



The oncological colorectal surgery in the Great Elderly. Risk factors and predictive indexes. Is this the future of a patient-modulated surgery?

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Abstract

INTRODUCTION: Colorectal surgery has become more common in the very elderly. The scientific community includes all the people with an age ≥ 80 years in the category of oldest old.

OBJECTIVES: Investigation of the correlation between comorbidities and postoperative complications, in order to plan the surgery itself.

METHODS: This prospective observational study enrolled patients candidates for colorectal cancer surgical resection. The sample (172 patients) was divided into two subgroups: Group A (Age ≥ 80 years); Group B (Age < 80 years). The statistical comparison between the two groups took into consideration some Dependent Variables (30 days mortality, reoperation, readmissions, transfusion requirement, videolaparoscopic or laparotomic approach, conversion rate, ostomy creation need; major surgical complications; sepsis; length of hospital stay) in relation with the Independent Variables Age, Age Adjusted Charlson Index (AACI), ASA score, stage of disease; surgery typology (Programmed vs Urgent).

RESULTS: Group A consists of 43 patients (25%); Group B from 129 (75%). Group A Patients have surgical outcomes worse than the Group B ones. Patients with AACI ≥ 8 and Patients operated in emergency showed several complications. Patients with AACI ≥ 8 represent the 79,1% of the patients in Group A (age ≥ 80 years) and the 24,8% of patients in Group B (age < 80 years).

CONCLUSIONS: In our study, the AACI (cut-off = 8) and the urgency interventions proved to be the best predictors of post-operative complications, in a statistically significant manner

Introduction

With the increase in life expectancy, colorectal surgery has become more common in the very elderly, who very often have chronic diseases and are therefore considered high-risk patients.

For this reason, in the past there was a tendency to refuse problematic resective surgery on this group of patients opting instead for palliative cares.

Currently, colon resective interventions cannot be longer avoided in super old patients. Hence, an accurate assessment of comorbidities before surgery, to plan both the degree of the surgery itself and the use of supportive post-surgical measures, is needed.

The pathology of colorectal cancer in the very elderly is the most frequent surgical pathology [1], with an occurrence of 50% of malignant neoplastic disease, followed by the diverticulitis surgery with an occurrence of 25%[2].

The overall perioperative mortality rate is between 6,2% and 23%[3] and a restricted number of this element explains the large variations in the literature.

The main problems related to colorectal surgery in the oldest old (especially under emergency) are represented from operative risk and high mortality, which, although lower than in the past, remains high[4].

The pathophysiologic changes that accompany the videolaparoscopic colorectal surgery in the very elderly may raise some concerns in relation to the frequent cardio-respiratory diseases of these patients. Several studies have shown, however, the effectiveness and advantages of this type of surgery.

The explanation of the high incidence of postoperative complications that occur in octogenarian patients are to be found in the physiological and pathological degenerative processes correlated to age. In addition to these age-depending degenerative processes, concurrent diseases associated with age (arteriosclerosis, diabetes, respiratory failure, renal failure, etc.) contribute to worsen the clinical picture and facilitate the onset of acute complication significantly aggravating the final prognosis.

The tendency of the scientific community is to include in the category of oldest old all the people who have crossed the threshold of 80 years. This is justified by the following reasons: 1) Demographic reason according to mortality rates: the mortality coefficient drops significantly after the border of the 80 years of age; 2) Physiological reason: several scholars have identified over 80 years of age specific vulnerability

factors (i.e. "frailty" or "fragilité") 3) Medical-surgical reason: i.e. the characteristic nosology of morbidity common in the age range from 80 years old[5,6]. Moreover, the trend of international literature is to continue the tradition to producing comparable studies based on the definitions of "super old [1]", "oldest old [2]", "grand âge[3]."

Rationale of the study

Considering age as the only parameter to decide on the admission of the elderly patient in the operating room has become obsolete.

