Number of lymph nodes identified in resected specimens of colorectal cancer from a variety of South African Hospitals: a retrospective study

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Declaration

I, **Philippus Theunis du Plooy** declare that this research report is my own work. It is being submitted for the degree of Master of Medicine in the branch of surgery at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

Signature

Date:

Dedication

To Jossie – my soulmate, my love, my wife – you complete me!

Jeremiah 9:23-24: *Thus saith the Lord, let not the wise man glory in his wisdom, neither let the mighty man glory in his might, let not the rich man glory in his riches: but let him that glorieth glory in this, that he understandeth and knoweth me, that I am the Lord which exercise lovingkindness, judgement, and righteousness, in the earth: for in these things I delight, saith the Lord.*

Abstract

Title : Number of lymph nodes identified in resected specimens of colorectal cancer from a variety of South African Hospitals: a retrospective study

Purpose: To examine the number of lymph nodes present in specimens submitted for histological examination from a variety of South African hospitals; the identification of factors that influence nodal yield and node positivity; determining whether oncological clearance is improved based on the number of nodes examined in high volume centers versus low volume centres; the establishment of guidelines on where surgery for colorectal cancer should ideally be performed.

Patients and methods: Pathology reports of resected specimens of colorectal adenocarcinoma in the database of the National Health Laboratory Service Johannesburg laboratory from 2000 to 2005, were examined for patient demographics, referring hospital, tumour specific features of T-stage, degree of differentiation, lymphovascular invasion and adenocarcinoma subtype (mucinous versus non-mucinous), number of lymph nodes identified, number of nodes positive and whether preoperative radiotherapy was administered. Hospitals were grouped into four groups of Charlotte Maxeke Johannesburg Academic Hospital, Helen Joseph Hospital, private hospitals and non-academic public hospitals. Patients were grouped according to the number of lymph nodes retrieved into the following groups: not recorded, no nodes identified,1-7 nodes identified, 8-12 nodes, 13-18 nodes, and greater than 18 nodes identified. Additionally, patients were subdivided into those with nodal metastasis and those without, and into colon and rectal cancer respectively. Multivariate analysis was performed via StatSoft, Inc. (2008) STATISTICA (data analysis software system), version 8.0 on the different lymph node groups versus the abovementioned covariates.

Results: Of the 365 patients identified, the mean number of lymph nodes examined per resected specimen was 8.9 (±6.2SD), with significant differences noted between the different resection subtypes ($p < 0.001$). No statistically significant difference in mean number of nodes identified could be seen between the various hospitals. Alarmingly, in the group of patients where no metastatic nodes could be identified, the recommendation of 12 or more nodes examined per specimen was upheld in only 29% of cases. Factors associated with positive lymph nodes in this study include T-stage, degree of differentiation and lymphovascular invasion by the tumour. No significant benefit in terms of finding metastasis nodes could be demonstrated by examining more than 18 nodes.

Conclusions and recommendations: This study highlights a substandard nodal assessment in colorectal cancer specimens overall, including the academic hospitals. More than 70% of node negative patients in this series may have been understaged. Close liaison between the surgeon and examining pathologist is recommended. In the presence of the identified high risk factors for nodal involvement and a substandard nodal assessment, additional measures i.e. fat clearance and immunohistochemistry need employment. A prospective study assessing quality of surgery is necessary, as is the creation of a central database to improve overall quality of cancer care.

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