans pap	46%	76%	n/a
morbidity	17%	23%	33%
mortality	1%	0%	4%
Recurrence /failure	10-20%	37%	5%
Follow-up	2 years	7/12	26/12

*AGA Post Grad 2002

- Differentiating pain due to the pseudocyst vs pain from the underlying CP can be difficult
- EUS guided drainage of Pseudocysts in CP is probably the first line of therapy
- Size of the cyst is not an indication for surgery
- Recurrence after endoscopic drainage may require surgical treatment
- Role of distal resection?

Timing of Surgery

Does earlier surgery improve functional outcomes?

Functional Changes

		Smith (99)*	Niels (223)**
Pre-operative			
	Endocrine	30%	18%
	Exocrine	28%	44%
Post-operative; New Onset			
	Endocrine	21%	39%
	Exocrine	27%	14%

- *Smith Abstract 2005
- **Niels Ann Surg 2012

Timing of Surgery

Improvement in pancreatic function

- Sidhu, Am J Gastroenterol 2001 Jan: improvement in mean sugar levels and in steatorrhea.

Progressive Loss of Pancreatic Function in Chronic Pancreatitis Is Delayed by Main Pancreatic Duct Decompression

A Longitudinal Prospective Analysis of the Modified Puestow Procedure

William H. Nealon, M.D., and James C. Thompson, M.D.

ANNALS OF SURGERY
Vol. 217, No. 5, 458–468

Nealon, 1988 and 1993: delay in loss of pancreatic function with early surgery

	Initial Evaluation	Follow-Up
Operated	9.9 (100%)	7/9 (78%)
Nonoperated	8/8 (100%)	2/8 (25%)
	Mean follow-up of 39 months	

Opiate Usage

- Does preoperative opiate use impact on outcome?
- If so should we operate on opiate users earlier?

Functional and Medical Outcomes After Tailored Surgery for Pain Due to Chronic Pancreatitis

Niels A. van der Gaag, MD,∗ Thomas M. van Gulik, MD, PhD,∗ Olivier R. C. Busch. et.al.

- Opiate users are younger (45.4 vs 50.7)
- Longer duration of pain (48 months vs 36 months)
- Exocrine and endocrine insufficiency the same
- Post Operatively 63% of opiate users vs 93% of non opiate users remained off opiates
  - The mean VAS for the pre-operative opiate users was lower in patients off opiates post-operatively

Annals of Surgery. 255:4;2012

TABLE 5. Multinomial Logistic Regression for Factors Associated With Persistent Pain*

Variables*	Intermediate Pain, OR [95% CI]	Severe Pain, OR [95% CI]
Age at follow-up†	1.01 [0.97–1.05]	0.95 [0.92–1.01]
Female sex	1.24 [0.51–3.01]	1.79 [0.64–4.98]
Reported duration of pain preoperatively†	1.04 [0.98–1.10]	0.94 [0.84–1.06]
Preoperative daily opioid use	1.35 [0.55–3.28]	3.04 [1.09–8.49]**
Prior therapeutic endoscopic procedures (n)‡		
2–4	0.91 [0.33–2.53]	2.19 [0.59–8.14]
≥5	1.41 [0.47–4.24]	3.89 [1.01–14.9]**
Type of procedure§		
Drainage	1.61 [0.43–6.07]	1.52 [0.31–7.55]
Head resection	2.62 [0.55–12.5]	2.62 [0.41–16.5]
Length of follow-up†	1.02 [0.92–1.13]	0.99 [0.87–1.13]
Reoperation‖	1.34 [0.33–5.41]	3.18 [0.84–11.8]
Continued alcohol consumption¶	0.65 [0.26–1.63]	0.36 [0.11–1.25]
Continued smoking#	1.35 [0.54–3.39]	1.89 [0.58–6.19]
Current endocrine insufficiency	1.52 [0.63–3.68]	1.64 [0.56–4.82]
Current exocrine insufficiency	1.21 [0.40–3.65]	0.83 [0.24–2.91]

*Reference category is no/low pain score.
†1-year increment.
‡Reference category is 0–1 previous endoscopic procedure.
§Reference category is tail resection. Head resection in relation to drainage also not significantly different.
‖Related to sequelae of chronic pancreatitis: cholestasis, recurrent pain, gastric outlet obstruction or suspicion of malignancy.
¶Variable confined to patients that consumed alcohol prior to surgery and continued.
#Variable confined to patients that smoked cigarettes prior to surgery and continued.
**Significant at the $P < 0.05$ level.

