

Comparison of Treatment Modalities of Esophageal or Gastroesophageal Junction Cancer at the National Cancer Institute – Brazil: A Retrospective Observational Study

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Abstract

Background: Esophageal (EC) and gastroesophageal junction (GEJ) carcinoma are highly incident neoplasms worldwide and tend to be diagnosed at a more advanced stage, contributing to the high mortality rates observed. Surgical resection has always been the standard curative treatment for patients without invasion of adjacent structures or metastases. However, unsatisfactory surgical results associated with low survival rates stimulated the development of multimodal treatments. Although the Brazilian National Cancer Institute (INCA) follows the evolution of EC and GEJ treatment, there are no data regarding the impact of the different treatment modalities instituted in our population. Thus, the objective of this study was to analyze the overall survival according to the modality of treatment performed and also to describe the study population.

Materials and Methods: We identified 189 patients who underwent esophagectomy over a 26-year period and divided them into 3 groups according to their treatment: exclusive esophagectomy, neoadjuvant chemoradiotherapy (CRT) by the CROSS protocol followed by surgery and radical CRT followed by salvage esophagectomy. Sociodemographic, clinicopathological and surgical data were collected from the review of medical records.

Results: By the end of the last century, the minority of patients enrolled with EC were operated either by advanced staging or by lack of clinical conditions. Among the patients submitted to surgical treatment, 63% had adenocarcinoma (AC). However, after 2000, with the development of new surgical devices, advances in anesthetic techniques and the introduction of neoadjuvant protocols, squamous cell carcinoma (SCC) became the most frequently treated subtype, reaching 56% of the total cases in the last 9 years. We also found that the minimally invasive surgical approach was the most used in the last 4 years of the study, approximately 75% of the cases, and contributed to the reduction of surgical morbimortality in our institution. In our population, the CROSS protocol had no impact on overall survival. Three factors might have impacted negatively the results of neoadjuvant treatment in our cohort: the long interval between the end of neoadjuvant treatment and surgery (median of 172 days), the recent increase of patients with an advanced stage and the low number of cases (n = 31). There was also no difference in 2-year overall survival between the three types of treatments.

Conclusion: The ineffective regulation of the Brazilian Public Health System's patient referral, associated with deficits in infrastructure and human resources interferes with the ideal treatment protocols. In order to obtain an even better picture of the different treatment modalities used for EC in INCA and its impact in prognosis, it is necessary to proceed with the analysis including patients from subsequent years.