Our preliminary findings suggest, in fact, that geriatric patients with the same risk factors of adults show similar therapeutic responses. Thus, the choice of treatment should only be influenced by comorbidities and functional status of the patient. Therefore, the primary objective should be not only the eradication of the tumour for obtaining objective responses according to the criteria widely used in oncology, but also the maintenance and, where possible, the improvement of quality of life and the prevention and reduction of disability .

Objectives of the study

The super olds consist of a large group of patients poorly studied and considered in the surgical literature. Studies on the influence of comorbidities on the outcome of surgery are scarce.

A thorough preoperative evaluation is important to anticipate possible postoperative complications. This consideration is particularly valid for the elderly, often subject to comorbidities.

The purpose of the study conducted so far has been to investigate the correlation between comorbidities present at the time of surgery and postoperative complications after colorectal cancer surgery, in order to improve risk stratification and to plan the surgery itself and measures of postoperative support.

Specifically, the goals of our research are to:

- Delineate both appropriate procedures of surgical intervention in the strict sense and multidimensional ones, in order to reduce hospital stay allowing the recovery of the functional autonomy pre-existing and ensure a sufficient quality of life for patients.

- Evaluate the surgical outcomes in the very old patient, comparing them with the outcomes of a control group (patients aged < 80 years)

- Demonstrate that in patients older than 80 years (either for programmed or urgent surgery) colo-rectal surgery, and particularly laparoscopy, is feasible and that a multidisciplinary setting of intervention brings improvements in terms of surgical outcome, fewer postoperative complications (mortality rate at 1st month, postoperative sepsis, pneumonia, cardiovascular and thrombus-embolic events).

Materials and Methods

This prospective observational study was developed in a period of time between January 1, 2010 and March 31, 2012, in this interval all patients candidates for surgical resection for colorectal neoplastic disease were examined at the Unità Complessa di Chirurgia Generale II of the Policlinico di Modena

172 patients candidates for laparoscopic or laparotomy colonic resection for cancer were enrolled in the study.

The sample was divided into two major subgroups:

Group A: Patients aged \geq 80 years (cases)

Group B: Patients aged < 80 years (Group control).

The study was called COLORE (ColoRectal Surgery Data Manager), derived from the name of the database specifically created during the study design.

All patients enrolled in the study underwent a multidisciplinary surgical, cardiological, anesthesiological evaluation during the preoperative period, in order to obtain a correct risk stratification. The evaluation of patients, and especially of any complications, did not stop in the immediate postoperative period but continued through a careful follow-up, carried out over a period of time ranging from three to thirty months after the discharge. Possible re-interventions during hospitalizations after discharge, adjuvant radio-oncological therapies, occurrence of local tumor recurrence, metastasis and metachronous tumors were also evaluated.

Research methodology and summary of the features of the study

This prospective observational study has been divided into two phases:

- a first phase, lasting 27 months, for recruiting patients;

- a second phase, lasting 3 months, for the analysis of data, dissemination of the results.

In the analysis of clinical cases, several parameters were extracted: clinical diagnosis, diagnostic complications (obstruction, perforation, etc..),

histological characterization, stage of disease, chronic or acute ongoing diseases, nutritional status. All comorbidities collected were aggregated with a clinical criterion and then on the basis of an adaptation to Charlson index (Age Adjusted Charlson Index). Intra-operative data include ASA score, length of surgery (laparoscopy versus laparotomy), specificity of surgery (district concerned, surgical technique, degree of contamination). We also assessed the duration of hospital stay, mode of discharge, and the mortality of nosocomial patients enrolled in the study.

In addition, clinical and performance indicators such as average length of stay, ICU admission, re-intervention in the course of hospitalization, repetitive readmissions, re-intervention following hospitalization, protective ostomy rate in case of anastomosis, conversion to laparotomy rate were evaluated.

After the discharge the overall mortality was taken into consideration.

