Pathological reporting of malignant colorectal polyps

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Abstract

Aim The pathological reporting of malignant colorectal polyps plays an important role in determining whether definitive surgical resection is required following endoscopic polypectomy. This study aims to assess the adequacy of reporting on malignant polyp specimens at Auckland Hospital and whether synoptic reporting results in an improvement.

Method The pathology database at Auckland Hospital was accessed using a search strategy to identify all malignant polyps diagnosed between 1999 and 2011. Pathology reports were reviewed retrospectively.

Results In total 121 malignant polyps were found. Of these, 73 were colonoscopic polypectomies, 41 were colectomy specimens, and seven transanal resections.

Of the 41 colectomy specimens, 19 (46%) were reported in synoptic format compared with none of the colonoscopic polypectomies or transanal resections. The status of the margin of excision, differentiation, and presence of lymphovascular invasion were given in 100% of synoptic reports compared with 51% of non-synoptic reports.

Conclusion Synoptic reporting does improve the completeness of pathological reporting in malignant colorectal polyps. Currently none of the colonoscopically excised malignant polyps are reported in this format at Auckland Hospital. The development and routine use of a synoptic system for reporting on malignant polyps would give clinicians more information on which to base decisions.

The malignant colorectal polyp, defined as an adenomatous polyp with infiltration of malignant cells into the submucosa, is the earliest form of bowel cancer. Approximately 5% of all endoscopically removed adenomas are malignant but this number is set to rise.

Population-based screening programmes implemented in Australia and being piloted in New Zealand are causing a shift to earlier diagnosis of bowel cancer, with 32% of screen-detected cancers at stage A compared to 20% diagnosed outside screening.

In colorectal cancer advances in surgical technique, the role of neoadjuvant therapy and the advent of biological agents have placed the pathologist as a key player in multidisciplinary care.

The pathology report is a crucial document for treatment planning and also now stands as a benchmark of surgical quality, a template for audit and a tool for epidemiological study. Identified as an area for improvement over the last 20 years, national guidelines across many countries now have a minimum dataset for the colorectal pathology report.
In Australia and New Zealand, the Royal College of Pathologists of Australasia have introduced the Colorectal Cancer Structured Reporting Protocol,\(^4\) with mandatory elements for the pathology report for colorectal cancer, although this protocol is designed for tumours removed by surgical resection not polypectomy.

The Cancer Registry Upgrade, overseen by Cancer Control New Zealand and the Ministry of Health, has made structured reporting a requirement for all colorectal cancer reports in New Zealand as of April 2013 although this again does not appear to include malignant polyps.\(^5\) Structured reporting is considered important to quantify the effect of screening programmes within New Zealand and for comparison of outcomes with other countries.\(^5\)

There is evidence that the format of the pathology report is important, with synoptic or structured reports more likely to be complete.\(^6-7\) Freetext reports are prone to recurrent omissions,\(^8\) time costs\(^9\) and the potential for misunderstanding.\(^6\) With this information the recently published New Zealand Guidelines Group (NZGG) clinical practice guidelines\(^10\) recommend synoptic reporting for all colorectal cancer specimens, and this recommendation is extended to include synoptic reports even for procedures such as colonoscopy and operation reports.

In 1984 a seminal paper from St. Mark’s Hospital showed that endoscopic polypectomy can be an acceptable treatment for malignant polyps.\(^11\) The following features are associated with a favourable outcome after polypectomy – a clear margin of excision, well or moderately differentiated cancer, the absence of lymphatic or venous invasion, and an endoscopic assessment of total removal.\(^12\)

The guidelines in New Zealand (NZGG) and Australia (National Health and Medical Research Council (NHMRC)) state no further treatment is required if these ‘favourable’ features are all satisfied, and if not a radical surgical resection should be considered.\(^10,12\) Three of these four ‘favourable’ features are assessed by the pathologist, making the pathology report a crucial part of clinical decision making following polypectomy for the malignant polyp.

This study aims to assess the completeness of pathology reporting for malignant polyps and whether synoptic reporting improves it.

**Method**

The pathology database at Auckland Hospital was accessed with a keyword text search request for reports containing any of “rectum, rectal, colonic, colon, caecal” and any of “adenocarcinoma, carcinoma” and any of “polyp, polypectomy”. This search strategy was devised after pilot tests to ensure complete collection of all malignant colorectal polyps. The time period for the search was 1 January 1999 to 31 December 2011.