38% of CHBAH patients received opioids preoperatively vs 60% in this study

Table VII. Patient data during the follow-up period

	Patients without opioid use N = 53	*Patients with opioid use N = 35*
Pain		
No pain	30 (57%)	17 (49%)
Mild/moderate	19 (36%)	10 (29%)
Strong	4 (8%)	4 (11%)
Severe	0	4 (11%)
Analgesia		
No	36 (68%)	14 (40%)
Paracetamol	3 (6%)	4 (11%)
Codeine	11 (21%)	10 (29%)
Morphine	3 (6%)	7 (20%)
Steatorrhea	17	9
Diabetes mellitus	23	18
Activity		
Normal	29 (55%)	16 (46%)
Mild restriction	18 (34%)	12 (34%)
Severe restriction	6 (11%)	7 (20%)
Work status		
Working	18 (34%)	8 (23%)
Not working	29 (55%)	24 (69%)
Retired	6 (11%)	3 (9%)

Opiate abuse negatively impacts on post operative outcomes

Influence of opioid use on surgical and long-term outcome after resection for chronic pancreatitis

N. Alexakis, MD, PhD, S. Connor, MBChB, FRACS, P. Ghaneh, MBChB, MRCS, M. Raraty, MB, BS, FRCS, PhD, M. Lombard, MB, BCh, BAO, MSc, FRCP, H. Smart, MB, BS, DM, FRCP, J. Evans, BSc, MB, ChB, MRCP, DMRD, M. Hughes, MA, MB, BChir, MRCP, DMRD, FRCR, C. J. Garvey, MB, BCh, BAO, DBE, FRCR, M. Goulden, MB, BS, C. Parker, MA, MB, BChir, MD, FRCA, R. Sutton, BA, MB, BS, DPhil, FRCS, *and* J. P. Neoptolemos, MA, MB, BChir, MD, FRCS, *Liverpool, UK*

Surgery 2004, 136. 600-8

Substance Abuse Disorder

- Associated with Dual Pathology and Major Psychiatric disorder
  - Pain aggravates depression and sense of hopelessness
  - Depression aggravates SAD
  - SAD results in either increased drinking or opiate abuse
  - Progressive CP and Major depression
- Must address all aspects of the disease and require MDT

Jeppe, Szabo, Smith SAMJ 2014 in print

Chronic Pancreatitis and Cancer

- The causal relationship between Chronic Pancreatitis and Ductal Adenocarcinoma is well established
- The incidence of cancer is 3 -15%
  - 10 - 25 fold increase in sporadic forms of CP
  - 40 - 70 fold increase in hereditary CP
- The question that is not yet answered is whether surgery for CP can reduce the risk

Surgery for chronic pancreatitis decreases the risk for pancreatic cancer: A multicenter retrospective analysis

Junji Ueda, MD, PhD,[a] Masao Tanaka, MD, PhD, FACS,[a] Takao Ohtsuka, MD, PhD,[a] Shoji Tokunaga, PhD,[b] *and* Tooru Shimosegawa, MD, PhD,[c] for the Research Committee of Intractable Diseases of the Pancreas, *Fukuoka and Sendai, Japan*