Criteria for inclusion and exclusion

Patients eligible for the study were:

Male or female patients affected by colorectal neoplastic disease

The selected patients were subjected to surgical removal of the primary intestinal tumor with video laparoscopic or open technique.

Patients excluded were:

Patients diagnosed with metastatic disease and primary tumor locally advanced with criteria of inoperability.

Patients who underwent palliative - not resective surgical intervention (laparotomy or laparoscopy exploration, diagnostic biopsies, laparoscopic or open derivative ileo-colo -stomies)

Results

Patients

In the period taken under consideration, from 1st January 2010 to 31st March 2012, the 172 Patients underwent colonic resection for cancer in the Unità Operativa Complessa of Chirurgia Generale II .

This sample was divided into two groups on the basis of an age-statistical criterion:

Group A: Patients aged ≥ 80 years;

Group B: Patients aged < 80 years.

Group A consists of 43 patients (25%); Group B from 129 (75%).

The average age of the total sample is 71.5 years (range: 39-96, SD: 11.06; 95% confidence interval (CI) 71.5 ± 1.65).

In Group A, the average age is 84 years (range: 80-96, SD: 4.06, 95% confidence interval (CI) 84 ± 1.21).

In Group B, the mean age was 67.3 years (range: 39-79, SD: 9.39, 95% confidence interval (CI) 67.3 ± 1.62).

See Table 1.

In patients over 80 (Group A) there is an average of 4 comorbidities concomitant to the primary tumor (compared to an average of 3 comorbidities in patients of Group B).

In the entire sample studied the 30-day mortality was 5.8% (10 exitus of 172 Patients.). This figure varies from 3.1% (Group B < 80 years = 3 exitus) to 14% (Group A ≥ 80 exitus = 7).

As expected, the Age Adjusted Charlson Index is on average higher in Group A. In particular, the Charlson index is ≥ 8 in the majority of patients in Group A (79.1%), whereas it is < 8 in the majority of patients in Group B (75.2%). This further confirms the fact that the very elderly patients are more complex than the patients aged < 80 years.

After surgery , 66 patients (38.4%) were transferred to ICU ward, 26 were from Group A (60.5%) and 40 from Group B (31.0%).

The average length of hospitalization in ICU, for those who have transited there, was of 2,3 days (range: 1-15, SD: 2,47, 95% confidence interval $2,3 \pm 0.6$).

In Group A, the average length of hospitalization in ICU, for those who have transited there, was 1,85 days (range: 1-6, SD: 1,49, 95% confidence interval $1,85 \pm 0.57$).

In Group B, the average length of hospitalization in ICU, for those who have transited there, was 2,6 days (range: 1-15, SD: 2,92, 95% confidence interval $2,6 \pm 0,9$).

These data confirm the expected results. In particular, elderly patients (Group A, age ≥ 80 y) are more frequently admitted in ICU because of preexisting comorbidities rather than immediate intra- or postoperative critical conditions. This hospitalization has a monitoring and precautionary meaning; this statement can be deduced from the short length of hospitalization with an early discharge in a non-surgical ward. Conversely, adult patients (Group B, age < 80 y) are less frequently admitted in ICU but, when it happens, surgical or anesthesiological intra- or post- operative severe critical conditions are

the hospitalization causes.

Detail required on ICU Stay are:

- Group A (age > 80 y): ICU stay \geq 3 days = 4 patients (9.3%)

- Group B (age < 80 y): ICU stay \geq 3 days = 13 patients (10.1%)

No statistical differences at Fisher's exact test ($p=0.6579$)

Statistical Considerations

The tests used for the statistical analysis of the data were: Fisher's exact test and Mann-Whitney U Test.

Statistical Analysis

The statistical comparison between the two groups of the study was characterized by a multiparametric evaluation, measuring some Dependent Variables in relation with the Independent Variable AGE.

