Incidental findings during a surgical procedure—current practice and ethical implications

Rachel McKenzie, Jasper Diong, Jeanne Snelling, Lynley Anderson, André M van Rij

ABSTRACT

AIM: Sometimes during an elective surgical procedure, an abnormality is found which is unrelated to the scheduled procedure. In many instances, immediate treatment of this unexpected pathology is in the patient’s medical interests, however, specific patient consent has not been obtained. This study investigates current surgical practice when confronted by an incidental finding (IF), as well as surgeons’ views on informed consent in this context.

METHOD: An online survey was sent to all practicing surgeons and surgical trainees within New Zealand. Respondents were presented with hypothetical scenarios involving IFs and asked to decide whether or not they would proceed with treatment. Opinion was sought on the factors influencing such decisions and the need for a clause within surgical consent documents to prompt discussion about IFs.

RESULTS: 151/450 (33.6%) surgeons and trainees responded. Immediate treatment was more likely with IFs of greater clinical significance, lower-risk procedures and where there was prior consent for IF treatment. A proportion of surgeons did not follow these trends. Although a great deal of variation exists in the way that IFs are dealt with in the consent process, the majority of respondents (111/129, 86%) favoured a clause within a consent form that prompts discussion and seeks consent for the treatment of IFs.

CONCLUSION: Responses to the IF scenarios were generally consistent with good practice. While variation in decision-making is to be expected, some decisions were concerning. Most surgeons agree that a clause within the consent form should trigger a discussion of IFs during the consent process.

Occasionally during surgery, an additional abnormality is found which is unrelated to the condition for which the procedure is being undertaken. While uncommon, such findings highlight the limitations of pre-operative diagnostics and imaging techniques.1 A surgical, ethical and legal dilemma arises in cases where it may be medically in the patient’s best interests to treat the incidental finding (IF) during the same operation; yet to do so without prior consent would deny patient autonomy. From a legal perspective, to carry out an additional procedure to treat an IF without informed consent may provide grounds for charges of battery or negligence.2,3 In New Zealand, such treatment may be in breach of Consumers’ Rights. Surgeons may also be subject to disciplinary proceedings.4 Despite such constraints at least some surgeons are willing to undertake additional procedures under certain circumstances5,6 and some institutions have used broad consent clauses to cover these events.7

Responding to IFs requires an individual surgeon’s judgment, which is subject to ethical and legal restraints. This study investigates the perspectives of surgeons and trainee surgeons regarding when it is and is not appropriate to carry out additional procedures for the treatment of IFs, as well as professional opinion regarding current approaches to consent for IF treatment and ways in which this may be improved.
Method
The online survey
An online survey constructed with a mixed quantitative and qualitative methodology was sent out to all surgeons and surgeons in training in New Zealand with the agreement of the New Zealand National committee of the Royal Australasian College of Surgeons (RACS) whose office sent our email letter of invitation containing a weblink for an online survey. Respondents remained anonymous to the researchers. The initial invitation was followed four days later by a second reminder email.

The questionnaire used the online survey design programme surveymonkey.com. The survey questions evaluated the circumstances under which respondents would, or would not, carry out an additional procedure at the time the IF is discovered. The scenarios included several key factors that might influence the decision such as:

- urgency of the need to deal with the IF
- clinical consequence of the IF
- level of increased risk conferred by the additional procedure
- presence or absence of written general consent for additional procedures to deal with IF

Each scenario was followed by the question: “would you or would you not go ahead with the additional procedure in these circumstances?” Respondents were required to record a decision for each proposed scenario before they were able to move on.

Qualitative questions asked respondents to list the factors which would influence their decision making. These open-ended questions both preceded and followed the quantitative questions. Demographic data including the surgeon’s specialty, level of qualification, years of practice or training stage, and other demographic details were noted. Participants were also asked to provide examples of IF in their specialty and their recollection of their institution’s consent form regarding IF. Finally, they were asked their opinion about including a specific clause within surgical consent documents that dealt with IFs. Copies of the anaesthesia and surgical consent documents from both public and private surgical institutions in New Zealand were obtained to determine the presence and nature of clauses pertaining to IF.

