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ORIGINAL SCIENTIFIC REPORT

Selective Histological Examination After Cholecystectomy: An Analysis of Current Daily Practice in The Netherlands

B. J. G. A. Corten[1] · W. K. G. Leclercq[1] · C. H. Dejong[2,3] · R. M. H. Roumen[1] · G. D. Slooter[1]

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Abstract

Background The 2016 Dutch national guidelines on handling of a removed gallbladder for cholelithiasis proposes a selective histopathologic policy (Sel-HP) rather than routine policy (Rout-HP). The aim of this study was to determine the current implementation of the present guideline and the daily practice of Sel-HP.

Methods Surgeons who were engaged in gallbladder surgery in the Netherlands and were involved in local hospitals' gallbladder protocols completed a questionnaire study regarding gallbladder policy, between December 2017 and May 2018. Data were analyzed using standard statistics.

Results A 100% response rate was obtained (n = 74). Approximately 64% of all gallbladders (n = 22,500) were examined microscopically. Sixty-nine (93.2%) hospitals confirmed they were aware of the new guidelines, and 56 (75.7%) knew the guideline was adjusted in favor of Sel-HP. Half of the hospitals (n = 35, 47.3%) had adopted a Sel-HP, and 39 (52.7%) a Rout-HP. Of the 39 hospitals who had a Rout-HP, 36 were open to a transition to a Sel-HP although some expressed the need for more evidence on safety or novel guidelines.

Conclusions The current implementation of the 2016 Dutch guideline advising a selective microscopic analysis of removed gallbladders for gallstone disease is suboptimal. Evidence demonstrating safety and cost-effectiveness of an on demand histopathological examination will aid in the implementation process.

Abbreviations

GBC	Gallbladder carcinoma
HP	Histopathology
Rout-HP	Routine histopathologic policy
Sel-HP	Selective histopathologic policy
NPV	Negative predictive value

Introduction

Approximately 23,000 cholecystectomies are performed annually in the Netherlands, compared to over 750,000 cholecystectomies in the United States [1]. There are several indications for cholecystectomy such as symptomatic cholelithiasis, biliary pancreatitis, a polyp or a suspicion of

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✉ B. J. G. A. Corten
bartcorten@gmail.com

[1] Department of Surgery, Máxima Medical Center, PO Box 7777, 5500 MB Veldhoven, The Netherlands

[2] Department of Surgery, Maastricht University Medical Centre, Maastricht, The Netherlands

[3] Department of General, Visceral and Transplantation Surgery, RWTH University Hospital Aachen, Aachen, Germany

gallbladder carcinoma. It is common practice to send each gallbladder to the department of Pathology for routine histopathologic examination (Rout-HP). However, associated costs approximate €60,- per specimen in the Netherlands [2, 3].

In an attempt to be cost-effective, a selective histopathologic examination (Sel-HP) policy of gallbladder specimens was proposed by surgeons [4]. However, some feared the omission of incidental gallbladder carcinoma (GBC). Studies report a GBC incidence of 0.19–2.8% of cholecystectomies for benign conditions [5, 6]. All other pathologic findings do not change the treatment plan. Furthermore, nearly all gallbladder carcinomas contain macroscopic abnormalities. Smaller studies claim a 100% negative predictive value (NPV) in absence of abnormalities, whereas 92% NPV is described in a systemic review [7], implying that gallbladder cancer does not occur in normal appearing gallbladders. Moreover, if a resected gallbladder does contain a non-visible or non-palpable tumor it is likely an early GBC of limited tumor penetration and the preceding cholecystectomy would suffice. Therefore, it is unlikely that a tumor that is only detected microscopically by random transections would change treatment.

The national guideline "cholecystolithiasis" of the Dutch Surgical Society (Nederlandse Vereniging voor Heelkunde, NVvH) provides Dutch surgeons with recommendations for adequate decision making with regard to gallbladder policy [8]. The guideline contains comprehensive recommendations regarding diagnosis, treatment and follow-up strategies for gallstone disease. The guideline was updated in 2016 favoring a Sel-HP policy of the gallbladder: 'In the absence of macroscopic abnormalities, it seems justifiable to refrain from additional histopathologic examination (level 2a—systematic review) [2, 3, 9]. At present, adaptation rates of this update are unknown. The aim of this study was to analyze the implementation of the Dutch Surgical Society 2016 update on cholecystolithiasis regarding handling of the removed gall bladder.

