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Original article

Improving colorectal cancer follow-up: the dedicated single-visit colorectal cancer follow-up clinic

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***Objective*: To assess the effectiveness of the dedicated single-visit colorectal cancer follow-up clinic in improving postoperative surveillance.**
***Patients and Methods*: Data of follow-up of 137 consecutive patients with colorectal cancer treated by the senior author over a 3 year period were obtained. Surveillance over three periods in time were analysed: (i) before the establishment of a protocol; (ii) following the implementation of a protocol for follow-up of colorectal cancer with liver ultrasound and colonoscopy; and (iii) following the establishment of the dedicated single-visit colorectal cancer follow-up clinic.**
***Results*: The single-visit colorectal cancer follow-up clinic has reduced the mean time to the interventions (from 12.1 months to 6.0 months for the liver ultrasound and from 8.7 months to 6.4 months for the colonoscopy). In addition, the percentage of patients having their liver ultrasound within the targeted time has increased from 14% to 55%. The percentage of patients having their colonoscopy within the targeted time has also increased from 50% to 77%. The percentage who missed their liver ultrasound has been reduced from 57% to 0%. The percentage of patients who missed their colonoscopy has also been reduced from 36% to 3%.**
***Conclusion*: The dedicated single-visit colorectal cancer follow-up clinic improves the post-operative surveillance of patients with colorectal cancer.**

Key words: Colorectal cancer – Audit – Follow-up – Surveillance – Liver ultrasound – Colonoscopy

Colorectal cancer follow-up is an important part of the total care package offered to patients with colorectal cancer. Following curative surgery, close follow-up is recommended to detect synchronous or recurrent disease, to identify potentially-operable liver metastases and to provide re-assurance to patients.

Traditionally, the follow-up of patients with colorectal cancer has been on an *ad hoc* basis. These visits are sometimes unproductive as patients often attend multiple out-patient appointments to arrange investigations or to receive the results of investigations.

The guidelines for the management of colorectal cancer by The Royal College of Surgeons of England and the Association of Coloproctology of Great Britain and Ireland[1] have recommended that local strategies be implemented for the follow-up of colorectal cancer. As a result of this, the Leicestershire Service Specification for Colorectal Cancer was published in 1997 (Table 1).[2]

A dedicated single-visit colorectal cancer follow-up clinic has been established with the initial aim of reducing unproductive out-patient attendance. We have audited this clinic to assess our adherence to local guidelines.

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Table 1 Leicestershire Health Service specification for colorectal cancer: 5 year follow-up schedule for patients with no residual disease

2–6 months	Colonoscopy (if pre-operative imaging inadequate)
6 months	Liver ultrasound Sigmoidoscopy for rectal tumours
12 months	Liver ultrasound Sigmoidoscopy for rectal tumours
2 years	Liver ultrasound Colonoscopy (depending on risk factors)
5 years	Colonoscopy(depending on risk factors)

Patients and Methods

This audit looks at the interval between curative surgery and first follow-up ultrasound and colonoscopy of patients with colorectal cancer in our practice. Data were obtained from the personal colorectal cancer computer database of all patients treated and followed-up by the senior author over a 3 year period from August 1996 to October 1999. Patients with residual disease or incurable metastatic cancer (*i.e.* patients with modified Dukes' stage D colorectal cancer) and patients unlikely to benefit from further surgery for metastatic or recurrent disease because of frailty and other medical co-morbidities were not enrolled in the surveillance programme. The follow-up of patients through three different periods in time was examined.

The first group were patients treated surgically between August 1996 and July 1997 where there was no protocol for colorectal cancer follow-up with postoperative liver ultrasound and colonoscopy.

The second group were patients operated on following the publication of the Leicestershire Health Service Specification for Colorectal Cancer in August 1997[1] in which a protocol was set out for the follow-up of patients with colorectal cancer with liver ultrasound and colonoscopy. The protocol specified that the first postoperative liver ultrasound should be performed at 6 months, while the first postoperative colonoscopy should be performed between 2–6 months if pre-operative colonic imaging was inadequate.

The third group were patients who underwent surveillance after a dedicated single-visit colorectal cancer follow-up clinic was started in April 1998. This was initiated to improve the effectiveness of this service, namely to reduce the number of unproductive out-patient attendances. With this clinic, the patients undergo a liver ultrasound (performed by a consultant radiologist with an interest in liver imaging), and colonoscopy (performed by a consultant colorectal surgeon) at an integrated follow-up clinic in the Gastroenterology Department. Patients received the results of these investigations before leaving the department. This single hospital visit replaces routine out-patient follow-up and hospital attendance for ultrasonography and colonoscopy.

For this audit, we accepted 5–7 months as the targeted range for the first follow-up liver ultrasound, while the targeted range for colonoscopy was set at 2–7 months. In addition, patients who had their investigations at 12 months or more postoperatively were deemed to have missed their investigations. Patients who had their investigations between 8–11 months were considered to have had their investigations late.

