

## CONFERENCE REPORT

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# Pancreatectomy for Pancreatic Disease and Quality of Life

Raffaele Pezzilli, Lorenzo Fantini, Antonio Maria Morselli-Labate

Department of Internal Medicine and Gastroenterology, Sant'Orsola-Malpighi Hospital,  
University of Bologna. Bologna, Italy

### Summary

The aim of this paper was to review the data existing in the English literature on the quality of life in patients who undergo surgical resection of the pancreatic gland either for benign or for malignant diseases. MEDLINE, Web of Science, and ScienceDirect were browsed in order to select the data existing in the literature on quality of life and pancreatic surgery. Alerts received by e-mail were also taken into account. Only full text papers were selected. Of the 161 papers found, only 13 papers were evaluated for the purpose of this study: 11 focused on surgical resective procedures in chronic pancreatitis and two focused their interest on assessing the quality of life related to resective procedures in pancreatic neoplasms. Despite the scarcity of studies assessing the quality of life in patients who underwent pancreatic surgery, there is the need to routinely assess well-being in patients who have been operated on.

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### Introduction

The World Health Organization (WHO) has defined the quality of life (QoL) as: "... an individual's perception of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectations, standards and concerns. It is a broad-ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, and their relationship to

salient features of their environment." [1]. This is a general definition because QoL, subjectively perceived by the patient, is becoming a major issue in the evaluation of any therapeutic intervention, mainly in patients with chronic or hard to cure diseases where the aim of the intervention is to keep patients either symptom-free and able to live in the community for a long time, or to reduce the discomfort caused by the disease. Even if chronic pancreatitis and pancreatic cancer are chronic and hard-to-cure diseases, the suggestion of WHO has been applied by clinical researchers only recently. In fact, together with the traditional evaluation of morbidity and mortality, and the assessment of exocrine and endocrine functions in patients with pancreatic disease, we should consider the perception of the health status of patients with benign [2, 3, 4] or malignant pancreatic diseases as a priority. If this is true for chronic disease treated medically, QoL becomes of particular interest in those patients who undergo surgical procedures for their pancreatic disease.

It is well-known that patients who undergo pancreatic surgery may develop several post-procedural complications mainly represented by diabetes and maldigestion which may affect their way of life [5].

The aim of this paper was to review the data existing in the English literature on the QoL in patients who undergo surgical resection of the head of or the entire pancreatic gland either for benign or for malignant diseases of the pancreatic gland.

**Table 1.** MEDLINE search carried out in order to select the data existing in the literature on quality of life and pancreatic surgery (June 20<sup>th</sup>, 2006).

Search	Most Recent Queries	Time	Result
#6	Search (#4) OR (#5) Limits: <b>English, Humans</b>	02:33:43	<u>74</u>
#5	Search (#1) AND (#3)	02:33:17	<u>61</u>
#4	Search (#1) AND (#2)	02:33:05	<u>56</u>
#3	Search "Pancreaticoduodenectomy"[MeSH]	02:32:35	<u>2059</u>
#2	Search "Pancreatectomy"[MeSH]	02:32:18	<u>6355</u>
#1	Search "Quality of Life"[MeSH]	02:31:59	<u>52885</u>

## Methods

A search was made on June 20<sup>th</sup>, 2006 using three different data bases (MEDLINE, Web of Science and ScienceDirect) in order to select the data existing in the literature on QoL and pancreatic resection surgery published in full text only. Controlled terms only were searched: the Medical Subject Headings (MeSH) terms for MEDLINE, the Topic terms (TS) for Web of Science (WoS) and the Keywords for ScienceDirect. Seventy-four papers on MEDLINE, 122 on WoS, and 4 on ScienceDirect were found (Tables 1, 2, 3). In addition, one more article was identified in the reference data received in the same time-period from an e-mail alerting provider. Forty duplicate papers were found among the various databases; 37 of these were present in MEDLINE and WoS while, regarding the four papers found in the ScienceDirect database, two were present at same time in

MEDLINE and one was present at same time in WoS. The fourth paper of the ScienceDirect database was in abstract form and was not included in the present study. One-hundred and sixty papers were found [6, 7, 8, 9,10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109,110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165] (Figure 1). Of these, 35 papers were excluded because they were review articles [6, 7, 8,

**Table 2.** Web of Science search carried out in order to select the data existing in the literature on quality of life and pancreatic surgery (June 20<sup>th</sup>, 2006).