Method

This study was initiated by the Department of Surgical Oncology of Máxima Medical Centre (MMC) Veldhoven, the Netherlands. A total of 96 Dutch hospitals provide care to over 17 million inhabitants. Of some hospitals the board and medical staff have merged. In these collaborating hospitals cholecystectomies are performed by the same group of surgeons. These merged hospitals were only included once. Excluded were independent treatment institutes ("ZBC", Zelfstandige behandelcentra), children's hospitals ($n = 4$) and one cancer institute. As a consequence, 74 unique hospitals were eligible for evaluation. These institutions are classified as University teaching hospitals ($n = 8$), teaching hospitals ($n = 26$) and non-teaching hospitals ($n = 40$). A flow chart of the contacted hospitals is displayed in Fig. 1.

The interview

A telephone or personal interview was performed between December 2017 and May 2018 by the first author, using a structured questionnaire with a surgeon who was well aware of the local hospitals' gallbladder policy.

Questionnaire

The questionnaire was based on the current 2016 national guideline "cholelithiasis" of the Dutch Surgical Society (NvvH) [8]. A first version of the questionnaire was composed by a panel of 3 HPB surgeons of MMC ("Appendix") and was earlier tested on a limited number of staff members. Ambiguities and linguistic errors were amended and the final version was produced. The questionnaire contained a total of 21 questions. If surgeons opened the gallbladder with the sole purpose to examine the presence of gallstones, they were scored as no macroscopic examination.

Statistical analysis

Statistical analysis was performed with SPSS version 24.0 for Windows (SPPS Inc., Chicago, IL, USA). Descriptive statistics were used to describe results. Results are expressed as percentages or absolute numbers. The accumulated number of cholecystectomies performed per hospital was calculated using the median of the self-reported range of cholecystectomies (i.e., 225 for the range of 200–250).

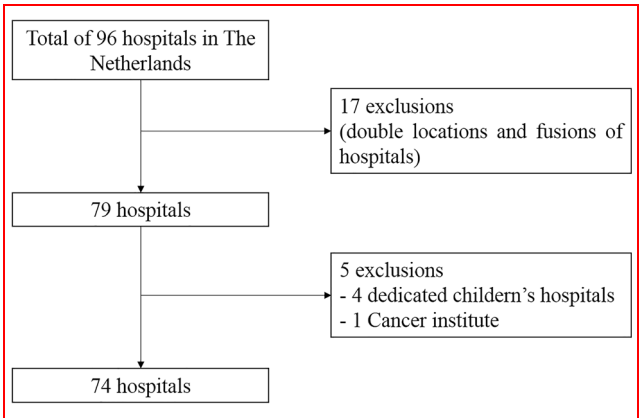

Fig. 1 Flow chart of the hospitals in the Netherlands. Numbers are based on data of the Dutch Society of Surgery in 2016

Results

Clinical profile

Results from all hospitals (n = 74) was obtained (Table 1). Most respondents, representing their hospital, were abdominal (n = 55) or hepatobiliary surgeons (n = 13) whereas six general surgeons were involved in routine gallbladder surgery. These 74 surgeons represented a total of 1053 surgeons of all 74 participating hospitals [range 4–36 surgeons per hospital]. They reported that a total of 603 Dutch surgeons routinely performed cholecystectomies [range 3–20 surgeons per hospital] during daytime and n = 571 also during on call hours [range 2–20 surgeons per hospital]. The total number of cholecystectomies in the 12 months preceding the interview was 22,533.

