

Early mobilization after ilio-inguinal lymph node dissection for melanoma does not increase the wound complication rate

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Abstract

Aim: Ilio-inguinal lymph node dissection for stage III melanoma is accompanied by a substantial amount of wound complications. Our treatment protocols changed in time in terms of postoperative bed rest prescriptions, being in chronological order Group A: 10 days with a Bohler Braun splint, Group B: 10 days without splint, and Group C: 5 days without splint. The aim of this study was to evaluate the effect of bed rest prescriptions on wound complications.

Methods: For this study, we included all patients who underwent ilio-inguinal dissection for stage III melanoma in the period 1989–2011. Both univariate and multivariable analysis were performed to identify factors that were associated with occurrence of wound complications defined as wound infection, wound necrosis, and seroma.

Results: Of the 204 patients analyzed, 99 suffered one or more wound complications: 51 wound infection, 29 wound necrosis, and 39 seroma. A wound complication occurred in 26 out of 64, 51 out of 89, and 22 out of 51 patients for Group A, B, and C, respectively. Univariate analysis showed age >55 ($p = 0.001$) and presence of comorbidity ($p = 0.002$) to be associated with higher incidence of wound complications. The 5 day bed rest protocol used in group C did not significantly increase the incidence of wound complications (ref = Group A: OR = 1.18; 95%CI = 0.52–2.68, $p = 0.698$).

Conclusion: Early mobilization did not significantly increase the overall wound complication rate after ilio-inguinal lymph node dissection for melanoma. Age >55 and comorbidity were risk factors in univariate analysis.

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Keywords: Melanoma; Ilio-inguinal; Dissection; Complications; Bed rest

Introduction

The incidence of melanoma is constantly increasing in the western world. In the Netherlands the incidence doubled in the past two decades, from 11.3 per 100,000 in 1989 to 26.3 per 100,000 in 2009.^{1,2} Most of the patients present initially with Stage I or II melanoma.³ Unfortunately, despite defined surgical treatment of the primary melanoma with excision margins of 1 or 2 cm, approximately 16–28% will develop recurrent disease. These recurrences occur in 20–28% local or in-transit, 15–50% on distant sites, but most frequently in regional lymph nodes (26–60%).⁴

For nodal metastases in the groin region, ilio-inguinal lymph node dissection is performed. Both clinically detectable nodal metastases (macrometastasis) and a positive sentinel lymph node biopsy (micrometastasis) identified by hematoxylin and eosin staining reflect nodal disease and are indications for an ilio-inguinal lymph node dissection in our center. These procedures for stage III melanoma are accompanied by a substantial amount of wound complications, with complication rates up to almost 50% in literature.^{5–8}

Our treatment protocols for ilio-inguinal lymph node dissection changed in time in terms of postoperative bed rest prescriptions. In the beginning a 10 day long period of strict bed rest with the usage of a Bohler Braun splint was thought to prevent complications by reducing edema and tension along the wound. Later, with the introduction of adjustable hospital beds the Bohler Braun splint was

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abandoned, although the duration of prescribed bed rest remained 10 days. In this period more wound healing problems seemed to occur.⁷ The protocol was adjusted to prescription of 5 days of bed rest in the most recent period following studies that successfully handled early mobilization.^{6,9} Grounds for this adjustment were increasing cost effectiveness as well as the conviction 10 days of bed rest would not improve wound healing and could increase the risk for complications like deep venous thrombosis and pulmonary embolism. This resulted in three consecutive cohorts being in chronological order Group A: 10 days with a Bohler Braun splint, Group B: 10 days without splint, and Group C: 5 days without splint. The aim of this study was to evaluate the effect of bed rest prescriptions on early wound complications.

Patients and methods

Patients and data acquisition

For this retrospective study we included all patients who underwent ilio-inguinal dissection for stage III melanoma for both clinically detectable macrometastasis and micrometastasis found by sentinel node biopsy in our center during the period 1989–2011. Patients who underwent a superficial dissection solely or in whom additional adjuvant limb perfusion was performed were excluded. Eventually, 204 melanoma patients were analyzed in present study.

Characteristics of patient, primary melanoma, operative procedure, and postoperative period were recorded. Early wound complications were defined as complications within 30 days of the operative procedure and were divided into wound infection, wound necrosis and seroma. Wound infection was scored if the wound was opened to drain an abscess, antibiotics were administered, or a positive culture was found. Wound necrosis was defined as necrotic edges of the wound which necessitated secondary wound healing for closure. Seroma was recorded when a puncture was performed.

Surgical procedure

For ilio-inguinal dissection, the superficial lymph nodes as well as the iliac and obturator lymph nodes were excised via a single ellipse shaped incision. The sartorius muscle was used to cover the neurovascular femoral bundle, as described extensively in the past.^{7,10} Since 2004, a single gift of antibiotic prophylaxis was given before the procedure to patients in whom sentinel node biopsy was performed previously. This was introduced to handle the increased risk for wound infection that was found in patients in whom lymph node dissection was performed after sentinel lymph node biopsy.¹¹

All patients were ordered strict bed rest with flexion in hip and knee for a minimum of 5 days, depending on the applicable protocol at time of surgical procedure. Flexion

in hip and knee in all patients was provided by the Bohler Braun splint or later by the adjustable hospital beds. Support stockings were used for mobilization during the first 6 months and low molecular weight heparin was given until the patient was completely mobilized. Drains were removed after 10 days when the production was less than 20 ml a day. For patients with 5 days of bed rest drains were mostly removed in the outpatient department.

Statistical analysis

Frequencies and percentages were used for description of patient and group characteristics. Differences between bed rest groups A, B, and C were analyzed by Fischer's exact test or the chi-square test for categorical variables and the Kruskal–Wallis test for continuous variables, all on a 5% significance level. Association of variables with early complications was assessed by univariate and multivariable logistic regression analyses. All variables significant on a 20% significance level in univariate analysis were entered in the multivariable analysis to identify factors that were independently associated with early complications with a $p < 0.050$.

Results

In total, we studied 204 patients, consisting of 105 females and 99 males with a median age of 56 (range

Table 1
Patient characteristics of 204 ilio-inguinal lymph node dissections for stage III melanoma.

Characteristic	<i>n</i>	(%)
Gender		
Male	99	(48.5)
Female	105	(51.5)
Age, in years, median (range)	56	(5–91)
Breslow thickness (mm)		
T1: ≤1.00	18	(8.8)
T2: 1.01–2.0	49	(24.0)
T3: 2.01–4.0	68	(33.3)
T4: >4.0	49	(24.0)
Unknown primary	20	(9.9)
Median mm, (range)	2.5	(0.7–20.0)
Ulceration		
Present	74	(36.3)
Absent	97	(47.5)
Unknown	33	(16.2)
Indication for dissection		
Macrometastasis	152	(74.5)
Micrometastasis	52	(25.5)
Side of dissection		
Left	100	(49.0)
Right	104	(51.0)
Risk factors		
BMI > 25	110	(53.9)
Smoking	58	(28.4)
Diabetes mellitus	12	(5.9)
Comorbidity	60	(29.4)

Abbreviation: BMI, body mass index.

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