Results

There were 137 patients who were treated by the senior author between August 1996 and May 1999. Of these, 38 patients were excluded from surveillance because they had metastatic disease which was not curable (n = 29) or inoperable primary colorectal cancer (n = 9). A further 36 were excluded because of medical co-morbidities and frailty. This left 63 patients who were suitable for surveillance. Of these, 3 patients died of medical causes at day 1, 5 and 6 respectively after surgery. The peri-operative mortality rate was 1 in 136 (0.7%). In addition, 2 patients were lost to follow-up (Table 2). This left 58 patients for analysis (Table 3). The mean age of patients undergoing surveillance was 69 years (range, 39–86 years).

In the first group prior to the protocol being implemented (n = 14), the mean (SD) interval to the first follow-up liver ultrasound and colonoscopy was 12.1 (6.3) months and 8.7 (5.9) months, respectively. Only 14% of the patients (2/14) had their ultrasound at 5–7 months postoperatively, while 50% of the patients (7/14) had their colonoscopy within the targeted range.

In the second group following the implementation of the protocol for colorectal cancer follow-up (n = 11), the

Table 2 Patient population with colorectal cancer

	Preprotocol	Protocol	Clinic	Total
Frailty and medical co-morbidity	11	4	21	36
Not curable	15	10	13	38
Deaths	0	2	1	3
Lost to follow-up	2	0	0	2
Undergoing surveillance	14	11	33	58
Total	42	27	68	137

Preprotocol, before the establishment of the service specification; Protocol, after the protocol was published; Clinic, after the establishment of the dedicated single-visit colorectal follow-up clinic.

Table 3 Patients undergoing surveillance for colorectal cancer

Ultrasound	*n*	Mean (SD)	Within target	Late	Missed
Preprotocol	14	12.1 (6.3)	2 (14%)	3 (21%)	8 (57%)
Protocol	11	8.4 (4.3)	4 (36%)	1 (9%)	4 (36%)
Clinic	33	6.0 (2.2	18 (55%)	8 (24%)	0 (0%)
Colonoscopy	*n*	Mean (SD)	Within target	Late	Missed
Preprotocol	14	8.7 (5.9)	7 (50%)	2 (14%)	5 (36%)
Protocol	9	8.0 (4.6)	2 (22%)	2 (22%)	5 (56%)
Clinic	30	6.4 (2.1)	23 (77%)	6 (20%)	1 (3%)

n, Number of patients; Mean, number of months from surgery to intervention; Late, patients who had their investigations at 8–11 months after their operation; Missed, patients who had their investigations at 12 months or more after their operation.

mean interval to the first follow-up liver ultrasound and colonoscopy improved to 8.4 (4.3) months and 8.0 (4.6) months, respectively. Of these, 36% of the patients (4/11) had their ultrasound at the targeted time and 22% of the patients (2/9) had their colonoscopy at the targeted time. One patient had adequate pre-operative imaging of the colon whilst another had a proctocolectomy.

Finally, in the third group, after the establishment of the single-visit colorectal cancer follow-up clinic ($n = 33$), the mean interval to the first follow-up liver ultrasound and colonoscopy was 6.0 (2.2) months and 6.4 (2.1) months. Of these patients, 55% (18/33) had their ultrasound at the targeted time and 77% of the patients (23/30) had their colonoscopy at the targeted interval. Two patients had a proctocolectomy and one declined the offer for colonoscopy.

Overall, 21% (3/14), 9% (1/11) and 24% (8/33) had their liver ultrasound late in the three groups, respectively, and 57% (8/14), 36% (4/11) and 0% (0/33) in the three groups, respectively, missed their liver ultrasound.

Of the total, 14% (2/14), 22% (2/9) and 20% (6/33) had their colonoscopy late in the three respective groups and 36% (5/14), 56% (5/9) and 3% (1/33) in the three groups, respectively, missed their colonoscopy.

Discussion

Traditionally, follow-up for patients with colorectal cancer is performed on an *ad hoc* basis and patients are usually seen in the out-patient clinic by various members of the surgical firm. These visits are often an inefficient use of resources as these consultations are often used to initiate investigations and deliver results. This leads to multiple out-patient attendances which are unproductive both for the clinician and patient.

Previous studies have demonstrated that many patients do not undergo planned postoperative surveillance.[3] The dedicated colorectal cancer follow-up clinic has allowed an improvement in meeting follow-lip targets. This audit has clearly shown that there has been a definite increase in the number of patients having their first postoperative liver ultrasound and colonoscopy at the targeted time. In addition, it has reduced significantly the number of patients who missed those investigations. This may result in treatable disease (either metastatic or recurrent) being identified earlier and allows further surgery, if necessary, to be carried out at an earlier stage.

There is also the additional advantage of reducing out-patient attendance thereby freeing up clinic space to allow for more expeditious review of symptomatic patients and in reducing the waiting time for new clinic referrals.

This arrangement does not increase the number of follow-up ultrasound and colonoscopy as we are still adhering to the local protocol. This service is now being extended to include the patients having their second and third follow-up ultrasound and a dedicated colorectal cancer ultrasonographer has been appointed to facilitate this service.

Conclusion

The dedicated single-visit colorectal cancer follow-up clinic has certainly helped to improve the service provided to patients with colorectal cancer. We believe that this service should be offered to patients with colorectal cancer as part of their care package.

Acknowledgement

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