Routine cholecystectomies

For patients with symptomatic cholelithiasis, 35 (35.3%) hospitals had a Sel-HP, whereas 39 (52.7%) practice a Rout-HP. For acute cholecystitis this is 16 (21.6%) and 58 (78.4%) respectively. Three (4.1%) Sel-HP hospitals have predetermined criteria for selective gallbladder examination. Of the hospitals that do not have a Sel-HP, 36 out of 39 (92.3%) attested they would consider a selective policy, and the remaining 3 (7.7%) would not. In the Sel-HP hospitals it is estimated that 23% of gallbladders would have been referred for HP. Based on references that 15% (1 in 6 or 7) of cholecystectomies are performed for cholecystitis and all others for symptomatic cholelithiasis, we calculate that currently in the Netherlands 64% of all gallbladders is referred for additional histopathology. Table 2 depicts the main results of the questionnaire.

Table 1 Clinical profile of the respondents demographics

	n [%]
Number of surgeons in hospital of survey (n = 74)	1053
Number of surgeons performing routine cholecystectomies	603
Number of surgeons performing cholecystectomies during on call hours	571
Total number of surgeons questioned	74
Differentiation	
Surgeon, abdominal	55/74 [74.3]
Surgeon, hepatobiliary	13/74 [17.6]
Surgeon, other	6/74 [8.1]
Type of Hospital	74
University hospital	8/8 [10.8]
Teaching hospital	26/26 [35.1]
Non-teaching	40/40 [54.1]
Total number of estimated cholecystectomies performed in the past 12 months	22,533

Table 2 Results of questionnaire

	n [%]
Routine histopathologic examination for symptomatic cholelithiasis	
Yes	39 [52.7]
No	35 [47.3]
Routine histopathologic examination for acute cholecystitis	
Yes	58 [78.4]
No	16 [21.6]
Evaluation of pathologists' rapport, even in uneventful and uncomplicated cholecystectomy	
Yes	74 [100]
No	0 [0]
Standard macroscopic inspection by surgeon in theatre	
Yes	42 [56.8]
No	22 [29.7]
Depended on surgeon, some do/don't	10 [13.5]
Hospitals policy regarding additional histopathologic examination	
All specimens are routinely examined	39 [52.7]
A selective policy based on macroscopic abnormalities	32 [43.2]
A selective policy based on predetermined criteria	3 [4.1]
Would the hospitals be willing to change their policy to a selective regime	
Yes	36 [48.6]
No	3 [4.1]
Does not apply, already a selective policy in place	35 [47.3]
Aware of 2016 Dutch guideline	
Yes	69 [93.2]
No	5 [6.8]
Aware of change in guideline (in favor of selective policy)	
Yes	56 [75.7]
No	18 [24.3]
Did the guideline influence the hospital policy	
No influence, all gallbladders are routinely examined	32 [43.2]
No influence, all selective policy is already in place	13 [17.6]
Yes, hospital policy changed as a direct result of the guideline	22 [29.7]
Yes, hospital policy will change in the future, or will supplement to a change in policy	7 [9.5]

Dutch guideline

Sixty-nine (93.2%) hospitals confirmed they were aware that the national guidelines for cholelithiasis had been changed in 2016 and 56 (75.7%) knew the guideline was adjusted in favor of a selective policy. Nevertheless, thirty hospitals currently had not changed their practice. On the other hand, the new guideline resulted in a policy change in 22 hospitals to Sel-HP. In 13 hospitals Sel-HP was already amended prior to the change in national guideline. 7 hospitals were considering a change in the near future (Fig. 2).

Peroperative suspected gallbladder cancer

One scenario discussed during the interview was the hypothetical scenario of an unexpected gallbladder cancer during surgery. 43.2% (n = 32) would suspend the surgery and refer the patient to a hepatobiliary center. 8.1% (n = 6) would suspend surgery and perform additional imaging and subsequently treat the patient in their own hospital. None would convert to an open procedure and complete the resection, but 8.1% (n = 6) would convert to an open procedure with additional resection of liver parenchyma and lymphadenectomy. 6.8% (n = 5) would complete the cholecystectomy and await the final pathologic report. The remaining 33.8% (n = 25) would follow a different policy, e.g. consulting a HPB colleague.

