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Nationwide questionnaire survey of the contemporary surgical management of pancreatic cancer in the United Kingdom & Ireland[☆]

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KEYWORDS

Pancreas cancer

Abstract This paper reports the results of a questionnaire-based survey of pancreatic surgical specialists in the United Kingdom addressing aspects of staging, resection volume and outcome.

A postal survey was undertaken of the 517 members of the Association of upper Gastrointestinal Surgeons of Great Britain and Ireland (AUGIS). 57 surgeons undertook pancreatic resection from 162 overall respondents. Cross-checking with the list of members of the Pancreatic Society of Great Britain and Ireland yielded 64 pancreatic surgeons. 734 pancreaticoduodenectomy (PD) were reported by respondents compared with 822 procedures according to Government maintained Hospital Episode Statistics.

The modal resection volume performed per annum was 6–10. There were 24 in-hospital deaths in 732 resections (3%) mortality. For individual respondents the modal percentage mortality was 5% (0 to 16%). All clinicians with mortality rates in excess of 10% did less than 10 resections per annum. Respondents favoured “amylase rich discharge beyond 7th post-operative day” as optimal for definition of post-resection pancreatic fistula.

Accepting the limitations of questionnaire surveys, the results provide an important overview of pancreatic surgical practice: pancreaticoduodenectomy is carried out by a range of specialists, lower volume resectionists appear to have poorer outcomes and this study shows widespread agreement on optimum terminology for post-operative pancreatic fistula.

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Introduction

Pancreatic cancer is an important health care problem. In the United Kingdom, pancreatic cancer is the 6th most common cancer with an incidence of 12 per 100,000.¹ As the number of new registrations per annum is equivalent to the number of deaths, the overall survival remains in the order of 12 months from time of diagnosis.¹ Further,

there is evidence that pancreatic cancer is increasing in incidence.² Surgical resection is the only treatment that is associated with prolonged survival.² There is evidence that outcome after pancreatic cancer surgery is better in specialist, high-volume units which report operative mortality rates of less than 5%.^{3–8} In the United Kingdom, as in many other countries, this evidence has led to a drive towards concentration of pancreatic cancer surgery in specialist units. However, despite this specialisation there remains no general consensus on many aspects of management including optimal disease staging pathways and the role of pre-operative biliary drainage. Critically, this variation in practice may extend to details of the operative conduct of pancreaticoduodenectomy and to the use of terminology defining peri-operative complications.

This paper reports the results of a path finding questionnaire-based survey addressing aspects of practice volume, resection volume and outcome. The “snap-shot” questionnaire approach is also utilised to obtain views on technical aspects of pancreaticoduodenectomy and preferred terminology for post-operative complications.

Methods

Study design and population

A postal questionnaire survey was undertaken in 2005 of the 517 members of the Association of Upper Gastrointestinal Surgeons of Great Britain and Ireland (AUGIS). AUGIS is the principal forum in the United Kingdom for surgeons with a declared interest in upper gastrointestinal surgery. Written permission was obtained from the president of AUGIS in order to gain access to the membership database and to circulate questionnaires. The questionnaires were bundled together with the quarterly AUGIS newsletter. The study was closed for recruitment 8 weeks after the date of the mailshot. A total of 162 questionnaires were returned yielding a response rate among participating clinicians of 31%. Of these 162 respondents, 57 surgeons stated that they undertook pancreatic resection. This figure was cross-checked with the list of members of the Pancreatic Society of Great Britain and Ireland. The Pancreatic Society membership is comprised of individuals with a declared interest in diseases of the pancreas and thus includes physicians, basic scientists and other interested groups in addition to surgeons. However, male surgeon members are denoted by the suffix “Mr” and their declared affiliation to a department of surgery while female surgeons were identified by their suffix Ms/Miss or Mrs. Using these cross-checks, a total of 64 pancreatic surgeons were identified from the Pancreatic Society membership of 265. The senior author of this study was excluded from participation.

A further cross-check was carried out by comparing the summated numbers of pancreaticoduodenectomy (PD) procedures stated as being carried out by respondents with Data from Hospital Episode Statistics (HES). A total of 734 PD were reported by respondents to this questionnaire (for the calendar year 2004). This compares with 822 PD procedures for the financial year 2003/2004 for NHS hospitals in England according to HES⁹ (it should be noted that according to HES 1 of 822 PD was carried out as a day case).

Questionnaire design and analysis

This is a four part questionnaire designed to obtain a “snapshot” overview of aspects of clinical practice in pancreatic cancer. The four components are listed separately as follows:

1. *Clinical profile questions*: clinical practice parameters such as case volume per clinician, specialist interest of clinicians and their in-hospital mortality for the calendar year 2004 from pancreaticoduodenectomy.
2. *Staging investigation questions*: assess the role of staging investigations in pre-operative assessment.
3. *Technical (operative details)*: to identify routine procedural steps during and prior to pancreaticoduodenectomy such as laparoscopy/laparoscopy ultrasound prior to surgery, intra-operative frozen sections from tumour, preferred technique for restoration of pancreatic duct-enteric continuity, and definitions used for pancreatic fistula. This last category has proved particularly problematic as there is no generally agreed standardised definition for post-operative pancreatic fistula.^{10,11}
4. *Aspects of post operative care*: to investigate practice in referral for chemotherapy after surgery, methods of surveillance for tumour recurrence after resection and also to seek information on the registering of outcome results in a national register.

