

STROBE Statement—Checklist of items that should be included in reports of *cohort studies*

	Item No	Recommendation
Title and abstract page 3	1	(a) Indicate the study's design with a commonly used term in the title or the abstract this retrospective cohort study collected information from 462 consecutive patients (b) Provide in the abstract an informative and balanced summary of what was done and what was found Low tie of the IMA has a lower AL and diverting stoma rate,
Introduction		
Background/rationale page 5	2	Explain the scientific background and rationale for the investigation being reported The debate about high ligation and low ligation dates back to more than 100 year
Objectives page 6	3	State specific objectives, including any prespecified hypotheses we retrospectively compared the postoperative complications, lymph node harvest, sexual and urinary functions between the high ligation group and the low ligation group in rectal cancer patients.
Methods		
Study design page 6	4	Present key elements of study design early in the paper The enrolled patients were divided into the following two groups: the high ligation group(n=235), patients who underwent ligation at the root of the IMA at the level of the aorta, and the low ligation group(n=227),
Setting page 6	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection A total of 462 consecutive rectal cancer patients who underwent TME at the National Cancer Center/ National Sciences Research Center for Cancer/ Cancer Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College from July 2017 to July 2019 were enrolled in this study
Participants page 7	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up (b) For matched studies, give matching criteria and number of exposed and unexposed patients who under ligation just below the origin of the left colic artery branch. All cases were operated by experienced surgeons who majored in colorectal cancer.
Variables page7	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable . In the high ligation group, the IMA was ligated and divided at 1cm from its origin to avoid damaging the nerves(n=235), and the fatty tissue around the root of the IMA was swept to harvest maximum metastatic lymph nodes (Figure 1). In the low ligation group(n=227),
Data sources/ measurement page 8	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias page 8	9	Describe any efforts to address potential sources of bias All patients did bowel preparation the day before surgery by drinking sulfate-free

Study size	10	Explain how the study size was arrived at All cases were operated by experienced surgeons who majored in colorectal cancer.
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why According to the distal colonic blood supply and the tension of the anastomotic stoma, surgeons decided whether to perform Hartmann's procedure or ileostomy.
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding (b) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed (d) If applicable, explain how loss to follow-up was addressed (e) Describe any sensitivity analyses The Statistical Package for the Social Sciences (SPSS) version 21.0 for Windows (IBM Corp, Armonk, NY, United States) was used for data analyses. Quantitative data are shown as the mean $\pm$ SD and were analyzed by a t-test. Categorical data are shown as frequencies and percentages and were analyzed by the Chi-squared test or Fisher's exact test. Binary logistic regression analysis was performed to examine the predictors of AL in calculation the odds ratio (OR) and 95% confidence intervals (CI). Differences were considered significant when P- value was less than 0.05. Our data was statistically reviewed by a biomedical statistician in our institution.
<b>Results</b>		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed (b) Give reasons for non-participation at each stage (c) Consider use of a flow diagram Between July 2017 to July 2019, 462 patients with rectal cancer treated at the National Cancer Center
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders (b) Indicate number of participants with missing data for each variable of interest (c) Summarise follow-up time (eg, average and total amount) The regression models demonstrated that the following were associated with an increased risk of AL development: high or low ligation(OR,3.599; 95% CI,1.374-9.425; P=0.009); age(< or $\geq$ 65 years) (OR,2.494; 95% CI,1.080-5.760; P=0.032); and tumor location(OR,2.751; 95% CI, 0.772-3.985; P=0.031),

Table 6 shows the overall diverting stoma rate (12.1%). Thirty-nine (16.5%) patients in the HL group and seventeen (7.5%) in the LL group had a diverting stoma, the result had a statistically significant difference ( $p=0.003$ ).

Outcome data	page 9	15	Report numbers of outcome events or summary measures over time
Main results	page 10	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included (b) Report category boundaries when continuous variables were categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period Our data showed a significant difference in the AL rate between the high and low ligation groups (11.0% vs 2.8%, $p=0.001$ )
Other analyses	page 10	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses low ligation (OR, 3.599; 95% CI, 1.374-9.425; $P=0.009$ ); age (< or $\geq 65$ years) (OR, 2.494; 95% CI, 1.080-5.760; $P=0.032$ ); and tumor location (OR, 2.751; 95% CI, 0.772-3.985; $P=0.031$ ),
<b>Discussion</b>			
Key results	page 10	18	Summarise key results with reference to study objectives our study results show a lower AL and diverting stoma rate in the LL group. Surgeons should take the age and tumor location into account while deciding whether a HL or LL should be performed.
Limitations	page 13	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias The main limitation of our study lies in its retrospective nature, and we mainly focus on short-term postoperative complications
Interpretation	page 13	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence Therefore, a larger sample, multicenter randomized controlled trial is needed to testify the superiority of LL over HL in rectal cancer surgery.
Generalisability	page 13	21	Discuss the generalisability (external validity) of the study results Surgeons should take the age and tumor location into account while deciding whether a HL or LL should be performed.
<b>Other information</b>			
Funding	page 1	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based

\*Give information separately for exposed and unexposed groups.

**Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at <http://www.strobe-statement.org>.