In particular, the dependent variables considered were: mortality at 30 days, rate of reoperation during the same hospitalization, readmissions due to the first intervention, transfusion requirement (indirect quantifying parameter expression of "macrobleeding", i.e. intra-and post-operative bleeding complications); videolaparoscopic or laparotomic approach (index of feasibility), conversion rate, ostomy creation need (complexity indices); major surgical complications (either partial anastomotic leak and anastomotic dehiscence); sepsis; length of hospital stay.

The trend and the variations of these variables have been verified through the statistical analysis in the two groups A and B, in order to detect any statistically significant differences in function of the biological parameter (independent variable AGE).

According to the results obtained, it is possible to say that the patients of Group A (super old Patients) have surgical outcomes worse than the control group (Group B).

In particular, there are statistically significant differences in mortality at 30 days (p -value = 0.0167), transfusion requirements (p -value = 0.0005), major surgical complications (anastomotic leak, p -value = 0.0320), the re-interventions during the same hospitalization (p -value = 0.0243) and the mean duration of hospital stay (p -value = 0.0011). See Table 2.

Starting from the clinical evidence that the worst surgical outcomes occur more frequently in Group A, or in octogenary patients, we wanted also to measure the performance of all the dependent variables no longer in relation with AGE but in function of other variables such as : Age Adjusted Charlson Index (\geq 8

vs. < 8), ASA score (1-2 vs. 3-4), stage of disease (1-2 vs. 3-4); surgery typology (Programmed vs Urgent).

These statistical comparisons were aimed at ensuring that Age itself is not therefore a risk factor for postoperative complications. On the other hand, reduced physiological reserve and comorbidities, as well as the advanced stage of disease and emergency interventions on neoplastic diseases already complicated at the time of diagnosis (obstruction, perforation, bleeding) can be considered as risk factors.

Age Adjusted Charlson Index

Patients with Charlson index \geq 8, have worse surgical outcomes.

In particular, statistically significant differences can be observed in mortality at 30 days (p -value = 0.0075), technique of surgery (laparoscopic or open, p -value = 0.0145), conversion rate (p -value = 0.0387), transfusion requirements (p -value < 0.0001), re-interventions during the same hospitalization (p -value = 0.0369), sepsis as a major general complication (p -value = 0.0025) and average duration of hospitalization (p -value = 0.0006). See Table 3.

Intervention system

Patients operated in emergency showed more complications than the group of patients operated under election.

In particular, statistically significant differences can be outlined in mortality at 30 days (p -value = 0.0156), technique of surgery (laparoscopic or open, p -value < 0.0001), rate of conversion (p -value = 0.0118) and average duration of hospitalization (p -value = 0.0011). See Table 4.

ASA score

Patients with ASA score 3-4 have worse surgical outcomes.

Furthermore, there are statistically significant differences in transfusion requirements (p -value = 0.0057) average duration of hospital stay (p -value = 0.0090).

Stage of disease

According to the results obtained, we can not say that patients with stage disease 3 and 4 have worse surgical outcomes than patients with stage disease 1 and 2.

In fact, the complications seen in these two groups showed no statistically significant differences.

Correlation between age and predictors of complications.

A further progression of the analysis was to check which is the distribution of these independent variables in function of the two study groups (A and B), in order to demonstrate the prevalence of these negative prognostic factors in the population over 80.

Patients with Charlson index ≥ 8 , which we have seen to correlate with worse surgical outcomes, represent the 79,1% of the patients in Group A (age ≥ 80 years) and the 24,8% of patients in Group B (age < 80 years). Applying Fisher's exact test, it is possible to see that this different distribution of Charlson index in the two age groups (Charlson Index cut-off = 8) was statistically significant (p-value < 0.0001).

This demonstrates that the Charlson index ≥ 8 not only is a valid predictor of post-operative complications, but also that the same index (cut-off = 8) is more frequently found in patients over 80 being thus statistically significant.