Missing a carcinoma

With selective histopathologic examination of the gallbladder there is a theoretical chance of missing a carcinoma. Seventy (94.6%) of the questioned surgeons agreed with the premise that malignancy of the gallbladder is the only clinically relevant conclusion, whereas 4 (5.4%) did not. Reasons for disagreeing were e.g. polyposis of the gallbladder and biliary tree, metachromatic leukodystrophy and the presence of histopathologic findings.

Thirty-six (48.6%) surgeons said that additional histopathologic examination by the pathologist would not yield any clinically relevant conclusion after proper macroscopic examination of the gallbladder. Six (8.1%) surgeons explained that in their hospital they would refer all gallbladders for histopathologic analysis in order not to miss any gallbladder cancer. Respectively, 3 (4.1%), 16 (21.6%), 10 (13.5%), and 1 (1.4%) surgeons said they would accept a chance of 1:100, 1:1000, 1:10,000 or 1 in 100,000 to miss a gallbladder cancer in a macroscopically not-suspicious gallbladder.

Cost of histopathologic work

Surgeons estimated the cost for histopathologic examination of the gallbladder by the pathologist ranging from [lowest = €8] to [highest = €2000] with a mean of €100,-. Cost estimates were divided into different groups and presented in Fig. 3.

Discussion

The current study is an inventory of gallbladder policy in regard to histopathological gallbladder examination in the Netherlands, based on a national questionnaire. The response rate was 100%, allowing for a good reflection of the current Dutch daily practice. Summation of the self-reported number of annual cholecystectomies per hospital renders 22,533 cholecystectomies for the country. This corresponds fairly with the actual number of cholecystectomies performed in the Netherlands, being 23 000. The survey therefore provides a reliable representation of the general Dutch practice.

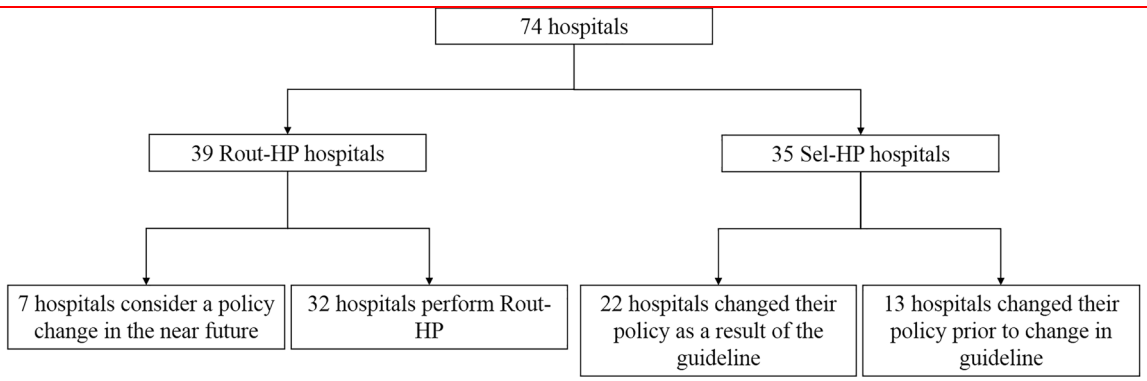

Fig. 2 Flow chart of the different hospital policies and impact of the national guideline