Surgery 2013;153:357-64

PDAC incidence

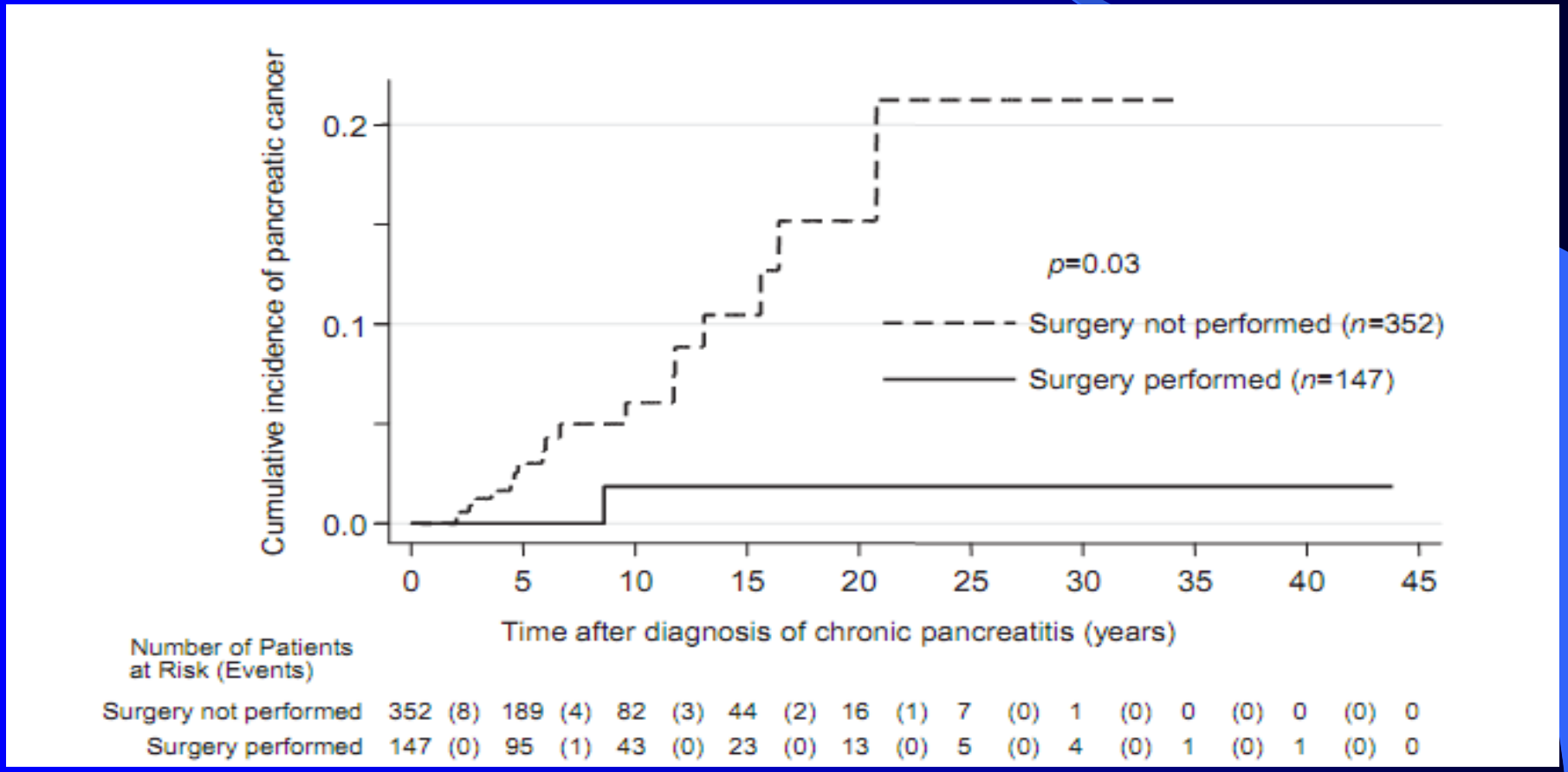
5.1% in no surgery group

0.7% in surgery group

This study also found an increase risk for cancer in patients who continued to drink alcohol

Operation for chronic pancreatitis	147	100
Drainage operation	87	59
Frey operation	53	36
Partington operation	18	12
Cystointestinal anastomosis	9	6
Beger operation	4	3
External drainage	2	1
Others	5	3
Resection of pancreas	125	85
Frey operation	53	36
Pancreaticoduodenectomy	38	26
Distal pancreatectomy	28	19
Beger operation	4	3
Segmental resection	4	3
Others	2	1

Surgery decreases cancer risk



Cancer in chronic pancreatitis

- **122 out of 772 patients with chronic pancreatitis had superimposed cancer at presentation (15%)**

- ***Low incidence (6 out of 900 patients) of postoperative cancer in a carefully followed up group – is it significant? All these had extensive residual calculi***

- ***Can drainage operations protect against cancer?***

Endoscopy therapy – when?

World Journal of Gastroenterology

Online Submissions: http://www.wjgnet.com/esps/
wjg@wjgnet.com
doi:10.3748/wjg.v19.i1.12

World J Gastroenterol 2013 January 7; 19(1): 12-16
ISSN 1007-9327 (print) ISSN 2219-2840 (online)

FIELD OF VISION

Is endoscopic therapy the treatment of choice in all patients with chronic pancreatitis?