Data analysis
Those who did not provide a full set of answers within one or more of the survey sections were excluded from the analysis of the data within those particular sections only.

Univariate analysis was undertaken to compare the various factors that affected the treatment decisions using a chi-square test for the categorical data.

Thematic analysis was undertaken for the qualitative data. A template of categories reflecting the themes of the comments given was generated inductively from the text; this was modified or added to throughout the categorisation process to generate a final template containing all of the themes represented within the dataset. The data was then coded and thematic categories were ranked according to the frequency of the appearance of themes within the data. These were corroborated with the surgeon researcher (AvR) to validate these in accordance with contextual knowledge and experience.

This study was granted ethical approval from the University of Otago Human Ethics Committee (Health).

Results
There were 151 respondents. Of these, 130 (86.1%) provided a complete set of survey answers. The demographic characteristics of the surgeons in this study are shown in Table 1 and were similar to the overall population of New Zealand surgeons. The majority practiced in general surgery, orthopaedic surgery, or otolaryngology. Approximately half had >15 years of surgical experience and 19% were trainee surgeons.

The proportion of surgeons and trainees who would proceed with surgery to deal with an IF increased as the clinical consequence of the finding worsened, and also increased as the additional risk of the added procedure decreased (Figure 1A). In the absence of consent and when the IF had serious consequences for the patient and the operative risk of treatment was low, most surgeons and trainees (91%) indicated...
that they would deal with it at that time compared with 38% who would proceed to treat the finding when the additional risk was high. In contrast, fewer surgeons (6%) would choose to proceed if treatment of the IF would be for the convenience of the patient and the surgical risk was moderate, although more (31%) would proceed when this risk was low. The presence of consent for the treatment of an IF dramatically increased the proportion that would proceed regardless of the IF’s severity and additional operative risk \((p<0.001)\) (Figure 1B).

Of all the decisions made by consultants and trainees, 499/1,596 (31.3%) were in favour of proceeding with the surgery when consent to do so was absent compared to 956/1,596 (60.7%) when consent was present \((p<0.01)\).

**Figure 1:** Proportion of decisions in favour of proceeding with the additional procedure according to the levels of lesion severity and additional surgical risk (A) in the absence of consent and (B) with consent to deal with IFs \((p<0.001)\). Surgeons \(n=133\).

**Table 1:** Demographics of responders.

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Number (%)</th>
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<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>109 (83.2%)</td>
</tr>
<tr>
<td>Female</td>
<td>22 (16.8%)</td>
</tr>
<tr>
<td><strong>Age (yrs)</strong></td>
<td></td>
</tr>
<tr>
<td>26-49</td>
<td>78 (59.5%)</td>
</tr>
<tr>
<td>50+</td>
<td>53 (40.5%)</td>
</tr>
<tr>
<td><strong>Specialty</strong></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>47 (36.2%)</td>
</tr>
<tr>
<td>Orthopaedic</td>
<td>36 (27.7%)</td>
</tr>
<tr>
<td>Otolaryngology</td>
<td>18 (13.8%)</td>
</tr>
<tr>
<td>Other†</td>
<td>29 (22.3%)</td>
</tr>
<tr>
<td><strong>Status</strong></td>
<td></td>
</tr>
<tr>
<td>Surgeon trainee</td>
<td>25 (19%)</td>
</tr>
<tr>
<td>Consultant</td>
<td>106 (81%)</td>
</tr>
</tbody>
</table>