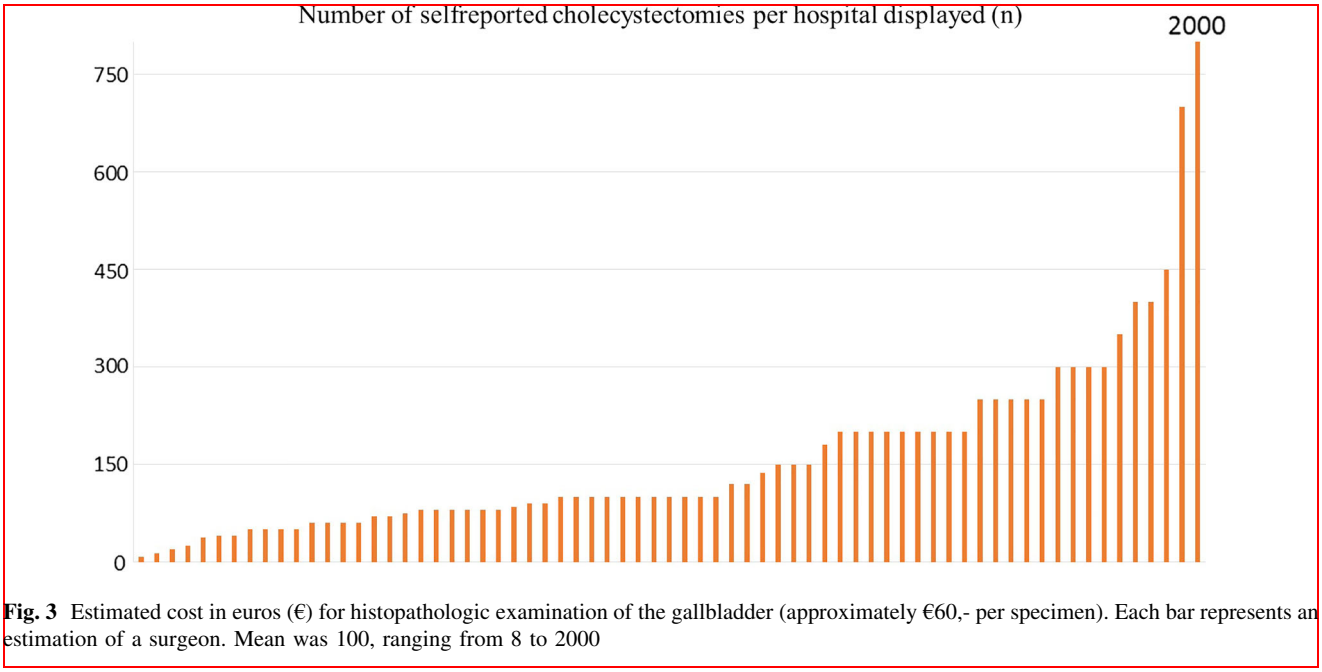

Fig. 3 Estimated cost in euros (€) for histopathologic examination of the gallbladder (approximately €60,- per specimen). Each bar represents an estimation of a surgeon. Mean was 100, ranging from 8 to 2000

Surgery in the Netherlands is increasingly specialized and differentiated into gastrointestinal, vascular and trauma surgery. The gallbladder remains an organ operated by all different specialists allowing for the existence of General Surgery. We observed that approximately 603 of the total 1035 surgeons performed cholecystectomies, which translates into nearly 37 (603/22,500) cholecystectomies per surgeon per year.

Awareness of the new national guidelines reached 69 (93.2%) of the questioned hospitals. Of these, 56 (75.7%) were aware of the details on Sel-HP. In our opinion the current distribution and awareness of the Dutch Surgical guidelines is adequate. Almost half of the hospitals in the Netherlands adapted their Sel-HP based on the new guidelines. Of the remaining hospitals with a Rout-HP, 92.3% (n = 36/39) of the hospitals admitted they were open for a change in policy. In their opinion, however, the current evidence is not sufficient enough for a switch to Sel-HP. To this extent additional studies may persuade more surgeons and hospitals to pursue a Sel-HP practice in regard to the gallbladder. Only 3 attested they did not want to change to a selective policy.

We calculated that in current daily practice in the Netherlands 64% of the gallbladders is referred for HP. Based on the estimation of referral of the respondents form Sel-HP hospitals this number could be reduced to 23% if all hospitals in the Netherlands would switch to Sel-HP. We previously reported the first prospective cohort of macroscopic evaluation by the surgeon in 319 gallbladder resections for benign indications. Indication for histopathology was found in only 17.2% of the cases [10]. This is supported by Vliet et al. who concluded that only 13.5% would require further microscopic examination of the gallbladder based on the inspection of the pathologist [2]. Therefore, the estimated 23% for referral by the respondents in the present study is plausible. The difference between these numbers can be explained by a difference in policy regarding acute cholecystitis. Histopathologic gallbladder examination cost approximately €60,- per specimen. Based on the data, consequently, further implementation of a Sel-HP and reduction of unnecessary histopathology could save over 1.5 million euros per year nationwide.