All results were anonymised for collation and analysis. The study was closed for recruitment 8 weeks after the date of mailshot. Responses to questionnaires were transcribed onto an electronic database (Microsoft Excel, Microsoft Corporation, Redmond WA) for analysis.

Ethical approval

The study was approved by the Central Manchester Research Ethics Committee and registered as a full clinical study with the Research and Development (R&D) office of the Manchester Royal Infirmary.

Results

Clinical profile

There was considerable variation in the terminology used by surgeon respondents to describe themselves. Fifteen (26%) used the term HPB ± transplant surgeon with the second most frequently stated category being General Surgeon with HPB interest (10 surgeons [18%]). Table 1 shows the responses categorised by whether or not surgeons carried out pancreaticoduodenectomy.

Case volume

The total number of pancreaticoduodenectomy procedures done by all respondents is 734.

The modal case volume performed per annum by respondents was 6–10 procedures (Fig. 1). Thirteen (23%) respondents undertook more than 15 procedures each per annum and 1 undertook more than 25.

Table 1 Clinical Profile that best fits the clinical practice of surgeons performing pancreaticoduodenectomies for the year 2004 in UK

Terminology used by surgeons to define their practice	Number performing PD	Number not performing PD	Total
Pancreatic & biliary surgeon	1	0	1
Hepatopancreatobiliary (HPB) surgeon	1	0	1
Hepatobiliary (HB) ± transplant surgeon	4	2	6
Pancreatic surgeon	9	0	9
Hepatopancreatobiliary ± transplant	15	0	15
Oesophagogastric (OG) surgeon	4	41	45
General surgeon	1	14	15
Gastrointestinal surgeon	8	19	27
General with HPB interest	10	7	17
General with OG interest	4	22	26
Total	57	105	162

PD, pancreaticoduodenectomies.

In-hospital mortality

There were 24 in-hospital deaths in 732 resections (3%) mortality. For individual respondents the modal percentage mortality was 5% with a range from 0 to 16%. All clinicians with operative mortality rates in excess of 10% did less than 10 resections per annum.

Staging investigations

Contrast CT is used by all respondents. Endoscopic ultrasound is utilised by 27 (47%). A similar percentage utilised laparoscopy routinely (27 [40%]) with a further 4 (7%) using laparoscopy selectively. Laparoscopic ultrasonography was used routinely by 11 (19%) and selectively by 4 (7%). Positron emission tomography (PET) was used routinely by 2 (4%). No respondents utilised selective mesenteric angiography.

Pre-operative biliary drainage

Pre-operative biliary drainage was undertaken routinely by 29 (51%). Twenty-six respondents (45%) did not routinely

drain an obstructed biliary tree and two surgeons did not respond to this question.

Delay to resection

The available responses were categorised as follows: 0–1 week, 1–2 weeks, 2–4 weeks and more than 4 weeks. The modal response, selected by 21 (37%) was 2–4 weeks. Of note, 34 (60%) have waiting times in excess of 2 weeks prior to resection.

Procedural steps in pancreaticoduodenectomy

The preferred options when performing pancreaticoduodenectomy are seen in Table 2.

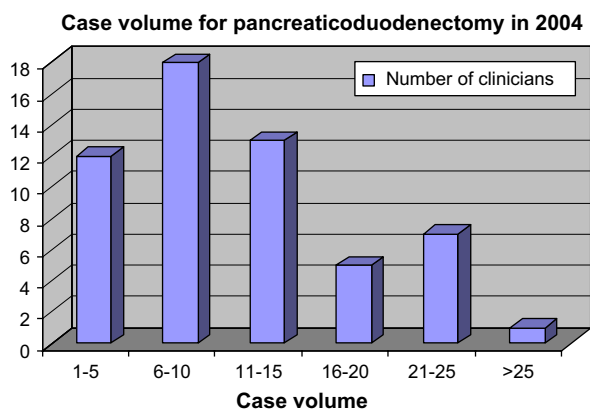


Figure 1 Case volume per annum (2004). Number of pancreaticoduodenectomies performed by respondents in the year 2004. Note that the numbers are grouped as 1–5, 6–10, 11–15 procedures.

Table 2 The procedural steps undertaken by clinicians during pancreaticoduodenectomy

Component procedure	Routine	Percentage (55 respondents)
Cholecystectomy	53	96
Intra-operative frozen section of tumour	6	11
Intra-operative frozen section pancreatic transection margin	10	6
Intra-operative frozen section of other resection margin	7	13
Excision of station 8 lymph node	36	66
Pancreatic reconstruction by pancreatico-gastrostomy	3	5
Pancreatic reconstruction by pancreatico-jejunostomy	52	95
Feeding jejunostomy	20	36
Feeding/decompressing gastrostomy	4	7
NJ feeding tube	10	6

NJ, nasojejunal.