†“Other”: Cardiothoracic (4), Neurosurgery (1), Vascular (5), Paediatric (3), Plastic and Reconstructive (9), Urology (7).
When the decision making of consultant surgeons was compared with that of surgical trainees, the proportion of consultants' responses (47%, 152/321) to proceed with the treatment of an IF was significantly greater than that of the trainees (31%, 23/75 \( p<0.01 \)) when the IF was non-life threatening, where the additional procedure risk was low, and there was no consent to proceed. This favouring of proceeding was also evident when the operative risk was moderate, 15% (47/321) of consultants vs 5% of trainees (4/75 \( p=0.03 \), Figure 2), and when the treatment of the IF was primarily for patients' convenience despite the absence of consent (\( p=0.02 \)). When consent was present, similar differences were seen with the exception that when the IF was of life-threatening severity or when the procedural risk was moderate-high, decision making by trainees and surgeons was similar. Among the surgeons, regardless of age or experience, responses were similar except for an IF of lesser significance, where older consultants were more prepared to deal with them compared with younger consultants (44%, 66/150 vs 33%, 50/153, respectively; \( p=0.01 \), Table 2).

**Figure 2:** Younger and older consultant surgeons and IF: comparison of decisions to proceed according to lesion severity when additional surgical risk was (A) low or (B) moderate and consent to proceed was absent. Consultants \( n=107 \); Trainees \( n=25 \).
Gender comparisons revealed that 83% (364/400) of decisions made by males were in favour of proceeding compared to 73% (159/200) of decisions made by females when the additional operative risk was low with consent to do so ($p=0.04$). Males were more likely to proceed with the additional procedure (72%, 159/220 of decisions) compared to females (57%, 25/44 of decisions) ($p=0.04$) when treatment was either for the patient's convenience or the avoidance of possible future symptoms.

General surgeons and trainees were the most likely of all the specialties to treat an IF, with 562/1,128 decisions (50%) favouring treatment. Orthopaedic surgeons and trainees were the least likely to treat an IF overall, with 372/864 decisions (43%) favouring treatment ($p=0.01$) (Figure 3A). Where consent was present, the general surgeons remained most likely to treat an IF, 164/188 (87%) compared to the ‘other’ surgeons with 86/120 (72%) ($p=0.01$) (Figure 3B).

**Table 2**: Younger and older consultant surgeons and IF: comparison of decisions to proceed according to lesion severity and additional surgical risk when consent present.

<table>
<thead>
<tr>
<th></th>
<th>Low risk</th>
<th>Moderate risk</th>
<th>High risk</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Younger*</td>
<td>Older*</td>
<td>Younger</td>
</tr>
<tr>
<td>Finding has disabling or life-threatening consequences</td>
<td>50 (98%)</td>
<td>48 (96%)</td>
<td>50 (98%)</td>
</tr>
<tr>
<td>Finding is highly likely to cause complications</td>
<td>47 (92%)</td>
<td>42 (84%)</td>
<td>41 (80%)</td>
</tr>
<tr>
<td>Finding may cause symptoms</td>
<td>40 (78%)</td>
<td>35 (70%)</td>
<td>18 (35%)</td>
</tr>
<tr>
<td>It would be convenient for the patient to have the finding corrected at this time</td>
<td>32 (63%)</td>
<td>37 (74%)</td>
<td>13 (25%)</td>
</tr>
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*Younger surgeons n=51 (32–49 years, experience 1–15 years); Older surgeons n=50 (>50 years, experience >16 years).
Qualitative comments regarding factors influencing the decision to proceed

Surgeons were asked to identify factors that would influence a decision to perform an additional procedure for an IF. There were a total of 147 statements containing encouraging factors and 145 containing discouraging factors. The relative theme frequencies are shown in Figure 4. The most dominant factors were: the level of urgency required for treatment, the risk of the additional procedure, the relative risk postponing treatment, the prior knowledge of the patient's wishes and the presence of prior discussion which constituted informed consent. Fear of legal or medical enquiry was an infrequent consideration.