Combine Results	
Sets	
#5	<u>122</u> #4 AND #1 <i>DocType=Article; Language=English; Databases=SCI-EXPANDED, SSCI; Timespan=1986-2006</i>
#4	<u>2,815</u> #3 OR #2 <i>DocType=Article; Language=English; Databases=SCI-EXPANDED, SSCI; Timespan=1986-2006</i>
#3	<u>1,552</u> TS=Pancreaticoduodenectomy <i>DocType=Article; Language=English; Databases=SCI-EXPANDED, SSCI; Timespan=1986-2006</i>
#2	<u>1,605</u> TS=Pancreatectomy <i>DocType=Article; Language=English; Databases=SCI-EXPANDED, SSCI; Timespan=1986-2006</i>
#1	<u>43,138</u> TS=Quality of Life <i>DocType=Article; Language=English; Databases=SCI-EXPANDED, SSCI; Timespan=1986-2006</i>

Out of the 122 papers, 36 had already been found in MEDLINE while the remaining 86 papers were processed for the study

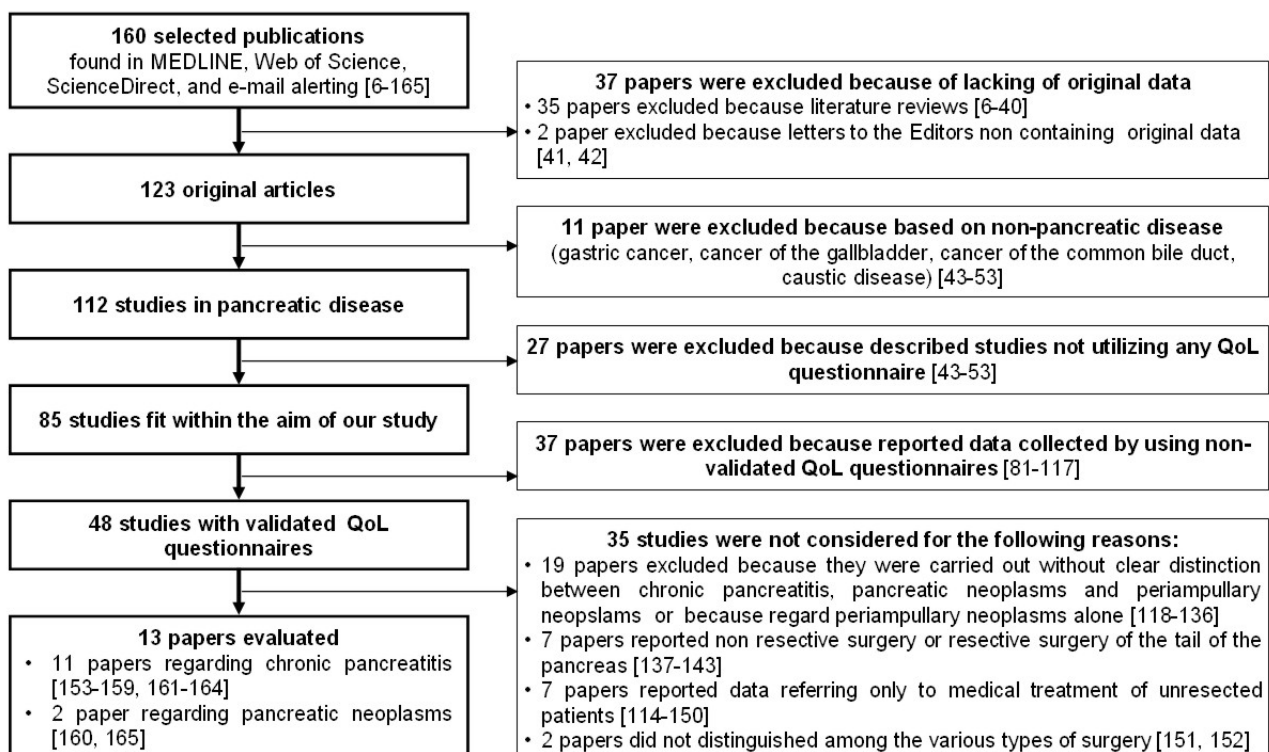
**Table 3.** ScienceDirect search carried out in order to select the data existing in the literature on quality of life and pancreatic surgery (June 20<sup>th</sup>, 2006).