We stated that malignancy of the gallbladder is the only clinically relevant conclusion which may change the treatment plan. Although 94.6% of respondents agreed that this may hold true, some hospitals responded that chronic inflammation of the gallbladder found during histopathology may provide the patients with a plausible cause for abdominal complaints and aid in the postoperative recovery and coping. Furthermore, a gallbladder polyp was suggested to be an interesting outcome, although macroscopic examination would identify these gallbladder abnormalities.

In the hypothetical case of missing a macroscopically invisible tumor 36 surgeons felt that such findings would not lead to a change in treatment plan for the patient and can therefore be omitted. On the other hand, 6 surgeons (8.3%) did not want to bear the responsibility of missing GBC. Nonetheless, it is clear that over 88.5% of the surgeons accepted a chance equal to or greater than 1 in a 1000 to miss a carcinoma in a normal appearing

gallbladder. Regarding gallbladder cancer in a macroscopically normal gallbladder Jamal et al. concluded a negative predictive value (NPV) of 92%, implying that gallbladder cancer almost never appears in macroscopically normal gallbladders [7]. Whether small, non-palpable tumors will lead to a change in treatment plan is questionable and debatable. One might question which number of missed lesions is acceptable in a normal appearing gallbladder. During HP examination of the normal appearing gallbladder a pathologist or lab technician takes a total of 3 sample cuts throughout, one from the cystic duct, one from the fundus and one from the body of the gallbladder. The likelihood of finding a non-palpable non-visible and thus very small tumor through randomly taken specimens is very low and is probably based on coincidence. Furthermore, such small tumors usually have limited tumor penetration and do not change the treatment plan following cholecystectomy. Current consensus regarding correct management of GBC is to pursue a R0 resection, and could require a re-resection [11, 12]. In case of early GBC (Tis and T1a) the tumour does not invade into the muscle layer and a simple cholecystectomy suffices. Extended oncologic surgery with liver resection and lymphadenectomy is advised in case of T1b and T2 tumours. Additional surgery can be considered in larger tumours (T3 and T4) but the inflicted comorbidity might overturn the possible gains.

Peroperative suspicion of malignancy is a rare entity during routine cholecystectomy, but is an important relevant scenario. Inadequate treatment could hypothetically lead to a diminished outcome. During our survey it became clear that all surgeons would get help (either via visual conformation of a colleague, or by consulting a HPB surgeon from a different hospital, usually a tertiary center). Most surgeons added such intraoperative decisions are multifactorial, depending on progress of the cholecystectomy, location and size of the suspicious lesion. None of the surgeons would convert to an open procedure which is in accordance with the guideline recommendation [13-20]. Few surgeons would acquire frozen sections peroperative in order to prove or disprove the carcinoma. However, most surgeons would strive for an R0 resection, and if not possible to abandon the cholecystectomy and refer the patient to a colleague with more experience in gallbladder cancer management. In conclusion, management of a peroperative suspicious gallbladder is dependent on many factors, including the location of the suspected lesion, the surgeons subspecialty, personal experience and hospitals facilities.

The implementation of Sel-HP does not only impact clinical decision making but also legal, social and economic factors. These consequences need to be factored in, and might be different in other countries. Therefore our results might be limited to the borders of our country. For example, the reimbursement of a cholecystectomy may be conditioned by the submission of a gallbladder specimen for histopathologic examination in some countries. These conditions should be evaluated and if necessary changed when aiming for a Sel-HP.