Figure 4: Categories generated from the free-text comments of responders that would encourage or discourage a decision to proceed with an additional procedure generated from 147 statements containing encouraging factors and 145 containing discouraging factors.
Consent for dealing with an IF

Surgeons were asked whether the consent forms used within their institutions included a section seeking consent for the treatment of unexpected findings at surgery. Approximately half of those working in public hospitals (46.8%, 58/124) believed that there was no such clause present; approximately a third (34.7%, 43/124) believed that such a clause was included, and the remainder were unsure. The situation was similar for private hospitals and did not differ according the respondents' age, gender, level of experience or sector of the health system.

There were, however, differences in the relative awareness of different specialties. Otolaryngologists were least unsure (16.1%, 5/31) about whether there was a statement to obtain consent for additional procedures to deal with an IF, while orthopaedic surgeons were most unsure (27.1%, 16/59). However, orthopaedic and 'other' surgeons were more confident that their institutions did have such a statement (53.5% and 53.7%, respectively) than otolaryngologists and general surgeons (23.1% and 28.8%, respectively; p=0.025).

The majority of surgeons, regardless of specialty, were supportive of the decision to include the clause for IFs (86%, 111/129). Thirty of these added further comments. Eight suggested that such clauses should provide clarification of the circumstances in which this should apply, six emphasised that such clauses would be no substitute for robust discussion about the possibility, while five pointed out that despite this consent, there may be times when the surgeon must be free to make the decision to treat or not treat an IF.

The remainder of surgeons opposed the inclusion of clauses to provide general consent for the treatment of IFs. For eight, such a clause would introduce additional complexity into discussions that are already content-rich, and at a time when a patient's capacity to receive information may be reduced. Four commented that IFs occur too infrequently for such a clause to be justifiable, and it would be more appropriate to add extra discussion where relevant or where there was a great deal of diagnostic uncertainty associated with the original procedure.

IFs encountered within different surgical disciplines

Surgeons were asked to offer examples of an IF from within their specialty area. Altogether, 58 different types of IF were distinguishable from the 169 examples recorded. These included all specialties, with a wider diversity in the larger surgical specialties. The most common examples were intra-abdominal findings (41.4%) and incidental malignancies (30.2%).

The most frequently mentioned specific examples related to the appendix, Meckle's diverticulum (13.6%) and gallstones (8%). Incidental abnormality of the ovary (1.5%) was mentioned surprisingly infrequently. No examples of immediate urgency were given. General surgeons provided the greatest number of examples per surgeon (1.71/surgeon). This suggests that IFs may be a more frequent part of the general surgeon's experience.

Discussion

This study shows that there is considerable variation in the current practice of surgeons and surgical trainees with regard to the treatment of IFs. A surgeon's decision-making varies with clinical circumstance, gender, level of surgical experience, type of surgical practice and the presence or absence of patient consent.

From a legal perspective, any surgical intervention that is performed competently with a patient's informed consent or alternatively when it is necessary to save the patient's life or to prevent serious harm to health in the absence of consent is consistent with expected ethical, professional and legal standards. Unsurprisingly, participants were more willing to act in these situations. Surgeons are also more inclined to treat IFs when the additional procedure is of lower risk to the patient and broad consent for treatment is present.

It is, however, evident that numbers of surgeons and trainees are prepared to proceed with treatment when the lesion does not require urgent treatment or the risk associated with the additional procedure is significant, even in the absence of specific consent. This is an important finding, and when asked what influenced these choices they emphasised equally what
they consider to be in the best medical interests of the patient and the need to determine patient choice (Figure 4). Such actions, while possibly welcomed by the patient, may not meet legal standards of informed consent; and may, if contested by the patient, result in legal proceedings.

Most surgeons agreed that under certain conditions, when risks are modest and benefits are significant, proceeding immediately is acceptable. However, some surgeons are a little more likely to proceed with treatment of an IF and others less so. Of concern are those few surgeons who would proceed without specific consent, when the risk of doing so is significant and the IF is of low-impact (eg, the treatment is a matter of patient convenience rather than necessity). At the other end, there are a few who would be less likely to proceed with treatment even when the finding is of immediate serious clinical significance and the added risk only modest. While it is plausible that such decisions may be appropriate in rare circumstances, as a general approach they would raise questions about clinical reasoning.

