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Titel onderzoek
The impact of paratracheal lymphadenectomy on survival after esophagectomy: a nation-wide propensity score matched analysis

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Beschrijving onderzoek
The optimal extent of mediastinal lymphadenectomy in esophageal surgery remains a subject of debate. Although paratracheal lymphadenectomy might improve survival even after esophagectomy for distal esophageal tumors after neoadjuvant therapy, this potential benefit must be weighed against the possible risks of increased morbidity by damage to structures such as the recurrent laryngeal nerves (1,2). A recent nation-wide study in The Netherlands found that paratracheal lymphadenectomy is associated with increased lymph node yield without increasing the incidence of recurrent laryngeal nerve injury or other complications (3). In this context, more studies are warranted to investigate the impact of paratracheal lymphadenectomy on survival.

Literature:
(1) Miyata H, Sugimura K, Yamasaki M, Makino T, Tanaka K, Morii E, et al. Clinical Impact of the Location of Lymph Node Metastases After Neoadjuvant Chemotherapy for Middle and Lower Thoracic Esophageal Cancer. Ann Surg Oncol 2018 Oct 29.
(2) Phillips AW, Lagarde SM, Navidi M, Disep B, Griffin SM. Impact of Extent of Lymphadenectomy on Survival, Post Neoadjuvant Chemotherapy and Transthoracic Esophagectomy. Ann Surg 2017 Apr;265(4):750-756.
(3) Hagens ERC*, Kingma BF *, Van Berge Henegouwen MI, Borggreve AS, Ruurda JP, Gisbertz SS^, Van Hillegersberg R^. The impact of paratracheal lymphadenectomy on lymph node yield and short-term outcomes: a nation-wide propensity score matched analysis. Unpublished
* and ^: these authors contributed equally to this study.

Onderzoeksvraag:
Study aim:

2017.1

The aim of this study is to investigate the impact of paratracheal lymphadenectomy on survival after esophagectomy for esophageal cancer.

Hypothesis:
Paratracheal lymphadenectomy improves survival after esophagectomy.

Primary endpoints:
-                    Overall survival

Secondary endpoints:
-                    Disease-free survival
-                    Radicality (R0)
-                    Lymph node yield
-                    Pathological nodal status (pN status)
-                    Postoperative complications (overall and for each DUCA registered complication separately)
-                    Re-intervention rate
-                    Length of hospital stay
-                    Comparison of cTNM and (y)pTNM

Onderzoeksopzet:
This study involves a nation-wide propensity score matched analysis.

Onderzoekspopulatie:
All patients who underwent elective transthoracic esophagectomy (2011-2017) for esophageal or gastro-esophageal junction cancer (cTisN0-3M0) and for whom a link between DUCA and Vectis data was created are eligible for inclusion.

Statistiek:
Patients with adenocarcinoma and squamous cell carcinoma will be analyzed separately. Within these separate groups, patient characteristics (i.e. age, Body Mass Index, ASA score, comorbidities, tumor location, tumor histology, cTNM stage), treatment characteristics (neoadjuvant therapy, surgical approach, year of surgery), and annual hospital volume will be compared between patients who received a paratracheal lymphadenectomy versus patients who did not during esophagectomy. Propensity score matching will be performed to minimize the effect of confounding influences of measured covariates on the assessed outcome between the study groups. A propensity score for each patient will be calculated using a logistic regression model, which will be fitted for paratracheal lymphadenectomy using baseline variables. Next, one-to-one matched study groups will be created using nearest-neighbor matching without replacement. Covariate balance of the matched cohort will be assessed using the mean standardized differences.

After propensity score matching, Cox regression analyses will be used to compare the overall- and disease survival between patients with paratracheal lymphadenectomy and 2017.1

patients without paratracheal lymphadenectomy. The other endpoints will be compared by means of chi-square tests (for categorical variables), independent samples t-tests (for normally distributed continuous variables), or Mann-Whitney U tests (for non-normally distributed continuous variables).

Statistical analyses will be performed using SPSS version 23.0 (IBM Corp., Armonk, NY) and R 3.3.1 open-source software (http://www.R-project.org, "matchit" and "optmatch" packages). A p-value of <0.05 will be considered statistically significant.

Beoogde publicatie
The impact of paratracheal lymphadenectomy on survival after esophagectomy: a nation-wide propensity score matched analysis.

2017.1