Beata Jabłońska

Beata Jabłońska, Department of Digestive Tract Surgery, University Hospital of the Medical University of Silesia, 40-752 Katowice, Poland

should be the first-line option in patients in whom ET has failed or in those with a pancreatic mass with sus-
picion of malignancy. ET is a very effective and less

Treatment of Chronic Pancreatitis with Endotherapy or Surgery: Critical Review of Randomized Control Trials

Jacques Devière · Richard H. Bell Jr. · Hans G. Beger · L. William Traverso

Table 1 Comparison of Pain Relief Observed in the RCTs for CP Treatments

Year	Location	Group 1	Group 2	Pain Relief	Follow-up	Patients
1995	Bern/Ulm	PPPD (n=20)	Beger (n=20)	Beger better 75 vs. 40%	6 months	40
2006	Szeged, Hungary	PPPD (n=20)	Beger (n=20)	Same ~85%	12 months	40
1998	Hamburg	PPPD (n=30)	Frey (n=30)	Same ~95%	24 months	60
1995	Hamburg	Beger (n=20)	Frey (n=22)	Same ~100%	36 months	NA
2005	Hamburg	Beger (n=38)	Frey (n=36)	Same ~90%	9 years	74
2003	Brno, Czech Rep	EndoTx, no ESWL (n=36)	Mixed surgeries (36)	Surgery better 85 vs. 61%	5 years	72
2007	Amsterdam	ESWL then EndoTx (n=19)	LPJ only (n=20)	Surgery better 75 vs. 53%	24 months	39
2007	Brussels, Rome	ESWL then EndoTx (n=29)	ESWL only (n=26)	Same ~55%	30 months	55
Total						380

All European studies—total 380 patients
EndoTx = endotherapy, NA = not applicable as the 2005 report included the 1995 patients

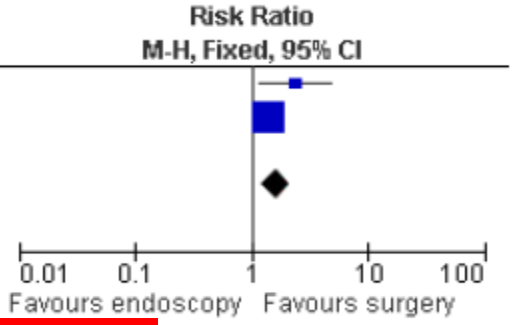
J Gastrointest Surg (2008) 12:640–644

- Algorithm for the treatment of CP based on high level evidence has not been achieved
- No guidelines for can be provided
- Require more trials with standardization of the inclusion criteria
- Choice is therefore based on institutional experience and expertise.

Figure 4. Forest plot of comparison: 1 Endoscopy versus surgery, outcome: 1.1 Pain relief.

Study or Subgroup	Surgery Events	Surgery Total	Endoscopy Events	Endoscopy Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Cahen 2007	15	20	6	19	21.9%	2.38 [1.17, 4.82]
Dite 2003	31	36	22	36	78.1%	1.41 [1.05, 1.89]
Total (95% CI)		**56**		**55**	**100.0%**	**1.62 [1.22, 2.15]**
Total events	46		28			

Heterogeneity: Chi² = 2.00, df = 1 (P = 0.16); I² = 50%
Test for overall effect: Z = 3.34 (P = 0.0008)



Endoscopic or surgical intervention for painful obstructive chronic pancreatitis (Review)

Ahmed Ali U, Pahlplatz JM, Nealon WH, van Goor H, Gooszen HG, Boermeester MA

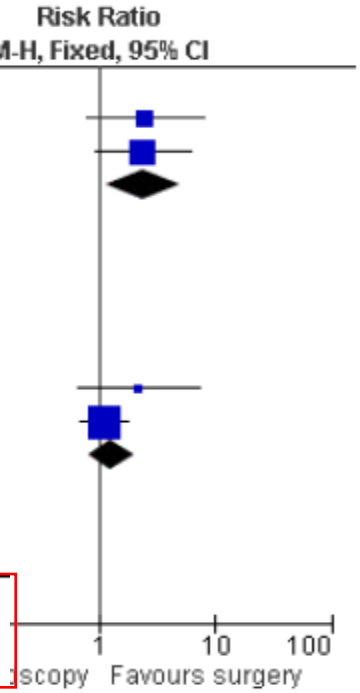
Figure 5. Forest plot of comparison: 1 Endoscopy versus surgery, outcome: 1.2 Complete and partial pain relief.

