Should we revisit treatment algorithm for the Groove Pancreatitis? Pancreas-Preserving Duodenal Resections vs Pancreatoduodenectomy for the Cystic Dystrophy of the Duodenal Wall (Groove Pancreatitis).

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Background: Management of the cystic dystrophy of the duodenal wall (CDDW), or groove pancreatitis (GP), remains controversial. Although pancreatoduodenectomy (PD) is considered as the most suitable operation for CDDW, pancreas-preserving duodenal resection (PPDR) has also been suggested as an alternative for the pure form of GP (isolated CDDW). There are no studies comparing PD and PPDR for this disease.

Aim: To compare safety, efficacy, short- and long-term results of PD and PPDR in patients with CDDW.

Methods: A retrospective analysis of clinical, radiologic, pathologic, intra- and postoperative data of 84 patients with CDDW (2004-2020) and comparison of safety and efficacy of PD and PPDR.

Results: Symptoms: abdominal pain (100%), weight loss (76%), vomiting (30%) and jaundice (18%) and data of CT, MRI, and endoUS led to correct preoperative diagnosis in 98,8% of cases. Twelve patients were treated conservatively, by pancreaticoenterostomy (n8), duodenum-preserving pancreatic head resection (DPPHR) (n6), PD (n44) and PPDR (n15) without mortality. Weight gain was significantly higher after PD and PPDR compared to other treatment modalities. Complete pain control was achieved significantly more often after PPDR(93%) and PD(84)% compared to other treatment modalities (>18%). New onset diabetes mellitus and severe exocrine insufficiency never occurred after PPDR compared to PD (31% and 14%).

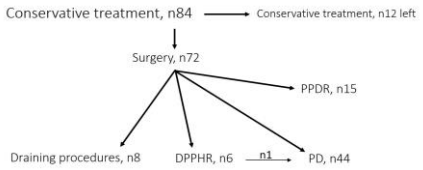

Figure 1. Patients' flow chart

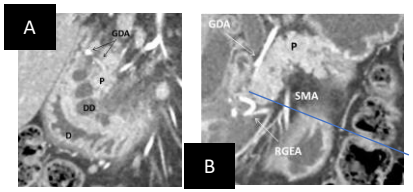

Figure 2. Isolated form of the CDDW. Arterial phase. Coronal view. a. Deformation and thickening of the medial wall of the duodenum (D), major papilla surrounded by the well-defined cysts located in the submucosa (DD). The GDA is shifted forward and to the left, lying in the groove between the unaffected pancreatic head (P) and duodenal wall. b. Unchanged orthotopic pancreas. Only duodenum is involved.

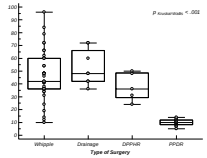

Figure 6. Duration of preoperative treatment of patients with cystic dystrophy of the duodenal wall. Preoperative treatment before PPDR was significantly shorter when compared with the other subgroups

PPDRs and PDs for CDDW. Comparison of intraoperative data and complications

Variables	PPDR	PD	P M-W value
n	15	44	
Blood loss, ml	50 (50-100)	50 (100-125)	.10
Time, min	235 (215-270)	275 (240-290)	.05
Hospital stay, day	15 (13-17)	12 (11-14)	.03
Morbidity (C-D > III) n(%)	1 (6)	6 (14)	.67

Table 1. Short- and long- term results of CDDW treatment (2004-2020)

Type of treatment	N	*Morbidity n (%)	Full pain control, n (%)	Steatorrhea, n (%)	New DM, n (%)
Conservative	12	5 (42%)	5 (42)	4 (33)	6 (50)
Draining OP	8	1/1 (12.5/12.5%)	2 (25)	2 (25)	2(25)
DPPHR	6	1/2 (17/34%)	2 (33)	-	-
PD	44	12/7 (27/16%)	37 (84)	6 (14)	12 (31)
PPDR	15	4/1 (27/7%)	14 (93)	-	-