Select and: <u>Combine with AND</u>   <u>Combine with OR</u> ? Combining Tips	Results
5. ((KEYWORDS(Pancreaticoduodenectomy)) OR (KEYWORDS(Pancreatectomy))) AND (KEYWORDS(Quality of Life)) [All Sources(- All Sciences -)]	<u>4</u>
4. (KEYWORDS(Pancreaticoduodenectomy)) OR (KEYWORDS(Pancreatectomy)) [All Sources(- All Sciences -)]	<u>170</u>
3. KEYWORDS(Quality of Life) [All Sources(- All Sciences -)]	<u>3054</u>
2. KEYWORDS(Pancreaticoduodenectomy) [All Sources(- All Sciences -)]	<u>94</u>
1. KEYWORDS(Pancreatectomy) [All Sources(- All Sciences -)]	<u>78</u>

1 paper was published in abstract form only; two papers had already been found in MEDLINE, and one had already been found in Web of Science

9,10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40] and two were letters to the editor not reporting original data [41, 42]. The remaining 123 original papers were considered for the purpose of this study. Of these 123 original papers, 11 were excluded because they reported data on non-pancreatic diseases (gastric cancer, cancer of the gallbladder, cancer of the common bile duct, caustic disease) [43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53]. Therefore, 112 studies

satisfied the aim of our study; however, 27 papers described studies not utilizing any QoL questionnaire [54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80] and 37 papers reported data collected using non-validated QoL questionnaires [81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109,110, 111, 112, 113, 114, 115, 116, 117]. Thirty-five of the 48 remaining studies were not considered: 19 considered surgical



**Figure 1.** Flowchart showing the selection of papers evaluating the quality of life (QoL) in patients with surgical resection of the head or whole pancreatic gland either for benign or for malignant pancreatic diseases (June 20th, 2006).

procedures of pancreaticoduodenectomy or total pancreatectomy without distinction among chronic pancreatitis, pancreatic neoplasms, neoplasms of the papilla of Vater, or biliary tree neoplasms [118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136]; seven papers reported non resective surgery or resective surgery of the tail of the pancreas [137, 138, 139, 140, 141, 142, 143]; seven papers reported data referring only to medical treatment of unresected patients [144, 145, 146, 147, 148, 149, 150]; finally, two papers [151, 152] did not distinguished among the various types of surgery. Therefore, only 13 papers were evaluated for the purpose of this study [153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165]; seven of these papers were present at the same time in two databases (MEDLINE and WoS) [153, 154, 155, 156, 157, 158, 159], two studies were present in the MEDLINE database only [160, 161], three in the WoS database only [162, 163, 164], and the remaining one was the one we received from an alerting e-mail [165].

## Results

Of the 13 studies considered, two focused their interest on assessing the QoL as related to surgical procedures involving pancreatic neoplasms [160, 165] and 11 concerned surgical procedures in chronic pancreatitis patients [153, 154, 155, 156, 157, 158, 159, 161, 162, 163, 164].