Figure 1. Flowchart of patient selection

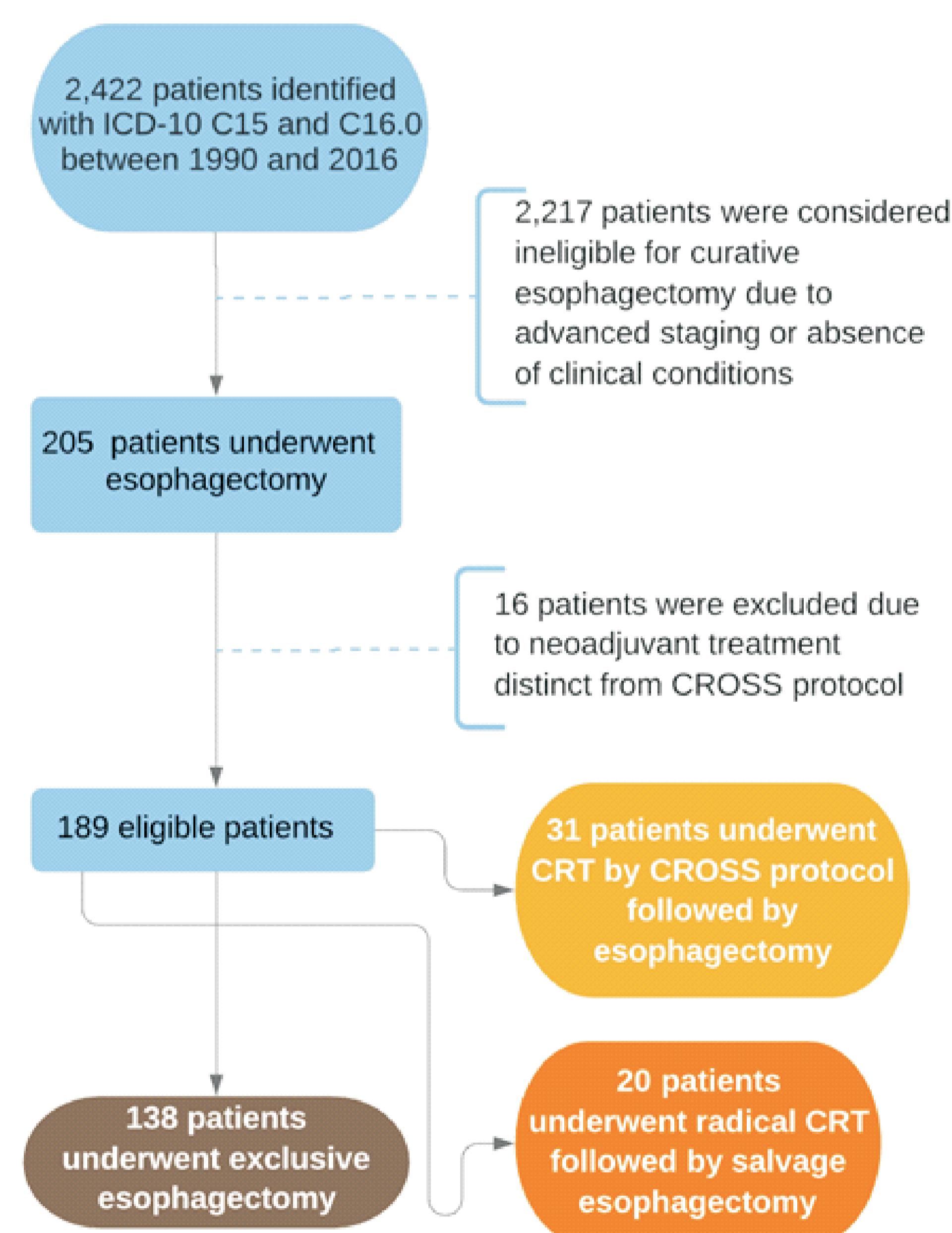


Figure 2. Distribution of treatment modality established by periods of three years.