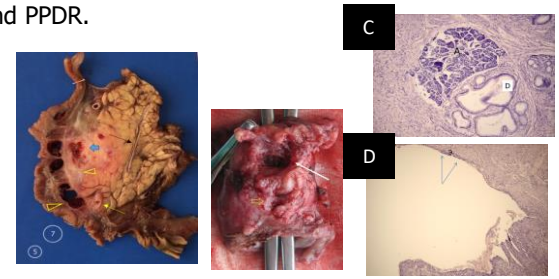

Figure 3. a. CDDW associated with chronic pancreatitis in the pancreatic head (segmental form of the groove pancreatitis). The resected specimen after Whipple procedure in 47-year-old male. There are multiple cysts within the thickened, chronically inflamed duodenal wall of the second portion of the duodenum (arrowheads) without dilation of the common hepatic (yellow arrow) and main pancreatic (black arrow) ducts. Chronic inflammation in the pancreatic head with necrotic mass (thick blue arrow) makes pancreas-preserving surgery unjustified and pancreatoduodenectomy the surgery of choice; b. Isolated form of the cystic dystrophy of the duodenal wall = pure form of the groove pancreatitis. Due to unchanged orthotopic gland pancreas-preserving duodenal resection was performed. Resected 6-cm specimen of the second part of the duodenum with major papilla (thick arrow) and large scarry-sided cyst of the medial duodenal wall with the remainders of the ectopic pancreatic tissue inside it. A forceps introduced into the duodenum to show the absence of communication between the duodenal lumen and the lumen of the cyst (arrow); c. Micro. Isolated form of CDDW. Heterotopia of the pancreatic tissue (acinuses – A and ducts – D) in the duodenal wall. Hematoxylin-eosin, x 100; d. Micro. Isolated form CDDW. Cyst in the duodenal wall formed by a dilated duct of the ectopic gland with the focuses of preserved epithelium (E and arrows). Hematoxylin-eosin, x50

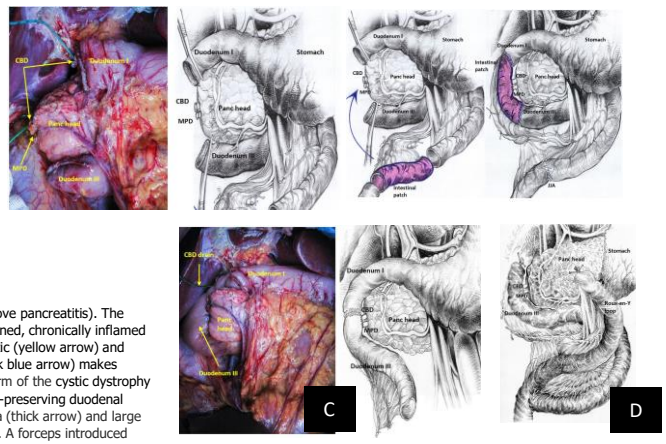

Figure 4. Isolated form of the cystic dystrophy of the duodenal wall. Scheme of the pancreas-preserving resection of the second portion of the duodenum (a) with reconstruction by intestinal interposition (b), direct duodeno-jejunostomy (c) or Roux-en-Y method (d).

PPDR vs PD for CDDW. Long term results

Variables	PPDR	PD	P M-W value
n	15	44	
Weight gain, kg	10 (8-16)	8 (7-9)	.01
Weight gain, %	77 (70-89)	69 (63-75)	.03
Pain after surgery, n (%)	1 (6)	5 (11.4)	.66
New DM, n(%)	-	12 (31)	.00*
PERT, n (%)	1 (6)	43 (98)	.00*
Follow up, months	89 (78-100)	105 (80-134)	.15

PERT – pancreatic enzymes replacement therapy

Literature review of the largest series for CDDW treatment

Author	Number of CDDW patients	Pure form of CDDW	Surgery*	PD**	PPDR* *
Stolte, 1982 [8]	30	11 (37%)	30 (100%*)	30 (100%)	-
Jouannaud, 2006[4]	23	0	14 (61%*)	10 (71%)	-
Rebours, 2007[5]	105	30 (29%)	29 (28%)	17 (59%)	-
Tison, 2007[35]	9	5 (56%)	9 (100%*)	9 (100%)	-
dePretis, 2017[17]	82	22 (27%)	57 (69.5%*)	51(89%)	-
Our data	82	18 (22%)	70 (85%)	42 (60%)	15 (21%)
Overall	331	86	209	159	15

Conclusions: PPDR is similar in safety and better in efficacy compared to PD in patients with CDDW and may be the optimal procedure for the isolated form of CDDW. The pure form of GP is a duodenal disease and PD may be an overtreatment for it. Early detection of CDDW gives chance for pancreas-preserving surgery.