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Establishing a complex surgical oncology program with low morbidity and mortality at a community hospital

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Abstract

BACKGROUND: We report our experience with a large volume of complex oncologic resections and describe the framework necessary to develop a program with low morbidity and mortality in a community hospital.

METHODS: From August 2010 to May 2014, 224 consecutive patients underwent abdominal oncological resection, at a community hospital by a single surgeon (R.N.B.). Cases included pancreatic, gastric, hepatobiliary, colorectal, hyperthermic intraperitoneal chemotherapy with cytoreduction, splenic, and sarcoma resections. We retrospectively reviewed our prospectively maintained database and evaluated postoperative complications.

RESULTS: There was no 0, 30-, 60-, or 90-day mortality. The complication rate was 44%, including 5% grade I, 28% grade II, 9% grade III, and 1% grade IV complications. The median length of stay was 8 days. Mean follow-up for the entire group was 643 days.

CONCLUSION: Our study demonstrates that complex oncologic resections can be safely performed in the community setting if a well-organized, surgeon-led multidisciplinary team is assembled.

With the heightened awareness of monitoring surgical quality and outcomes, there has been increasing emphasis on the multidisciplinary management of gastrointestinal cancer. Over the past decade, morbidity and mortality for major oncological resections have improved, with multiple studies showing that high-volume centers offer better outcomes, however, there is still wide variation in outcomes between centers, with a lack of understanding as to why.[1,2] Because of this, there has been a shift toward performing complex oncological resections at tertiary institutions and National Cancer Institute–designated cancer centers.[3]

Although the standard of practice at designated cancer centers and other tertiary academic institutions is to involve a multidisciplinary team, this quality-driven approach may not be utilized in community centers. In this review, we share our experience with a large volume of complex abdominal oncologic resections and report our morbidity and mortality in detail to determine whether these procedures could be performed safely in the community setting.

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Methods

We performed a retrospective review of all patients who underwent a complex oncologic resection by a single surgeon (R.N.B.) from August 2010 to May 2014. All patients underwent surgery at St John Hospital and Medical Center in Detroit, MI—a 776-bed community hospital with a recently developed Gastrointestinal Multidisciplinary Tumor Board (MDTB) that was established by the surgical oncologist (R.N.B). This team includes a dedicated nurse practitioner, surgical oncology, general surgery, colorectal surgery, medical and radiation oncology, pathology, radiology, nutrition, genetics, spiritual care, palliative care, and other support staff. Approval from the Institutional Review Board was obtained for this study.

Patients included in this analysis underwent a complex oncologic resection in one of the following categories: gastric, pancreas, hyperthermic intraperitoneal chemotherapy (HIPEC), cytoreductive surgery alone, hepatobiliary, colorectal cancer, soft tissue and sarcoma, or splenic resection. Organ resections done in the HIPEC and cytoreductive group were not used in the subgroup data analysis. We retrospectively reviewed our prospectively maintained database and evaluated postoperative complications using the established Clavien–Dindo grading system.[4] For each patient, only the single highest grade complication is reported. Mean follow-up and survival are reported in days. Because of the focus of the investigation on morbidity and mortality and with a large proportion of the data being relatively recent, we only report 1-, 2-, and 3-year survival data using Kaplan–Meier analysis. Furthermore, in this series of patients, we do not report the oncologic staging information for each disease site or the details of perioperative therapy other than surgery, as this will be reported in our future accounts.

Somewhat dissimilar to other outcome data reported in the literature, we report 0-, 30-, 60-, and 90-day mortality. Readmissions were reported if the patient was readmitted during the first 30 days after discharge. Length of stay (LOS) was calculated from the date of surgery. Once recovered from surgery, every patient is followed in our clinic every 3 to 4 months, thus follow-up was calculated from the date of surgery. Death was reported in number of days following surgery.

Results

From August 2010 to May 2014, a total of 224 consecutive patients who underwent complex surgical oncologic resections were analyzed. During this time period, 39 patients underwent pancreatic resection, 32 colorectal resections, 22 gastric resections, 20 hepatobiliary resections, 15 soft tissue or sarcoma (12 intra-abdominal or retroperitoneal), 54 HIPEC with cytoreduction, 37 cytoreduction alone, 4 splenectomies, and 1 adrenalectomy. There were no data included before this time period as there was no formal database or comprehensive records before this time.

Overall, 224 patients were evaluated, of which 107 (47%) were male and 117 (53%) were female. The average age was 60.2 years. Forty-four (20%) patients were black, 177 (79%) white, 1 Native American, and 2 Asian. The median LOS was 8 days. There was a total of 19 (9%) patients who had an intraoperative blood transfusion, 37 (17%) had a postoperative blood transfusion, and the average intraoperative blood loss was 229 mL per patient (Table 1). There were 2 patients who required reoperation within 30 days from surgery for a reoperation rate of .9%. The readmission rate within 30 days of discharge for the entire group was 17% (37 patients). A recently established gastrointestinal MDTB prospectively discussed 127 (57%) of our patients.

We recorded and analyzed all complications for the entire group. The overall complication rate was 44%, including 12 (5%) grade I, 62 (28%) grade II, 21 (9%) grade III, 3 (1%) grade IV, and 0 grade V complications. There were no 0, 30-, 60-, or 90-day mortalities in our study (Table 2); we did have 1 mortality at 94 days in a patient who had delayed (>30 days) hemorrhage leading to multiorgan system failure after undergoing a pancreaticoduodenectomy. The mean follow-up for the entire group was 643 days. At the time of analysis, 29 patients (13%) had died of their disease at an average of 458 days following surgery. We performed Kaplan–Meier analysis for the entire group and for each

Table 1 Operative details

	Total (n = 224)	Gastric (n = 22)	Pancreas (n = 39)	Liver (n = 20)	CRC (n = 32)	HIPEC (n = 54)	Cytoreduction (n = 37)
LOS (days)	9.7	12.3	13.4	8.6	7.7	8.2	8.2
EBL (mL)	229	175	292	177	155	118	118
No. of intraoperative transfusion	19	1	2	0	4	7	1
No. of postoperative transfusion	37	4	4	4	5	15	4
Reoperation	2 (.9%)	0	2 (5%)	0	0	0	0
Readmission	37 (17%)	3 (14%)	17 (44%)	1 (5%)	7 (22%)	3 (6%)	2 (5%)
Presented at MDTB	127 (57%)	11 (50%)	26 (67%)	10 (50%)	6 (19%)	47 (87%)	24 (65%)

CRC = colorectal cancer; EBL = estimated blood loss; HIPEC = hyperthermic intraperitoneal chemotherapy; LOS = length of stay; MDTB = Multidisciplinary Tumor Board.