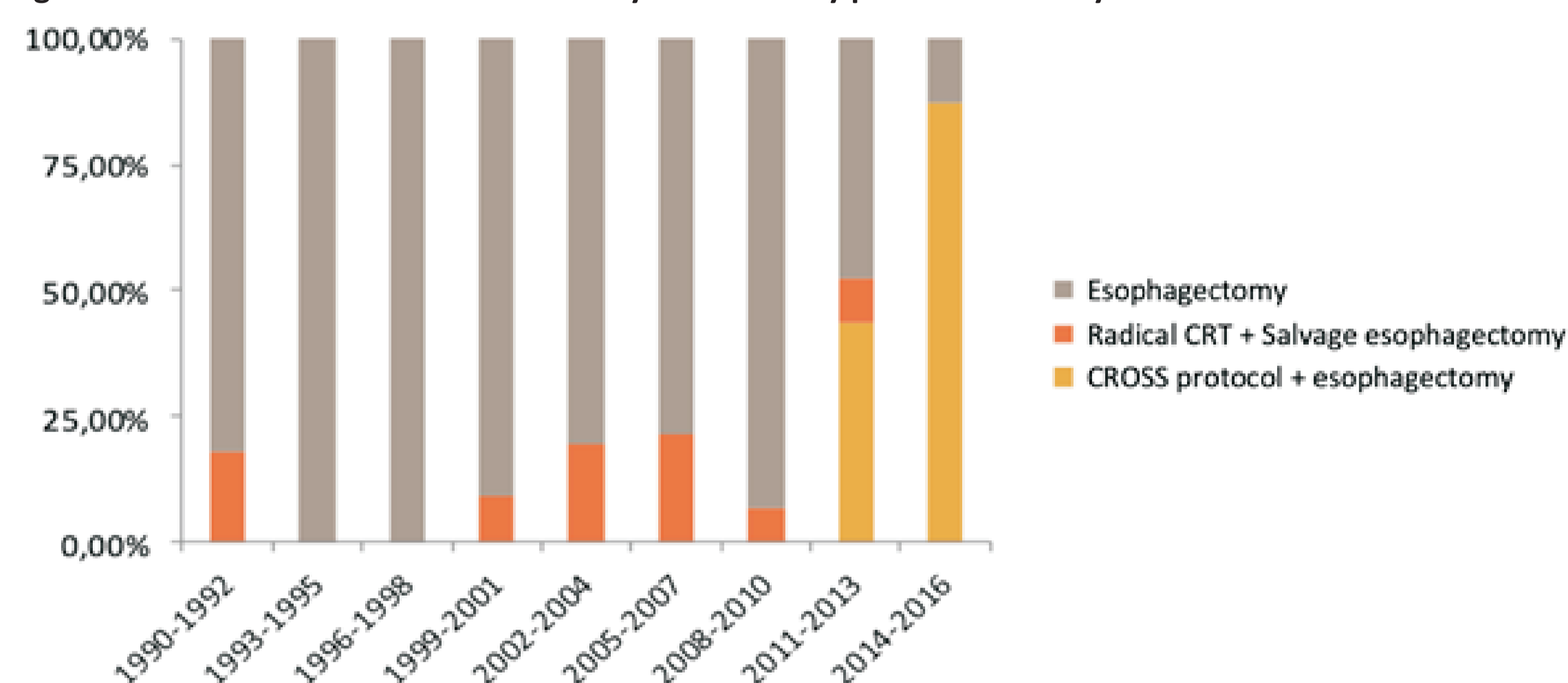


Figure 3. Distribution of clinical stage at diagnosis by year of study.