Some variation in surgical decision making should not be unexpected. Some differences may be attributable to age, level of training and experience; others may arise because of changes within the socio-cultural milieu. Only a few decades ago, a doctor’s decision making was predominantly paternalistic. Today, there is greater emphasis given to patient autonomy and participation in decision making. Gender differences in clinical decision making are well recognised with males described to be less apprehensive, worrying less, having greater confidence and more likely to take risks. This is consistent with the results of our study where a larger proportion of males consistently favoured treating the IF.

Differences in decision making by surgeons in different specialties, while possibly related to the personal characteristics of the surgeons in a specialty, is likely a reflection of the nature of the surgery, the type and frequency of IFs encountered, and their associated and unique clinical and ethical challenges. General surgeons experience a greater diversity and frequency of IF, which are often potentially more life threatening.

There are other reasons why surgeons might vary in their responses to IF. Although equally guided by the ethical values of beneficence, non-maleficence and respect for autonomy, weighing these values in situations where they conflict can be difficult. Surgeons will differ in their views and the trade-offs they are willing to make. This will translate into differences in practice.

How acceptable is this variation in the practice of surgeons? From an orthodox legal perspective, undertaking non-emergency surgery without consent constitutes negligence and/or battery. A strict interpretation of the law would require IFs that do not pose an immediate threat to life or health be left until express consent is obtained for surgery at a later date. While legally sound, it is not consistent with the good common practice by surgeons and would likely lead to outcomes that would displease many patients. However, individual patient preference may vary widely depending on the nature and implications of a particular surgical procedure. Assumptions about these are hazardous and surgeons should exercise extreme caution if a procedure will have implications for a patient’s way of life, reproductive capacity or other functions and lifestyle.

This research suggests an apparent disjunction between a strict interpretation of the law and common practice by surgeons and what patients would want to occur. It is a situation that needs some careful consideration and resolution. Ensuring a discussion around the possibility of an IF prior to surgery as part of informed consent would be a step forward. Our review, both nationally and internationally of examples of consent forms used by both public and private providers confirmed the diversity of approaches. Some consent documents take a very generic approach and make the assumption that IF will be raised by the surgeon if it is considered relevant. Some are so specific as to allow no discretion. In this study surgeons were often unaware whether IF were included within the consent forms they used. Despite this there was a clear preference by surgeons to have in place a consent process which incorporates discussion with the patient about the possibility of an IF prior to surgery. This step
dramatically influenced the management of IF and caused a shift towards benefiting the patient by more often providing immediate treatment. We endorse including such a clause in the consent process provided that this does not give inappropriate licence to treat but that it will prompt a meaningful discussion and comprehension of the patient's preferences. It is important enough even at the risk of adding to an already content-heavy process.

A limitation of this study is that surgeon participants were constrained to the scenarios given and were unable to incorporate all of the subtleties which may influence decision-making in real life. The expectation of a simple binary (yes/no) decision was additionally constraining and uncomfortable for some. However, we consider this is reflective of the reality in the operating room, where a decision to either proceed (yes) or not (no) is required within a short timeframe whereas a “maybe” or a “let’s go away and think about it” does not apply.

Overall, we have demonstrated that surgeons’ responses to an IF at the time of a surgical procedure are generally consistent. Yet these responses not infrequently appear to lie outside the strict interpretation of the law. There is a need to reconcile these perspectives and reduce the ambiguity that exists. There are important ethical and legal factors that must be considered in this context. Including a clause relating to IF within a consent form will benefit surgeons and patients. Empirical research into the attitudes and preferences of patients and the general public regarding IF would help.

Competing interests:
Nil.

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