In spite of some practical limitations we feel that this study is an accurate analysis of current daily practice in the Netherlands. We chose to interview one surgeon to represent the hospital, these surgeons were involved in gallbladder surgery. We expected their information to be more accurate than information of a random sample of Dutch surgeons. By personal effort of the authors (BC/GS/RR) we were able to include 100% of hospitals in the Netherlands. We think that estimations of numbers and percentages per hospital are quite accurate since the total number of cholecystectomies that was estimated by our participants was very close to the actual annual number mentioned in the national registry. For calculations on the total number of referred gallbladders for HP we made the assumption that 1 out of 6–7 operations were done for acute cholecystitis. This is based on one of our previous cohort studies [21]. Another practical limitation of a Sel-HP policy is the current lack of a standardized operating procedure or method to instruct surgeons how-to perform a proper macroscopic examination. Such a protocol could help the surgeon to adequately examine the gallbladder specimen and select the right gallbladder specimens for histopathologic assessment, alike chronic cholecystitis cases.

In summary, our analysis of the current daily practice provides insight into the different local policies regarding histopathological gallbladder examination. There is a good awareness of the Dutch national guideline among the surgeons. However, just half of the Dutch hospitals have implemented a selective policy where macroscopic examination is performed by the surgeon. We found that to date about 64% percent of resected gallbladders are still referred for HP. With further implementation of Sel-HP this percentage could be reduced to as low as the previously published estimates of 13–17%. This could lead to better use of healthcare budget. Most Rout-HP hospitals are willing to make the switch but await a higher level of evidence than the 2016 guideline was based on. To this extent, additional studies may persuade more surgeons to pursue a Sel-HP in regard to the gallbladder.

Acknowledgements We thank all the Dutch surgeons who took the time to participate in this survey. We are also indebted to Dr.M. Scheltinga MD, PhD from Máxima Medical Center, Veldhoven, for his contribution in the formatting and editing.

Compliance with ethical standards

Conflict of interest The authors have no conflicts of interest or financial ties to disclose.

Appendix: Questionnaire

Demographic data

Question 1. In which hospital do you currently work

Question 2. What is your current function

- HPB surgeon
- Gastrointestinal / oncological surgeon
- General surgeon
- Other

Question 3. How many routine cholecystectomies for benign gallstone disease are performed annually in your hospital. Estimation / certain of number.

Question 4. How many surgeons work in your hospital?

Question 5. How many surgeons perform routine cholecystectomies?

Question 6. How many surgeons perform cholecystectomies during on call hours?

Histopathologic policy

Question 7. Are all gallbladders for benign gallstone disease routinely sent to the department of Pathology for further histopathologic assessment?

- Yes; estimate which percentage would be sent to department of Pathology
- No; what are reasons to choose for additional histopathologic examination of the gallbladder. And which percentage would be sent in?

Question 8. Are all gallbladders for acute cholecystitis routinely sent to the department of Pathology for further histopathologic assessment?

- Yes; estimate which percentage would be sent to department of Pathology
- No; what are reasons to choose for additional histopathologic examination of the gallbladder. And which percentage would be sent in?

Question 9. Do you always check the pathology report of the gallbladder specimen, even if the surgery was uneventful and the patient made a uncomplicated recovery?

Question 10. We believe that malignancy of the gallbladder is the only clinically relevant diagnosis following routine histopathologic examination. Which outcomes might also be relevant?

Question 11. Does the surgeon perform a macroscopic examination of the gallbladder following a cholecystectomy?

- Yes
- No
- Some surgeons do, and some do not.

Question 12. What is the hospitals policy in regard of histopathologic examination of the gallbladder?

- We practice a routine histopathologic examination of the gallbladder. All gallbladders are sent to the department of Pathology.
- We practice a selective histopathologic examination of the gallbladder. We only send macroscopically abnormal gallbladders to the department of Pathology
- We practice a selective histopathologic examination of the gallbladder. We have predetermined criteria for identifying gallbladders in need of further histopathologic examination.

Gallbladder cancer

Approximately half of all gallbladder cancers are diagnosed prior to surgery. The remaining malignancies are discovered incidentally in patients undergoing surgery for symptomatic gallstone disease or an acute cholecystitis. These gallbladders are usually macroscopically abnormal and would definitely require additional histopathologic examination. So there is discussion on the matter of histopathologic examination of gallbladders that are macroscopically normal.