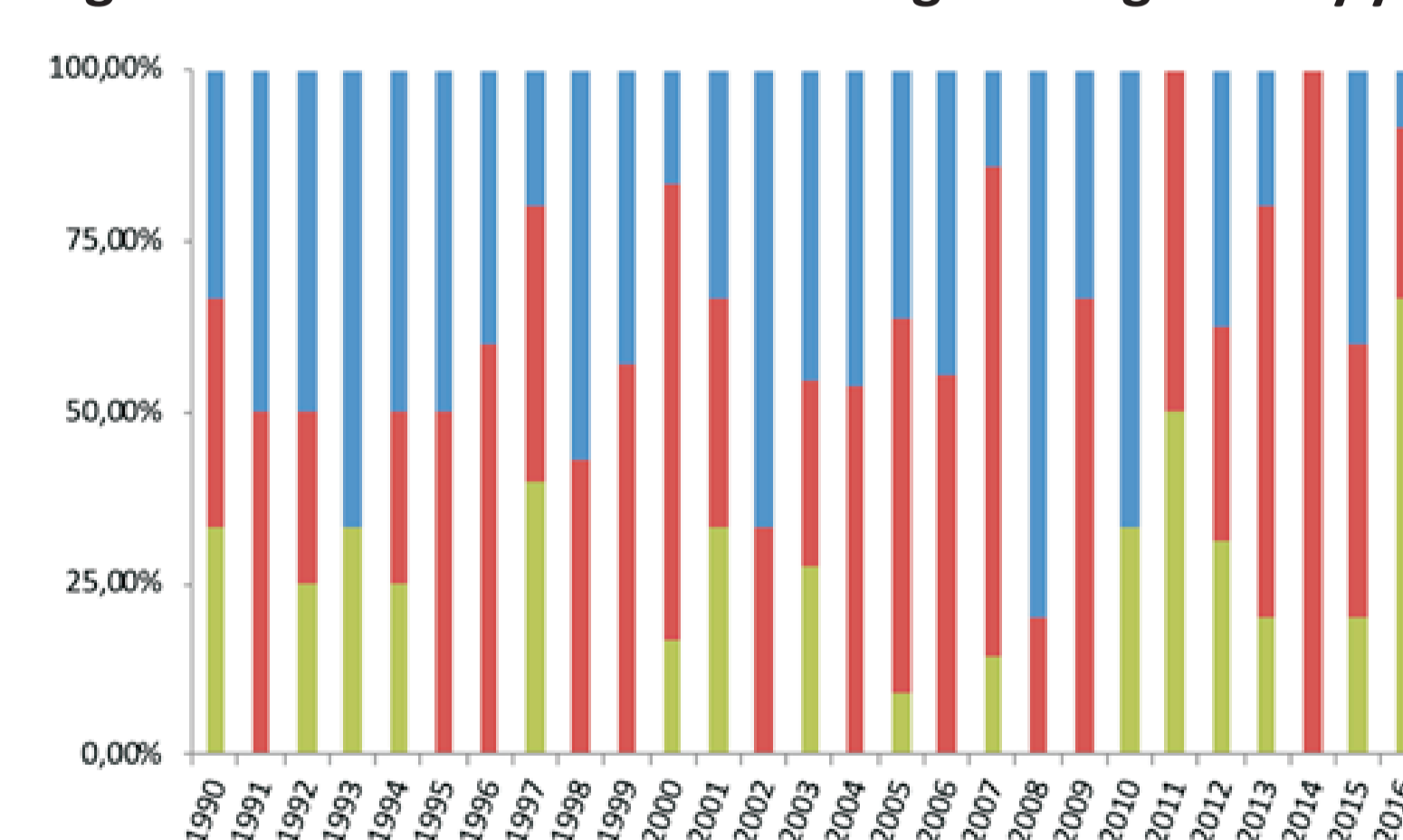


Figure 4. Histological subtype distribution by periods of 9 years of patients who underwent esophagectomy with curative intent.