### Pancreatic Neoplasm

It is well-known that the QoL is worsen in patients with pancreatic cancer [166, 167], but an objective measure of the well-being in patients operated on for a pancreatic neoplasm is lacking. The only two studies performed on patients with pancreatic cancer are those of Farnell *et al.* [160] and Schniewind *et al.* [165]. Farnell *et al.* [160] utilized the Functional Assessment of Cancer Therapy-Pancreas (FACT-P) questionnaire which is made up of 37 items; the questionnaire was self-administered in 35

patients in order to investigate their quality of life before and four months after pancreatic resection. Ten patients underwent a Whipple procedure and 25 a Whipple procedure and extended lymph node excision. The authors did not find any difference in the QoL assessment between the two types of surgery. The study of Schniewind *et al.* [165] added some more information to the previous study of Farnell *et al.* [160]. These authors studied 91 patients resected for pancreatic adenocarcinoma before surgery, at discharge, and 3, 6, 12 and 24 months after the operation; the EORTC QLQ-C30 questionnaire was used for the study. At the time of discharge from the hospital, all functional scores had dropped below baseline. At 3 and 6 months after surgery, the scores were comparable to preoperative values. After 12 and 24 months, patients reported a slightly better QoL than before surgery. The only exception was in the scale role functioning, which improved at 24 months when compared to the value at discharge but did not reach the preoperative level. With patients who had R0 resection, similar outcomes were found in the EORTC QLQ-C30 functional scales between partial pancreaticoduodenectomy and pylorus preserving pancreaticoduodenectomy, even if patients who had pylorus preserving pancreaticoduodenectomy reported significantly more pain at 24 months after surgery. Moreover, patients who had an extended lymphadenectomy reported better QoL on the EORTC QLQ-C30 functional scales, but the symptom scales were worse in comparison to the patients who underwent a regional lymphadenectomy.

### Chronic Pancreatitis

The questionnaires utilized by the various authors who assessed the QoL following surgical procedures in chronic pancreatitis patients are reported in Table 4. The questionnaires utilized were five: the SF-36, the EORTC QLQ-C30, the visual analog quality of life questionnaire, the Gastrointestinal Quality of Life Index (GIQLI), and the McGill Pain Questionnaire.

**Table 4.** Self-administered quality of life questionnaires utilized in assessing the quality of life (QoL) in the 11 surgical studies on chronic pancreatitis patients.

Questionnaire	No. Items	No. Studies
<b>SF-36</b> 36-Item Short-Form Survey	36	1
<b>EORTC QLQ-C30</b> European Organisation for Research and Treatment of Cancer-Quality of Life Questionnaire	30	7 <sup>a</sup>
<b>Visual analog quality of life questionnaire</b>	23	1
<b>GIQLI</b> Gastrointestinal Quality of Life Index	36	2 <sup>a</sup>
<b>McGill Pain Questionnaire</b>	4	1

<sup>a</sup> One study utilized both EORTC QLQ-C30 and GIQLI

Table 5 shows the experimental designs of these 11 surgical studies and the respective results are reported in Table 6. At present, there are no comparative studies assessing the possibility that the various questionnaires utilized explored the same physical and mental domains. Furthermore, except for one study demonstrating that the QoL in surgical patients is worse as compared to a reference population [159], in the other studies [153, 154, 155, 156, 157, 158, 161, 162, 163, 164], the authors aimed to demonstrate the superiority of one type of operation with respect to another, or to demonstrate that surgery is capable of improving the QoL as compared to the status evaluated prior to the

**Table 5.** Experimental designs of the 11 surgical studies assessing the quality of life (QoL) in chronic pancreatitis patients.

Refs.	Type	QoL questionnaire	No. of patients	Surgical procedure	Follow-up (months)	No. of administration
[153]	R	EORTC QLQ-C30	42	20 Beger procedure 22 Frey procedure	18	One before surgery One after surgery
[154]	R	EORTC QLQ-C30	61	31 Frey procedure 30 Beger procedure	24	One before surgery One after surgery
[155]	P	Visual analog quality of life questionnaire	255	Whipple procedure, distal pancreatectomy, Puestow procedure, sphincteroplasty, Duval procedure, other procedures	55	One after surgery
[156]	C	EORTC QLQ-C30+GIQLI	65	30 Whipple procedure 35 Beger procedure	24	One before surgery One 9-12 months after surgery One 18-24 months after surgery
[157]	P	EORTC QLQ-C30	70	32 Whipple procedure 38 Beger procedure	34	One before surgery One 6-12 months after surgery One 18-24 months after surgery
[158]	P	EORTC QLQ-C30	104	48 Whipple or Traverso-Longmire procedure 56 Frey procedure	43 36	One before surgery One after surgery
[159]	P	SF-36	35	7 total pancreatectomy 28 other procedures	46	One after surgery
[161]	P	EORTC	25	Beger procedure	18	Two before surgery One before discharge One 6 months after surgery One 18 months after surgery
[162]	P	GIQLI	61	32 Beger procedure 13 Frey procedure 21 PPPD	3-89	One after surgery
[163]	P	McGill Pain Questionnaire	22	Pancreatectomy + autologous islet cell transplantation	19	One before surgery One after surgery
[164]	P	EORTC QLQ-C30	74	25 Frey procedure 26 Beger procedure	104	One after surgery