Study or Subgroup	Surgery Events	Surgery Total	Endoscopy Events	Endoscopy Total	Weight	Risk Ratio M-H, Fixed, 95% CI
1.2.1 Complete pain relief						
Cahen 2007	8	20	3	19	38.1%	2.53 [0.79, 8.15]
Dite 2003	12	36	5	36	61.9%	2.40 [0.94, 6.12]
Subtotal (95% CI)		**56**		**55**	**100.0%**	**2.45 [1.18, 5.09]**
Total events	20		8			

Heterogeneity: Chi² = 0.01, df = 1 (P = 0.94); I² = 0%
Test for overall effect: Z = 2.41 (P = 0.02)

1.2.2 Partial pain relief						
Cahen 2007	7	20	3	19	15.3%	2.22 [0.67, 7.34]
Dite 2003	19	36	17	36	84.7%	1.12 [0.70, 1.78]
Subtotal (95% CI)		**56**		**55**	**100.0%**	**1.29 [0.83, 1.99]**
Total events	26		20			

Heterogeneity: Chi² = 1.15, df = 1 (P = 0.28); I² = 13%
Test for overall effect: Z = 1.13 (P = 0.26)



- Increase number of endoscopic procedures preceding surgery lead to a less favourable long-term outcome.
  - Endoscopic procedures may have delayed time to surgery leading to more advanced CP

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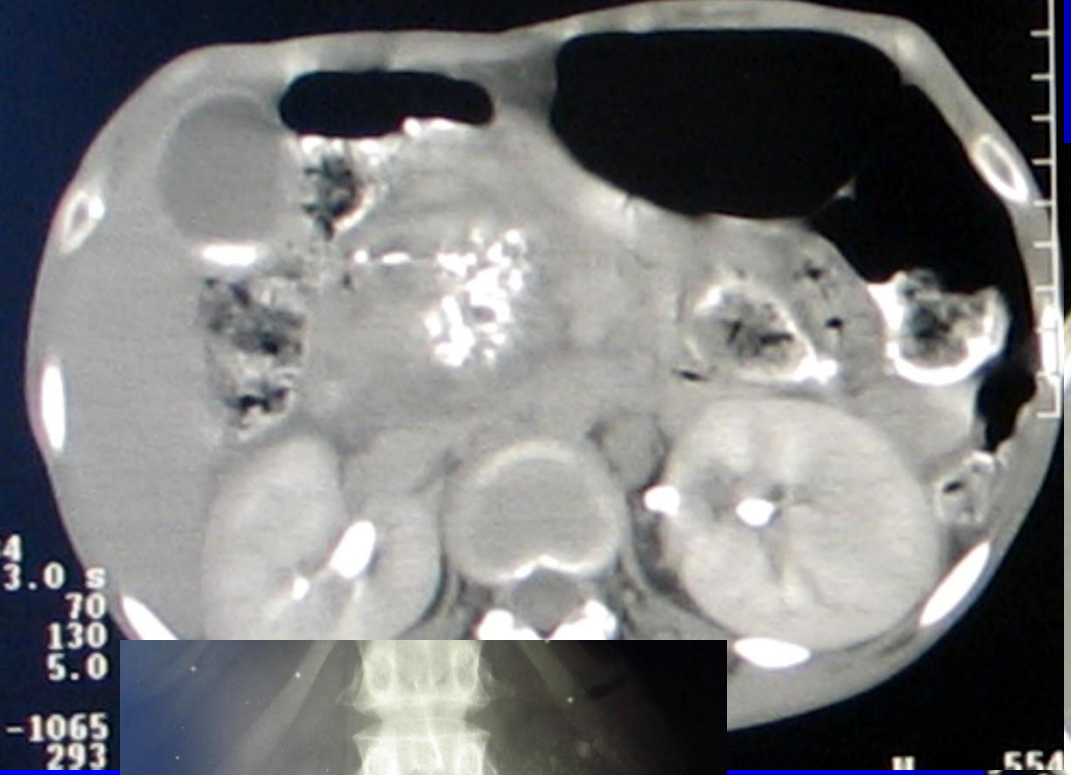
Indications for endotherapy