A total of 1622 pathology reports were identified and of these 121 were found to be true malignant polyps, defined as polyps with infiltration of malignant cells into the submucosa. For these 121 patients, the pathology report was reviewed retrospectively to ascertain completeness of reporting.

Reports were checked for margin status, distance from the margin to the tumour, cancer differentiation, and presence of lymphovascular invasion. Reports were also noted to be in either freetext or synoptic format and Haggitt’s level of invasion for pedunculated polyps was recorded if given. Polyp morphology was determined from the endoscopy report.
Results

Of the 121 malignant polyps, 73 were from colonoscopic polypectomies, 41 from colectomy specimens and 7 from transanal resections.

Nineteen (46%) of the colectomy specimens were reported as synoptic reports using a template derived from the Royal College of Pathologists of Australasia, however none of the colonoscopic polypectomy specimens or transanal resections were reported synoptically. The results flow chart is presented in Figure 1.

Figure 1. Results flow chart

All 19 synoptic reports from the colectomy specimens were complete with information provided for all necessary pathological features. However of the 102 freetext reports, the status of the margin was given in 97%, cancer differentiation in 70%, and lymphovascular invasion in 63%.

There were 38 colonoscopic polypectomies with clear margins, and in these the distance of the margin was given in 74%, although margin distance is not a specific criterion on the NHMRC guidelines.

Overall only 51% of the non-synoptic reports had complete pathological reporting according to NHMRC guidelines, as shown in Figure 2.

There was a trend to more synoptic reporting over time as shown in Figure 3. Synoptic reporting started at Auckland Hospital for colorectal cancer in 2004 and initially malignant polyps were included although in 2011 only 25% were reported this way.
Thirty-five of the malignant polyps were pedunculated and in only three (8.5%) of these the Haggitt level of invasion was given.

Specimen fragmentation did not appear to significantly alter the confidence in reporting of the margin status. In 27 of the 73 colonoscopic polypectomies the specimen was fragmented due to piecemeal resection and amongst these specimens
the margin status was given in 93%. Of the seven fragmented specimens with clear margins, the distance of margin was given in six (86%).

Discussion

The management of malignant colorectal polyps is highly dependent on accurate pathological reporting from the polypectomy specimen. Synoptic reporting has been shown to increase the completeness of reporting for colorectal cancer and to possibly reduce misinterpretation.6

Many national guidelines are therefore making this a mandatory format for reporting and the Royal College of Pathologists of Australasia have recently published the second edition of their structured reporting protocol,4 however these recommendations have not specifically included malignant polyps where the pathology report is pivotal in clinical decision making. This study is the first we are aware of looking specifically at the quality of pathology reporting in malignant colorectal polyps.

Our study found that in 49% of non-synoptic reports the information provided was inadequate for future treatment planning, based on current guidelines. However 100% of synoptic reports were complete.

Unfortunately none of the colonoscopic polypectomy specimens were reported in synoptic format, despite the fact that the pathology report is most important in these patients. The trend towards increased synoptic reporting over time probably reflects the push for synoptic reporting for colorectal cancer resection specimens, however the rate of complete reports did not appear to increase over the years of the study. Even in 2011 the rate of complete reports was only 58%.

The main limitation of this paper is that it was retrospective and all of the assessment was made by the formal pathology report on the Auckland Hospital database. Verbal communications made between the pathologist and treating clinicians may not have been included in these reports and therefore treating teams might have been given more information than was recorded. Also different pathologists may have varied in the completeness of their reporting but we did not record the pathologist reporting each specimen.

The group of non-synoptic pathology reports included specimens from colectomies, polypectomies and transanal excisions whereas all the synoptic reports were from colectomy specimens - this may have introduced some confounding bias into our results. However to account for this the 41 colectomy reports were analysed as a subgroup. Of the 22 non-synoptic colectomy reports, 15 (68%) were complete compared with all of the 19 synoptic reports, still a significant result.

The pathologist’s role starts with the technical handling of the specimen, involves collaboration with the surgeon and ends with the pathology report. Srigley et al7 cited four important features of a cancer pathology report: timeliness, completeness, accuracy and usability. In malignant polyps the completeness and usability of the report are particularly important as this information pertains to future decision making regarding subsequent management.
In terms of collaboration, the importance of communication between the pathologist and treating surgeon cannot be overstated. By working closely with the colonoscopist, the pathologist can improve the quality of interpretation of the colorectal polyp.  