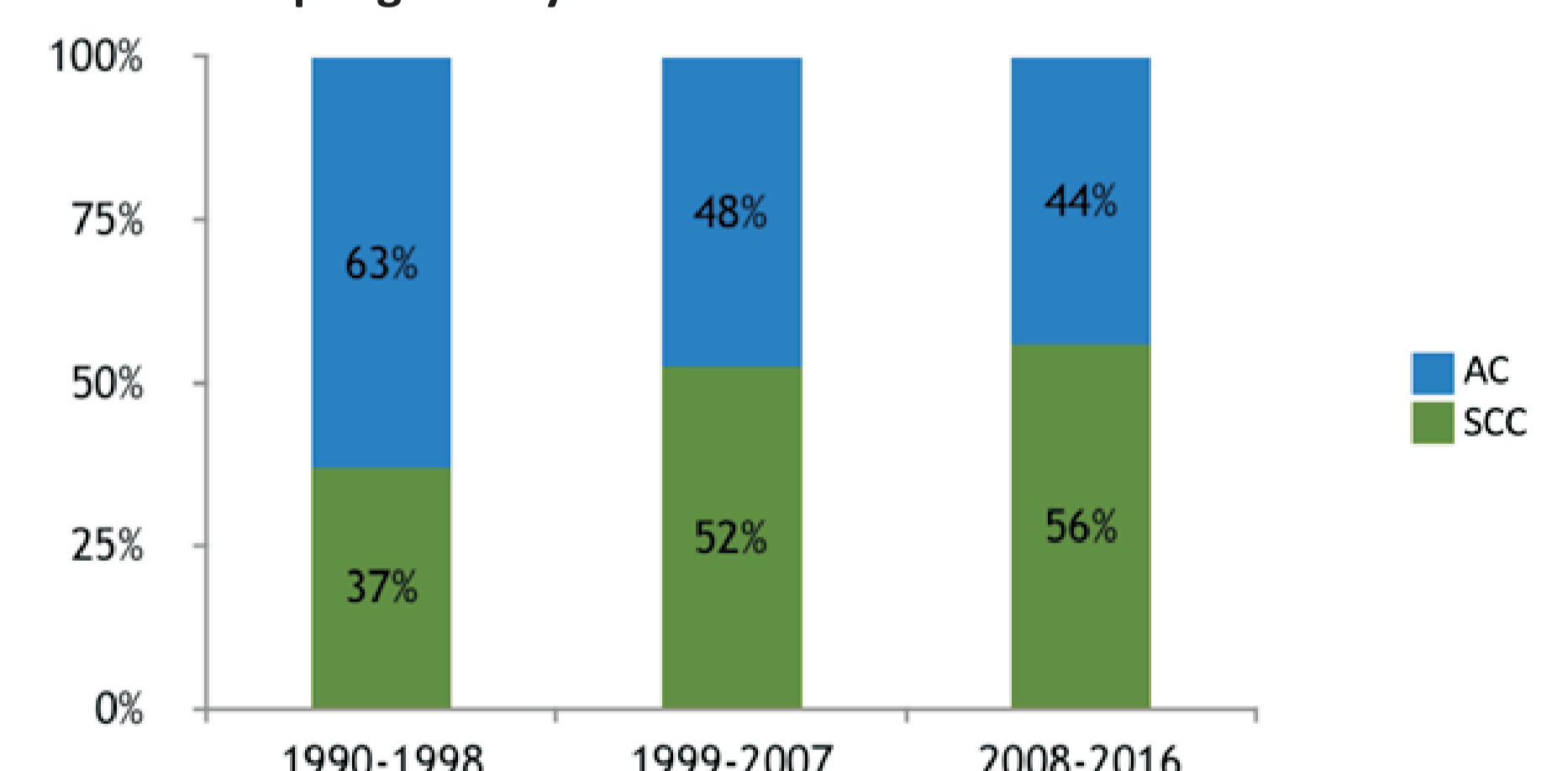


Table 1. Association of clinical and pathologic variables with histological subtype.

	Treatment	Histological subtype		p value
		SCC (%)	AC (%)	
Treatment	Esophagectomy	65 (65,7)	73 (81,1)	0,017
	CRT followed by surgery	34 (34,3)	17 (18,9)	
Tumor localization	Upper 2/3	59 (60,8)	3 (3,3)	< 0,001
	Lower 1/3 and GEJ	38 (39,2)	87 (96,7)	
Angiolymphatic invasion	No	54 (61,4)	34 (40,0)	0,005
	Yes	34 (38,6)	51 (60,0)	
Neural invasion	No	61 (69,3)	35 (42,2)	< 0,001
	Yes	27 (30,7)	48 (57,8)	

Table 2. Comparison between means of sociodemographic and clinicopathological features by type of treatment.

	Esophagectomy	Radical CRT+ Salvage Esophagectomy	CROSS protocol + esophagectomy	p value
Age (years)	57,37 (± 11,18)	58,44 (± 10,21)	60,32 (± 6,44)	0,358
Incisor distance (cm)	31,73 (± 5,88)	26,35 (± 6,27)	31,29 (± 5,17)	0,001
Tumor size (cm)	5,35 (± 2,60)	4,10 (± 1,50)	4,24 (± 2,60)	0,021
Proximal margin (cm)	7,27 (± 3,88)	6,87 (± 4,55)	7,20 (± 4,93)	0,923
Distal margin (cm)	8,46 (± 5,14)	11,21 (± 5,04)	9,69 (± 5,16)	0,063
Time between CRT and surgery (days)	-	383,55 (± 218,80)	205,32 (± 134,98)	0,001

Table 3. Comparison between medians of clinical, pathological and surgical features by type of treatment.

	Esophagectomy	Radical CRT+ Salvage Esophagectomy	CROSS protocol + esophagectomy	p value
Time between diagnosis and beginning of treatment (months)	3,38 (0,33 - 20,50)	2,69 (0,20 - 9,46)	3,15 (0,82 - 8,15)	0,054
GEJ distance (cm)	0,00 (0,00 - 42,00)	5,00 (0,00 - 21,00)	0,00 (0,00 - 11,00)	0,035
Lymph nodes ratio	0,08 (0,00 - 0,91)	0,00 (0,00 - 1,00)	0,00 (0,00 - 0,85)	0,003
Surgical time (minutes)	305,00 (165,00 - 720,00)	365,00 (240,00 - 700,00)	420,00 (150,00 - 540,00)	0,017
Length of ICU stay (days)	6,00 (1,00 - 86,00)	6,50 (2,00 - 36,00)	4,00 (2,00 - 34,00)	0,047
Length of hospital stay (days)	15,00 (3,00 - 166,00)	15,50 (8,00 - 41,00)	14,00 (8,00 - 46,00)	0,832