Patients who have ASA score between 3 and 4 present the worst surgical outcomes with the 79,1% of patients aged ≥ 80 years and the 58,9% of patients aged < 80 years. Applying Fisher's exact test, shows that the difference in the ASA score distribution in the two age groups was not statistically significant (p-value = 0.9959).

Patients undergoing emergency surgery and having the worst surgical outcomes represent the 32,6% of patients aged ≥ 80 years and the 12,4% of patients aged < 80 years. Applying Fisher's exact test, the different distribution in the two age groups of the intervention system is statistically significant (p-value = 0.0038).

Patients who have stage 3 or 4 of disease, representing the 48,8% of patients aged ≥ 80 years and the 48,1% of patients aged < 80 years. Applying Fisher's exact test, we can say that the different distribution of stage of disease in the two age groups (A and B) was not statistically significant (p-value = 0.5347).

Discussion

In Italy, in the last 50 years, we have witnessed a steady increase in life expectancy. Life expectancy has greatly raised and a person of 75 years has the theoretical potential to live, on average, another ten years. *Colorectal pathologies, both benign and malignant, increase in incidence with age, and this is particularly true for colorectal cancer.* A substantial proportion of octogenarians affected by colorectal disease are hospitalized for a complication and at least 50% of them require emergency surgery. New

pathophysiological knowledges, technological advances in surgery, anesthesia and methods in postoperative care have improved results in the treatment of these patients.

With the help of validated indicators such as the Charlson index, complications are estimated to occur less frequently than expected even in patients at high risk, emergency surgery and high ASA score [7].

Very elderly patients who have significant postoperative complications have a more than doubled risk of dying compared to those who do not. Postoperative heart, lung and kidney complications are those that have the greatest impact on patients' survival [5]. Moreover, the same postoperative complications in those who survive result in a worsening in their quality of life and functional status [6]. Hence, an appropriate preoperative evaluation and postoperative treatment is needed in order to avoid complications in this high-risk population.

Conclusions

Available evidence suggests that the patients should not be denied surgical treatment simply on the basis of age. Rather, elderly patients, especially those with cancer, deserve treatment commensurate with medical limitations, reduced functional reserves, social conditions and the ability to recover a good quality of life[8] (modulated-surgery on the Patient). The statistical analysis of surgical outcomes provided in our study confirms that geriatric patients with the same risk factors of adults show overlapping therapeutic responses, so the choice of treatment and the indication for surgery should only be influenced by comorbidities, and functional status of the patient.

Complications should not be seen as inevitable. We should try to prevent them by applying appropriate prophylactic measures and taking the utmost care in the planning and implementation of surgery.

In most cases, super old patients can tolerate major surgery, both in urgency and in election. Morbidity and mortality rates are still higher after emergency treatment, for which the elective interventions should not be delayed.

In our study, the Age Adjusted Charlson Index (cut-off = 8) and the intervention system (urgency) proved to be the best predictors of post-operative complications, in a statistically significant manner.

In the onco-geriatric patient, it is important not only to eradicate the tumor, but also to maintain a good

quality of life and to prevent disabilities. The approach to the frail elderly subject must take into account the parameters derived from a careful multidimensional assessment, because a technically possible surgical procedure does not always prove as the best treatment for the patient himself. It is thus evident that the "MANAGEMENT" of the elderly suffering from colorectal cancer is not just a "surgical technical" matter, but requires the collaboration of all sectors of hospital polispecialistic assistance resources together with the social welfare of the territory.

Conflict of interest

The authors declare that they have no conflict of interest.

Illustrations

Illustration 1

Statistical comparison of outcomes between the two groups divided by age.

Tab. 2: Statistical comparison of outcomes between the two groups divided by age.