By the same token, Chapius et al emphasized the importance of adequate information being provided to the pathologist by the surgeon, citing instances where it was evident the pathologist had received insufficient clinical information with bowel resection specimens. They had looked at 2,233 reports from bowel cancer specimens in New South Wales, although endoscopic polypectomy specimens were specifically excluded. There may be improvements to this in the future with the implementation of well-designed histopathology request forms such as those suggested by the Royal College of Pathologists of Australasia where pertinent clinical information of bowel resection specimens is provided by the surgical team.

The results of this study mirror the reporting on colorectal malignant polyps in North America. A recent Q-probe by the College of American Pathologists reviewed surgical pathology reports for a number of cancers across 86 institutions. Seventy-eight malignant colorectal polyps were reported on with complete reporting in only 42.3%. Lymphovascular invasion was the most frequently missed element in the report with 52.6% of reports not having it commented on.

Of all the cancers included in their study, reporting of malignant colorectal polyp specimens performed the worst. The paper notes a continuing need for pathologists’ familiarization with the required elements of a malignant polyp pathology report.

The most important features for the pathologist to identify are those ‘favourable features’ outlined in the NZGG and NHMRC guidelines. In terms of margin, most papers cite a margin of 2mm as being safe for a low risk of residual local disease, although margin distance is not formally considered a factor on the NHMRC guidelines.

Where the margin is greater than 1mm, the risk of relapse is 0-2%, but this increases to 21-33% when the margin is less than 1mm. Other potentially significant parameters that have been recently identified are the depth of invasion, tumour budding, lymphatic vessel density, cribriform histology and the presence of certain molecular markers, although these features are yet to be validated in clinical studies.

The site of the tumour may also be important, in particular low rectal lesions which have a high recurrence rate even after full-thickness transanal resection.

Lymphovascular invasion is relatively uncommon and often associated with other poor prognostic markers. Its interpretation is marred by difficulty in its interpretation, lack of guidelines for establishing its presence, and significant interobserver variability in its identification.

Its usefulness is controversial with some studies finding an association with a poor outcome, but others finding it not to be an independent risk factor. Despite its arguable value, the presence of lymphovascular invasion is considered an important feature to record by the NHMRC.

Specimen fragmentation following piecemeal resection will often render assessment of the margin status impossible. Interestingly in our series 27 patients had a
colonoscopic polypectomy with a fragmented specimen, yet in 93% an assessment of margin status was given and in seven of these the margin was reported as clear.

Guidelines from the National Comprehensive Cancer Network recommend surgical resection for all malignant polyps removed with a piecemeal polypectomy.21 Four of our seven patients underwent resection with no residual disease found and there was no poor outcome for any of the seven patients.

The Haggitt system22 for pedunculated malignant polyps has been widely used by surgeons as a prognostic marker although its utility has been questioned recently. Polyps with level four invasion are considered high risk and therefore candidates for surgical resection, but level four invasion cannot be adequately determined by endoscopic polypectomy.16 Only 8.5% of the pedunculated polyps in our study had the Haggitt level assessed and this reflects the downgrading of its importance by our pathologists.

In 1992 Zarbo et al23 first showed that a standard report form was associated with a more complete colorectal cancer pathology report, and since then similar results for synoptic reporting has been found in other cancers.7 An example of the successful implementation of synoptic reporting is in the Canadian state of Ontario.7

Following a recommendation that all cancer reports are presented in synoptic format, a knowledge transfer strategy was used to increase the rate of synoptic reports for colorectal cancer from 82.3% to 92.1%, and the completeness of synoptic reports from 78% to 93%. Prior to this the completeness of narrative reports was 30.3% compared to 83.6% for synoptic reports.7

Synoptic reports are still not perfect however, with recent studies showing 12-16% of cancer synoptic reports are still inadequate.6,7 Hospital-based6 and web-based systems24 as checks for completeness have been described to optimise synoptic reporting.

In conclusion, a synoptic format does improve the completeness of pathology reporting for malignant polyps. Unfortunately none of the endoscopically excised malignant polyps have been reported using this framework at Auckland Hospital, but these reports are vital for clinical decision making for these patients.

A move to the development and routine use of synoptic reporting for malignant polyps, in line with recommendations for bowel resection specimens, would address this deficiency.

Competing interests: None.

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