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Subtotal gastrectomy with conventional D2 lymphadenectomy for carcinoma of the distal gastric portion: A retrospective cohort study on clinical outcomes[☆]



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HIGHLIGHTS

- Results in 228 patients with distal gastric carcinoma were delineated.
- Patients underwent surgery in 2005–2007.
- The overall cumulative 1-year survival rate was 83.8%.
- The overall cumulative 5-year survival rate was 54.4%.
- Probability of cumulative 5-year survival decreases five times when N ratio is > 0.25.

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ABSTRACT

Background: The study was aimed to delineate the postoperative morbidity, mortality and long-term follow-up results after R0 subtotal gastrectomy with D2 lymphadenectomy for invasive non-disseminated adenocarcinoma of the distal gastric portion.

Methods: Between January 2005 and December 2007, 228 patients with median age at hospitalisation 66.6 ± 11.4 years underwent the above mentioned surgery for histologically proven distal gastric adenocarcinoma.

Results: Postoperative morbidity was documented in 92 (40.4%) of patients within 30 days. An anastomotic leakage was diagnosed in two (0.9%), peritonitis in two (0.9%), anastomosis in five (2.2%), and prolonged ileus in six (2.6%) patients. Nine patients died (3.9%). The overall 1-year survival rate was 83.8%, and the 5-year survival rate was 54.4%. Gender, age, TNM stage, pN, and N ratio were independent factors predicting a long-term prognosis for patients.

Conclusions: A R0 type distal subtotal gastrectomy with standard D2 lymphadenectomy for a histologically proven invasive adenocarcinoma of the distal gastric portion without distant metastasis offers acceptable postoperative morbidity and mortality, and considerably high overall cumulative 5-year survival rate. The probability of cumulative survival decreases five times when the ratio between metastatic and examined lymph nodes is > 0.25.

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1. Introduction

Trends for gastric cancer incidence and mortality are declining in both sexes in Lithuania since 1978 [1,2]. Nevertheless, incidence and mortality rates from gastric cancer still remain high in the country. In 2010, the crude and age-standardized incidence rates

were 27.7 and 21.5 per 100,000 for both sexes individuals of all ages, and accounted for 911 new gastric cancer patients – 534 men and 377 women [1]. Not surprisingly, 680 deaths from gastric cancer were reported to the Lithuanian cancer registry in 2010.

Currently, a margin-negative surgical resection (R0) which entails wide excision of primary tumour with *en bloc* removal of associated regional lymph node stations is the only potentially curative therapy for invasive non-disseminated gastric cancer. Despite the well known fact that a conventional or modified D2 lymph node dissection is associated with low morbidity and a survival benefit [3,4] in patients with favourable prognostic factors [5–8], the extent of gastric excision and the extent of lymph node dissection remain subject to controversy [4,9–11]. Furthermore, there are many other areas for controversy including application of adjuvant therapy modalities [12], and targeted therapies tailored by gastric adenocarcinoma subtype [13,14].

Results of the studies from not widely known high volume cancer centres could be considered for further discussions regarding the value of subtotal gastrectomy with extended perigastric lymph node surgery for distal gastric cancer. To delineate the postoperative morbidity, mortality, and long-term follow-up results following R0 gastrectomies with D2 lymphadenectomies for an invasive non-disseminated distal gastric cancer, was the primary endpoint of this retrospective study. To define the risk factors predicting early postoperative morbidity and a long-term prognosis for patients, was the secondary endpoint of the study. Study was performed at Lithuanian National Cancer Institute which is the only specialised cancer care institution accredited by Organization of European Cancer Care Institutes.

2. Material and methods

Between January 2005 and December 2007, 228 patients with median age at hospitalisation 66.6 ± 11.4 years (range, 34–98) underwent a R0 type distal subtotal gastrectomy with the conventional D2 lymphadenectomy for histologically proven invasive non-disseminated adenocarcinoma of the distal gastric portion. Patients with a distant metastatic disease and patients with non-invasive early gastric cancer were not considered for this study.

The 7th edition of the International Union Against Cancer TNM classification was applied for TNM staging of the carcinoma [15]. All operations were undertaken according to the second English edition of Japanese Classification of Gastric Carcinoma [16,17]. This resulted in 16.51 (SD \pm 6.785) median of perigastric lymph nodes retrieved (range, 2–45) and 3.387 (SD \pm 2.29) median of metastatic lymph nodes (range, 0–15).

Billroth I (67 patients), Billroth II (8 patients), Balfour (103 patients), and Hoffmeister –Finsterer (50 patients) methods were used for a gastrointestinal continuity restoration following subtotal gastrectomy [18]. Any adverse event from normal treatment course was considered as a complication.

The severity of postoperative complications was stratified according to the Clavien-Dindo model [19]. Procedure-related mortality was defined as a postoperative death from any cause within 30 days. Detailed general and histological characteristics of 228 gastrectomized patients are shown in Table 1.

Statistical analyses were performed using the SPSS 20 software package. Such factors as sex, age group, underlying disease, ASA grade, cancer stage and TNM category, and a gastrointestinal continuity restoration method were used to evaluate dependence of distribution of the postoperative complication rate within groups. Cut off values for the ratio between metastatic and dissected lymph nodes (N ratio or LNR) were grouped as follows: LNR 0, LNR >0 –0.09, LNR >0.09 –0.25, and LNR >0.25 [19–23].

Cumulative survival time was the time from the surgical

Table 1

General and histologic characteristics of the group of 228 gastrectomized patients.

Variable	Number	Percentage
Sex		
Male	140	61.4
Female	88	38.6
Age groups		
<60 years	70	30.7
60–74 years	86	37.7
>74 years	72	31.6
Co-morbidities		
Cardiovascular	134	58.8
Pulmonary	36	15.8
Diabetes	13	5.7
Other	118	51.8
Stage		
I	110	48.2
II	61	26.8
III	57	25.0
pT category of TNM		
1	75	32.9
2	109	47.8
3	42	18.4
4	2	0.9
pN category of TNM		
0	121	53.1
1	79	34.6
2	28	12.3
Differentiation		
G1	23	10.1
G2	63	27.6
G3	132	57.9
Missing G value	10	4.4
Invasion		
Perineural	14	6.1
Perivascular	27	11.8
Lymphovascular	6	2.6
Perineural and perivascular	10	4.4
No invasion	171	75.0
Adjuvant chemotherapy		
Applied	61	26.8
Not applied	167	73.2

intervention until the date of death or until March 2013 for surviving patients. Survival curves were produced by means of the Kaplan–Meier model. The log-rank test was used to evaluate the statistical differences between the survival curves. The chi-square test was employed to compare categorical outcomes. Means were compared by using the Student's *t* test. Differences with *P* values less than 0.05 were considered as statistically significant. Factors found to be associated with long-term survival by univariate analysis were assessed using the Cox's proportional hazards multivariate regression model.

3. Results

3.1. Postoperative 30 day morbidity and mortality

92 patients (40.4%) had postoperative morbidity. In terms of Clavien – Dindo classification, complications were stratified as follows: I – 20 patients (8.8%), II – 46 patients (20.2%), IIIA – nine patients (3.9%), IIIB – seven patients (3.1%), IVA – one patient (0.4%), and V – nine patients (3.9%). An anastomotic leakage was diagnosed in two (0.9%), peritonitis – in two (0.9%), anastomosis – in five (2.2%), and prolonged ileus – in six (2.6%) patients. The mean length of stay in hospital was 17.82 days (SD \pm 6.292). Nine patients died (3.9%).

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