Outcomes	Age ≥ 80 years (n=43)	Age < 80 years (n=129)	p-value
30 days mortality	14% (6)	3,1% (4)	0,0167
Laparoscopy vs Open	46,5% (open) (20)	32,6% (open) (42)	0,0722
Conversion rate	25,8% (8/31)	13,9% (14/101)	0,1020
Ostomy needed	2,3% (1)	5,4% (7)	0,9054
Transfusional requirement	65,1% (28)	34,9% (45)	0,0005
Major surgical complications	16,3% (7)	5,4% (7)	0,0320
Re-interventions (same hospitalization)	11,6% (5)	2,3% (3)	0,0243
Sepsis	20,9% (9)	10,1% (13)	0,0610
Avarage length of stay	14,95 days	11,7 days	0,0011
Readmissions	2,3% (1)	2,3% (3)	0,6873

Illustration 2

Statistical comparison of outcomes between the two groups divided by the Charlson index.

Tab. 3: Statistical comparison of outcomes between the two groups divided by the Charlson index.

Outcomes	Charlson ≥ 8 (n=66)	Charlson < 8 (n=106)	p-value
30 days mortality	12,1% (8)	1,9% (2)	0,0075
Laparoscopy vs Open	47% (open) (31)	29,2% (open) (31)	0,0145
Conversion rate	25,5% (12/47)	11,8% (10/85)	0,0387
Ostomy needed	6,1% (4)	3,8% (4)	0,3662
Trasfusional requirement	66,7% (44)	27,4% (29)	< 0,0001
Major surgical complications	12,1% (8)	5,7% (6)	0,1123
Re-interventions (same hospitalization)	9,1% (6)	1,9% (2)	0,0369
Sepsis	22,7% (15)	6,6% (7)	0,0025
Avarage length of stay	15,44 days	10,88 days	0,0006
Readmissions	4,5% (3)	0,9% (1)	0,1582

Illustration 3

Statistical comparison of outcomes between the two groups divided on the basis of the intervention system.

Tab. 4: Statistical comparison of outcomes between the two groups divided on the basis of the intervention system.

Outcomes	Urgent (n=30)	Programmed (n=142)	p-value
30 days mortality	16,7% (5)	3,5% (5)	0,0156
Laparoscopy vs Open	83,3% (open) (25)	26,1% (open) (37)	< 0,0001
Conversion rate	50% (5/10)	13,9% (17/122)	0,0118
Ostomy needed	10% (3)	3,5% (5)	0,1451
Transfusional requirement	56,7% (17)	39,4% (56)	0,0634
Major surgical complications	6,7% (2)	8,5% (12)	0,7417
Re-interventions (same hospitalization)	6,7% (2)	4,2% (6)	0,4214
Sepsis	16,7% (5)	12% (17)	0,3303
Avarage length of stay	14,14 days	12,14 days	0,0011
Readmissions	0%	2,8% (4)	1

Illustration 4

Overall results analysis

Tab. 1: Overall results analysis.

Variable	Characteristic	Total Sample (n=172)		Group A (n=43)		Group B (n=129)	
		Number	%	Number	%	Number	%
Gender	Male	111	64,5	24	55,8	87	67,4
	Female	61	35,5	19	44,2	42	32,6
Comorbidities	Hypertension	114	66,3	29	67,4	85	65,9
	AMI bypass a-c*	2	1,2	-	-	2	1,6
	AMI no stent**	11	6,4	4	9,3	7	5,4
	AMI stent***	13	7,6	4	9,3	9	7,0
	DVT	2	1,2	-	-	2	1,6
	Respiratory	25	14,5	9	20,9	16	12,4
	Neurologic	22	12,8	11	25,6	11	8,5
	Renal	20	11,6	5	11,6	15	11,6
	Cirrhosis	6	3,5	1	2,3	5	3,9
	Diabetes	36	20,9	7	16,3	29	22,5
Obesity	7	4,1	1	2,3	6	4,7	
Previous neoplasm	40	23,3	12	27,9	28	21,7	
Previous CHT	23	13,4	4	9,3	19	14,7	
Previous pelvic RT	13	7,6	1	2,3	12	9,3	