Definition of pancreatic fistula

A range of descriptors was made available for definition of post-pancreaticoduodenectomy pancreatic fistula (Table 3). The majority of respondents favoured the use of the definition of pancreatic fistula as used in the current dataset of the Association of Upper Gastrointestinal Surgeons.

Post-resection surveillance

After resection 53 (93%) referred patients for an oncological assessment. The most frequently used methods for post-resection surveillance were serial CT combined with measurement of carbohydrate antigen (CA 19-9). Only 1 respondent used ultrasonography in follow-up.

Role of a national register for pancreaticoduodenectomy

21 (37%) respondents currently register their results in some form of national register. Forty-eight (84%) were in favour of a national database of pancreatic resection.

Service improvements

Access to EUS for pre-operative staging was the most sought after service improvement (18 respondents [32%]). The second-most widely sought service was access to PET (13 [23%]). Six respondents wanted access to laparoscopic ultrasonography whilst faster access to CT and or High Dependency beds was listed by 3.

Discussion

It is acknowledged that the results of questionnaire surveys can be profoundly influenced by many factors, in particular an incomplete response, idealised answers from clinicians and preferential response by participants and the limited statistical power of questionnaire surveys. Any or all of

these factors may have influenced the results of the present survey. Further, the results should not be regarded as representative either of the views of any professional organisation or of the general body of pancreatic surgical specialists in the United Kingdom.

However, if these caveats are borne in mind, the present study provides a unique overview of the current practice of pancreatic cancer surgery in the United Kingdom. First, it is clear that there is no ready definition of a pancreatic surgical specialist – even when surgeons are invited to define themselves in their own words – there is considerable variation. Clinical profile of surgeons highlights the current variation of surgeons who carry out pancreaticoduodenectomies which is a procedure ideally carried out in specialist centres. The Department of Health estimates that 1 pancreatic surgeon is required for a population of between 2 and 4 million people.¹ Using the lower figure (2 million), there should be 30 pancreatic surgeons. It is accepted that this survey will not have sampled all pancreatic surgical specialists but cross-checking the AUGIS membership with that of the Pancreatic Society would suggest a high response rate. Similarly, comparison of the “claimed” total of 734 pancreaticoduodenectomy procedures with the 822 reported through HES suggests good capture. It should be emphasised that HES is not an absolutely reliable gold standard.

Viewed in this context, it is of interest that the major categories of respondent were HPB ± transplant followed by pancreatic surgeon. Similarly, it could be argued that in the current National Health Service, specialist pancreatic surgery should no longer be carried out by a “Gastrointestinal Surgeon” – albeit an individual who is a member of AUGIS.

Ideal case volume for pancreatic cancer resection has been exhaustively addressed. Yet, it is interesting that even in this self-declared response rate study, the highest mortality rates were seen in the practices of clinicians with the lowest resection volumes. It could be argued that the overall good outcomes from pancreatic cancer resection in the UK “mask” the outcomes of less successful surgeons.

Lack of technical standardisation of the procedure commonly referred to as the Whipple pancreaticoduodenectomy has been acknowledged for some time – for example should patients have cholecystectomy? The results of this survey show concordance in important areas of practice: cholecystectomy, separate sampling of the station 8 lymph node and reconstruction techniques seem relatively standardised. Evidence in favour of pancreaticogastrostomy over pancreaticojejunostomy¹² appears not to have been adopted in British practice.

The results in terms of definition of pancreatic fistula are perhaps the most important findings of this study. It can be stated that this survey of self-stated pancreatic surgical specialists has, for the first time, found a national consensus in the preferred terminology for pancreatic fistula. This definition strongly supports the AUGIS minimum dataset. There is potential for bias as the AUGIS dataset definition was sent to AUGIS members.

In terms of access to better facilities, EUS was the most widely sought – reflecting a national trend in the UK.¹³

Table 3 Current nomenclature used by clinicians for the identification of post-operative pancreatic fistula

Definition of pancreatic fistula ¹¹	Number of respondents (%)
>10 ml/day at or after the 5th post-operative day	3 (5%)
>10 ml/day at or after the 8th post-operative day	0
>25 ml/day at or after the 8th post-operative day	4 (7%)
>50 ml/day at or after the 11th post-operative day	2 (4%)
Amylase rich discharge (>3× serum amylase) beyond 7th post-operative day (current AUGIS dataset definition)	47 (83%)

AUGIS, Association of Upper Gastrointestinal Surgeons in UK and Ireland.

In summary, the results of this questionnaire survey must be interpreted with caution as bias can be introduced by a host of factors and further studies are needed to reach validated conclusions. Accepting these limitations, the results provide an important overview of pancreatic surgical practice: pancreaticoduodenectomy is still carried out by a range of surgical specialists, surgical outcomes are good (but lower volume resectionists appear to have poorer outcomes), the operative technique seems relatively well standardised and there is widespread agreement of the optimum terminology for definition of a post-operative pancreatic fistula. Overall, the findings provide a unique insight into current surgical management of pancreatic cancer in a large, industrialised, Western European economy.

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