C: controlled study; P: prospective study; R: randomized study

**Table 6.** Results of the self-administered quality of life (QoL) questionnaires in the 11 surgical studies assessing the quality of life (QoL) in chronic pancreatitis patients.

Refs.	Results
[153]	- Equal improvement of the QoL in both groups
[154]	- A more significant improvement of the QoL in patients who underwent the Frey procedure than in those who underwent the Beger procedure (P<0.01)
[155]	- Significant improvement of the QoL after surgery
[156]	- EORTC QLQ-C30 better GIQLI in the assessment of the QoL - Improvement in the QoL was higher after 18-24 months in patients who underwent the Beger procedure than in those who underwent the Whipple procedure
[157]	- Improvement in the QoL was higher after 18-24 months in patients who underwent the Beger procedure than in those who underwent Whipple procedure
[158]	- Significant improvement of the QoL after surgery in both groups
[159]	- The QoL worsened in patients who had been operated on as compared to the reference population
[161]	- Significant improvement of the QoL after surgery
[162]	- No differences among the three surgical procedures
[163]	- Significant improvement of the QoL after surgery
[164]	- No differences between the two surgical procedures

surgery. The follow-up period for assessing QoL in these studies had a median of 37 months (range 18-104 months) and this time-interval is probably too short to measure the impact of surgery on well-being over a long-term period. It is also difficult to compare QoL results between the various studies because of the differences in methodology, study design and patient characteristics. In this respect, more information comes from studies which evaluated mixed medical-surgical populations of chronic pancreatitis patients with a long follow-up period; in these papers, patients who underwent various surgical procedures for chronic pancreatitis had a QoL similar to patients treated medically [4, 151, 152]. It is probably true that surgical procedures are able to briefly ameliorate the QoL of surgically treated patients but, thereafter, chronic pancreatitis *per se* tends to affect the well-being of these patients.

## Conclusions

Presently, there are very few studies exploring the QoL in patients who undergo resection of the head of the pancreas or total pancreatectomy for benign and especially for malignant disease of the pancreas. Furthermore, more knowledge is necessary

regarding the comparative behavior of the QoL between patients operated on for benign and for malignant pancreatic diseases; finally, there is a need for studies which compare the QoL of patients who have been operated on with the well-being of a reference population. In the meantime, the routinely assessment of QoL in operated patients is recommended both for patients affected by chronic pancreatitis and for those with pancreatic carcinoma in order to plan intensive medical and psychological support.

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**Keywords** Chronic Pancreatitis, Alcoholic; Pancreatectomy; Pancreaticoduodenectomy; Pancreatic Neoplasms; Quality of Life

**Abbreviations** EORTC QLQ-C30: European Organisation for Research and Treatment of Cancer-Quality of Life Questionnaire; FACT-P: Functional Assessment of Cancer Therapy-Pancreas; GIQLI: Gastrointestinal Quality of Life Index; QoL: quality of life; SF-36: medical outcome study 36-Item Short-Form Health Survey; WHO: World Health Organization

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## Correspondence

Raffaele Pezzilli

Dipartimento di Medicina Interna

Azienda Ospedaliero-Universitaria di

Bologna

Policlinico Sant'Orsola-Malpighi

Via Massarenti, 9

40138 Bologna

Italy

Phone: +39-051.636.4148

Fax: +39-051.549.653

E-mail: pezzilli@aosp.bo.it

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