Hypothetically speaking, if you would practice a selective histopathologic policy in regard of the gallbladder, and macroscopically examine all gallbladders following a cholecystectomy. Consequently you would decide whether the gallbladder in question would need further histopathologic examination. Theoretically, there still remains a chance to miss a small gallbladder cancer.

Question 13. Which chance do you deem acceptable to miss a non-palpable small gallbladder cancer

- I would routinely send in all gallbladders because I do not want to bear the responsibility of missing a gallbladder cancer
- A chance smaller than 1 in 100 to miss a gallbladder cancer
- A chance smaller than 1 in 1 000 to miss a gallbladder cancer
- A chance smaller than 1 in 10 000 to miss a gallbladder cancer
- A chance smaller than 1 in 100 000 to miss a gallbladder cancer
- A chance smaller than 1 in 1 000 000 to miss a gallbladder cancer
- It is futile to submit a normal appearing gallbladder for further histopathologic examination, because following a macroscopic examination by the surgeon there would be no histopathologic outcome that would change the treatment plan

Question 14. What are the costs (in euros, €) of histopathologic examination following routine cholecystectomy? Is this an estimation of a known fact?

Question 15. If your hospital policy regarding the gallbladder is to routinely histopathologically examine the gallbladder, would you be willing to change to a selective policy?

- Yes
- No, if not please specify
- Does not apply, already a selective policy in place

National guideline

In 2016 an update of the national guideline “cholelithiasis” was published.

Question 16. Were you aware of the existence of the new guideline?

The new guideline states: in absence of macroscopic abnormalities of the gallbladder specimen, it seem justifiable not to perform additional histopathologic examination.

Question 17. Were you aware of the change in guideline regarding this matter?

Question 18. Did the new guideline influence your daily practice?

- Did NOT influence, all gallbladder are sent in routinely
- Did NOT influence, there was a selective policy in place prior to the updated guideline
- A policy change was amended as a direct result of the change in guideline
- A policy change will be amended in the future as a result of the change in guideline

In the event of an unexpected gallbladder cancer

Question 19. In case you encounter a, for GBC, suspected gallbladder during a routine cholecystectomy for benign gallstone disease. What steps do you undertake?

- Continue the surgery and complete the surgery laparoscopically, and follow-up via histopathologic examination
- Convert the surgery to an open cholecystectomy and complete the surgery, and follow-up via histopathologic examination
- Convert the surgery to an open cholecystectomy, perform an additional liver resection and lymph node resection
- Stop the surgery and perform additional imaging studies and continue to treat the patient in your own clinic because you have the expertise to do so.
- Stop the surgery and refer the patient to a different hospital for evaluation and further treatment.
- I would follow a different sequence, which is not specified in the earlier options

Other tissue specific questions

Finally some questions regarding routine histopathologic examinations of other tissues.

Question 20. Appendix

- All specimens are routinely examined via the department of Pathology (100%)
- We selectively examine the specimens via the department of Pathology in more than half the cases (>50%)
- We selectively examine the specimens via the department of Pathology in less than half the cases (<50%)
- We do not perform additional histopathologic examination of the specimen (0%)

Question 21. Lipoma

- All specimens are routinely examined via the department of Pathology (100%)
- We selectively examine the specimens via the department of Pathology in more than half the cases (>50%)
- We selectively examine the specimens via the department of Pathology in less than half the cases (<50%)
- We do not perform additional histopathologic examination of the specimen (0%)

Question 22. Atheroma

- All specimens are routinely examined via the department of Pathology (100%)
- We selectively examine the specimens via the department of Pathology in more than half the cases (>50%)
- We selectively examine the specimens via the department of Pathology in less than half the cases (<50%)
- We do not perform additional histopathologic examination of the specimen (0%)

Question 23. Ganglion

- All specimens are routinely examined via the department of Pathology (100%)
- We selectively examine the specimens via the department of Pathology in more than half the cases (>50%)
- We selectively examine the specimens via the department of Pathology in less than half the cases (<50%)
- We do not perform additional histopathologic examination of the specimen (0%)

Question 24. Would you like to receive the results of our survey after completion?

- Yes
- No

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