- tal disrupti
- ion
- enting
- um

Provided

The main ductal pathology /morphology is not too abnormal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-1065
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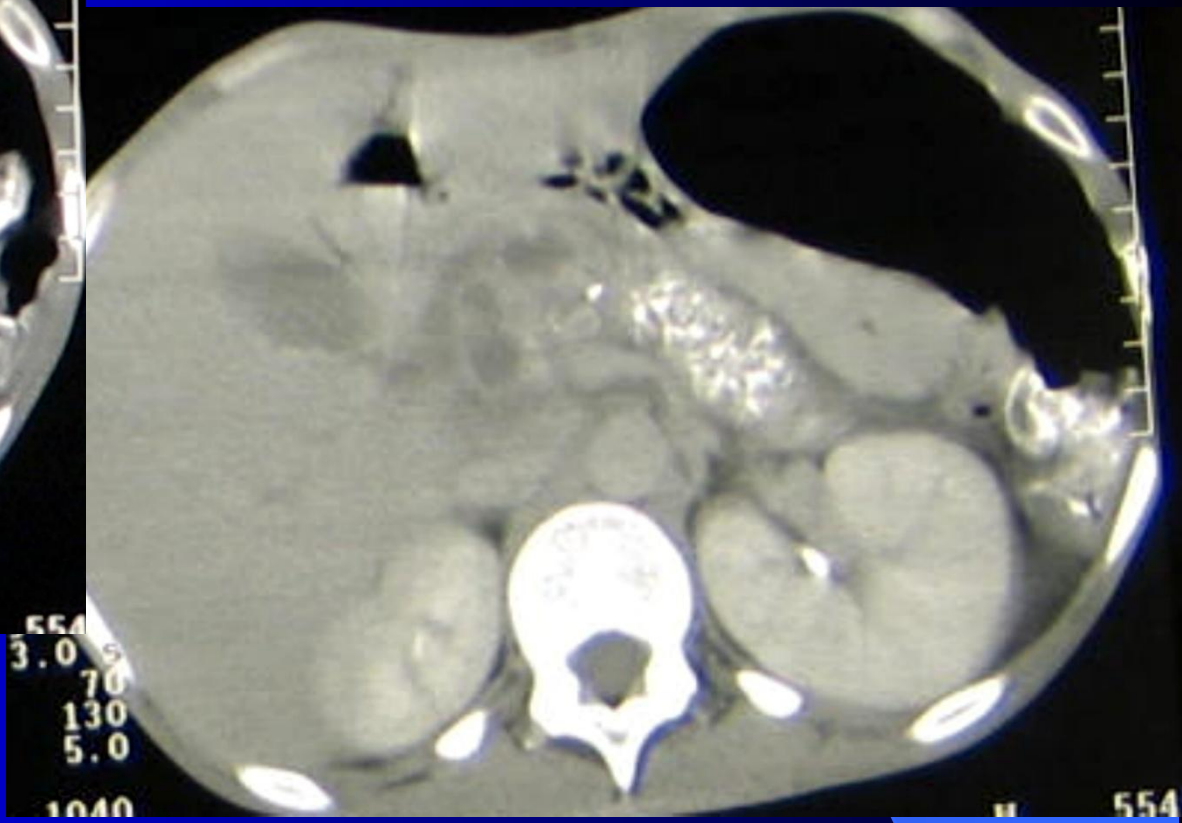
3.0
70
130
5.0
554

Should we be operating on Patients who are still drinking Alcohol?

- Conflicting evidence
- No association found in QOL studies
  - May be that patients who are pain free will continue to take alcohol

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Table 4. Relationship between interview parameters and dichotomized global health status/QoL (QL2) (n=32).

Structured interview at last visit	Global health status/QoL		P value [a]
	Good: QL2≥50 (n=15)	Poor: QL2<50 (n=17)	
Analgesics	7 (46.7%)	12 (70.6%)	0.280
Alcohol	4 (26.7%)	2 (11.8%)	0.383
Cigarettes	13 (86.7%)	15 (88.2%)	1.000
Employed	8 (53.3%)	2 (11.8%)	0.021
Ability to work well	5 (33.3%)	0	0.015
Retired	0	1 (5.9%)	1.000
Disability grant	2 (13.3%)	9 (52.9%)	0.028
NIDDM	0	1 (5.9%)	1.000
IDDM	3 (20%)	2 (11.8%)	0.645
Steatorrhea	7 (46.7%)	10 (58.8%)	0.723
Benefited from surgery	15 (100%)	10 (58.8%)	0.008