Age Adjusted Charlson Index	2	2	1,2	-	-	2	1,6
	3	5	2,9	-	-	5	3,9
	4	10	5,8	-	-	10	7,8
	5	24	14,0	-	-	24	18,6
	6	37	21,5	2	4,7	35	27,1
	7	28	16,3	7	16,3	21	16,3
	8	24	14,0	12	27,9	12	9,3
	9	19	11,0	9	20,9	10	7,8
	10	8	4,7	4	9,3	4	3,1
	11	4	2,3	4	9,3	-	-
	12	8	4,7	3	7,0	5	3,9
	13	3	1,7	2	4,7	1	0,8
ASA score	1	3	1,7	-	-	3	2,3
	2	59	34,3	9	20,9	50	38,8
	3	94	54,7	23	53,5	71	55,0
	4	16	9,3	11	25,6	5	3,9
Intervention scheme	Urgent	30	17,4	14	32,6	16	12,4
	Programmed	142	82,6	29	67,4	113	87,6
Intervention type	Right hemicolecotomy	51	29,7%	15	34,9%	36	27,9%
	Transverse colon resection	11	6,4%	4	9,3%	7	5,4%
	Left hemicolecotomy	16	9,3%	2	4,7%	14	10,9%
	Left colon resection	9	5,2%	2	4,7%	7	5,4%
	Sigmoidectomy	34	19,8%	11	25,6%	23	17,8%
	Anterior rectal resection	33	19,2%	5	11,6%	28	21,7%
	Hartmann	5	2,9%	1	2,3%	4	3,1%

	Miles	7	4,1%	1	2,3%	6	4,7%
	Total colectomy	2	1,2%	1	2,3%	1	0,8%
	Double resection	4	2,3%	1	2,3%	3	2,3%
Technique	Laparoscopy	110	64,0	23	53,5	87	67,4
	Open	62	36,0	20	46,5	42	32,6
Protection ostomy	None	164	95,3	42	97,7	122	94,6
	Ileostomoy	8	4,7	1	2,3	7	5,4
Tranfusion requirement	None	99	57,6%	15	34,9%	84	65,1%
	Blood transfusion	73	42,4%	28	65,1%	45	34,9%
	Plasma	12	7,0%	4	9,3%	8	6,2%
	Platelets	4	2,3%	3	7,0%	1	0,8%
Complications	None	92	53,5%	14	32,6%	78	60,5%
Major surgical complications	Re-interventions	8	4,7%	5	11,6%	3	2,3%
	Anastomotic dehiscence	7	4,1%	3	7,0%	4	3,1%
	Partial anastomotic leak	7	4,1%	4	9,3%	3	2,3%
	Post-operative abscess	13	7,6%	6	14,0%	7	5,4%
	Bleeding	9	5,2%	3	7,0%	6	4,7%
	Kidney ostomy	1	0,6%	0	0,0%	1	0,8%
	Transfusion	41	23,8%	15	34,9%	26	20,2%
	Surgical wound dehiscence	13	7,6%	6	14,0%	7	5,4%

Major general complications	Death	7	4,1%	4	9,3%	3	2,3%
	Sepsis	22	12,8%	9	20,9%	13	10,1%
	Cardiac arrest	3	1,7%	2	4,7%	1	0,8%
	Cardiac ischemia	6	3,5%	2	4,7%	4	3,1%
	Cardiac insufficiency	3	1,7%	1	2,3%	2	1,6%
	Cardiac arrhythmia	4	2,3%	3	7,0%	1	0,8%
	Respiratory	22	12,8%	14	32,6%	8	6,2%
	Renal failure	2	1,2%	0	0,0%	2	1,6%
	Neurologic	4	2,3%	3	7,0%	1	0,8%
Discharge mode	Home	143	83,1	26	60,5	117	90,7
	ADI/RSA****	13	7,6	7	16,3	6	4,7
	Transfer to another ward	9	5,2	6	14,0	3	2,3
	Death	7	4,1	4	9,3	3	2,3
Readmissions	Partial occlusion	3	1,7	1	2,3	2	1,6
	Anastomitic dehiscence	1	0,6	-	-	1	0,8
	Ostomy closure	5	2,9	-	-	5	3,9
	Other	41	23,8	10	23,4	31	24,0
Adjuvant therapies	CHT	63	36,6	2	4,7	61	47,3
	RT	6	3,5	-	-	6	4,7