[a] Fisher's exact test
NIDDM: non insulin dependent diabetes mellitus
IDDN: insulin dependent diabetes mellitus

Post-Frey Procedure Quality of Life in South African Patients with Painful Chronic Pancreatitis

Cara Yvonne Jeppe[1], Piet Becker[2], Martin Derrick Smith[1,3]

TABLE 5. Multinomial Logistic Regression for Factors Associated With Persistent Pain*

Variables*	Intermediate Pain, OR [95% CI]	Severe Pain, OR [95% CI]
Age at follow-up†	1.01 [0	0.95 [0.92–1.01]
Female sex		1.79 [0.64–4.98]
Reported duration of pain preoperatively†	–1.10]	0.94 [0.84–1.06]
Preoperative daily opioid use	1.35 [0.55–3.28]	3.04 [1.09–8.49]**
Prior therapeutic endoscopic		
2–4	0.91 [0.33–2.53]	2.19 [0.59–8.14]
≥5	1.41 [0.47–4.24]	3.89 [1.01–14.9]**
Type of procedure§		
Drainage	1.61 [0.43–6.07]	1.52 [0.31–7.55]
Head resection	2.62 [0.55–12.5]	2.62 [0.41–16.5]
Length of follow-up†	1.02 [0.92–1.13]	0.99 [0.87–1.13]
Reoperation‖	1.34 [0.33–5.41]	3.18 [0.84–11.8]
Continued alcohol consumption¶	0.65 [0.26–1.63]	0.36 [0.11–1.25]
Continued smoking#	1.35 [0.54–3.39]	1.89 [0.58–6.19]
Current endocrine insufficiency	1.52 [0.63–3.68]	1.64 [0.56–4.82]
Current exocrine insufficiency	1.21 [0.40–3.65]	0.83 [0.24–2.91]

*Reference category is no/low pain score.
†1-year increment.
‡Reference category is 0–1 previous endoscopic procedure.
§Reference category is tail resection. Head resection in relation to drainage also not significantly different.
‖Related to sequelae of chronic pancreatitis: cholestasis, recurrent pain, gastric outlet obstruction or suspicion of malignancy.
¶Variable confined to patients that consumed alcohol prior to surgery and continued.
#Variable confined to patients that smoked cigarettes prior to surgery and continued.
**Significant at the $P < 0.05$ level.

	Pain relief	P value
Continued alcohol use (n=63, 12%)	43 (68%)	P=0.0001
No alcohol use (n=463, 88%)	404 (87%)	

Majority of patients had tropical pancreatitis and not alcohol induced CP

Ramesh IHPBA 2012

EMPLOYMENT STATUS

- "Employed" (n = 38)
  - preop 17 (44.7%)
  - postop 11 (28.9%)
- "Employable" (n = 26)
  - postop 16 (61.5%)
- Accuracy of Data uncertain due to:
  - Avoiding paying hospital fees
  - Disability seeking behaviour

National Unemployment rates

- 3rd quarter of 2012
  - 25.5% unemployment
    - 70% <35 years of age
    - 64% did not complete secondary education
- In 99 patients undergoing Frey mean age = 47

Table VII. Patient data during the follow-up period

	Patients without opioid use N = 53	*Patients with opioid use N = 35*
Pain		
No pain	30 (57%)	17 (49%)
Mild/moderate	19 (36%)	10 (29%)
Strong	4 (8%)	4 (11%)
Severe	0	(11%)
Analgesia		
No		14 (40%)
Paracetamol		4 (11%)
Codeine	(21%)	10 (29%)
Morph	3 (6%)	7 (20%)
Steatorrhe	17	9
Diabetes mellitus	23	18
Activity		
Normal	29 (55%)	16 (46%)
Mild restriction	18 (34%)	12 (34%)
Severe restriction	6 (11%)	7 (20%)
Work status		
Working	18 (34%)	8 (23%)
Not working	29 (55%)	24 (69%)
Retired	6 (11%)	3 (9%)

Surgery 2004, 136. 600-8

- The Indication for surgery for Pain and local complications are fairly well defined but level 1 evidence is missing in most instances
- The timing of surgery is unclear but there is some evidence that suggests we should be operating earlier than later
- It would appear that in most patients surgery has better results than endoscopy but because no bridges are burnt with endoscopy this is an attractive option
- Recent evidence suggests that surgery may protect against developing adenocarcinoma in CP