Survival at the end of the study	Survivor	142	82,6	27	62,8	115	89,1
	Death	30	17,4	16	37,2	14	10,9
<p>*Acute Myocardial Infarction (AMI) treated with an Aorto-Coronary bypass. ** Acute Myocardial Infarction (AMI) not treated with a stent. *** Acute Myocardial Infarction (AMI) treated with a stent. **** ADI is a protocol with an activation of health care at home; RSA is a structure with health care. DVT (Deep Venous Thrombosis). CHT (Chemotherapy). RT (Radiotherapy).</p>							

Reviews

Review 1

Review Title: [Colorectal surgey in the great elderly](#)

Posted by Dr. Marcello Picchio on 26 Nov 2014 12:30:43 PM GMT

1	Is the subject of the article within the scope of the subject category?	
2	Are the interpretations / conclusions sound and justified by the data?	
3	Is this a new and original contribution?	
4	Does this paper exemplify an awareness of other research on the topic?	
5	Are structure and length satisfactory?	
6	Can you suggest brief additions or amendments or an introductory statement that will increase the value of this paper for an international audience?	
7	Can you suggest any reductions in the paper, or deletions of parts?	
8	Is the quality of the diction satisfactory?	
9	Are the illustrations and tables necessary and acceptable?	
10	Are the references adequate and are they all necessary?	
11	Are the keywords and abstract or summary informative?	

Rating: 6

Comment:

NA

Invited by the author to make a review on this article? : Yes

Experience and credentials in the specific area of science:

NA

Publications in the same or a related area of science: No

How to cite: Picchio M.Colorectal surgey in the great elderly [Review of the article 'The oncological colorectal surgery in the Great Elderly. Risk factors and predictive indexes. Is this the future of a patient-modulated surgery?' by Manco G].WebmedCentral Surgery 1970;5(11):WMCRW003147

Review 2

Review Title: The oncological colorectal surgery in the great elderly. Risk factors and predictive indexes. Is this the future of a patient-modulated surgery?

Posted by Prof. Peter Kornprat on 21 Nov 2014 08:14:05 PM GMT

1	Is the subject of the article within the scope of the subject category?	
2	Are the interpretations / conclusions sound and justified by the data?	
3	Is this a new and original contribution?	
4	Does this paper exemplify an awareness of other research on the topic?	
5	Are structure and length satisfactory?	
6	Can you suggest brief additions or amendments or an introductory statement that will increase the value of this paper for an international audience?	
7	Can you suggest any reductions in the paper, or deletions of parts?	
8	Is the quality of the diction satisfactory?	
9	Are the illustrations and tables necessary and acceptable?	
10	Are the references adequate and are they all necessary?	
11	Are the keywords and abstract or summary informative?	

Rating: 5

Comment:

NO

Invited by the author to make a review on this article? : Yes

Experience and credentials in the specific area of science:

general surgeon with great experience in that filed of surgery.

Publications in the same or a related area of science: No

How to cite: Kornprat P.The oncological colorectal surgery in the great elderly. Risk factors and predictive indexes. Is this the future of a patient-modulated surgery?[Review of the article 'The oncological colorectal surgery in the Great Elderly. Risk factors and predictive indexes. Is this the future of a patient-modulated surgery?' by Manco G].WebmedCentral Surgery 1970;5(11):WMCRW003137