

Incidence of symptomatic venous thromboembolism in oncological oral and maxillofacial operations: retrospective analysis

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Abstract

We retrospectively analysed the incidence of symptomatic venous thromboembolism (VTE) and associated risk factors in operations under general anaesthesia for cancer of the oral cavity. To identify symptoms related to deep venous thrombosis (DVT) and pulmonary embolism (PE), together with associated risk factors, we reviewed medical records of patients operated on in the department of oral and maxillofacial surgery at the Queen Elizabeth Hospital, Birmingham, United Kingdom, between June 2007 and October 2012. All patients were categorised according to their level of risk of VTE. The incidence of VTE was calculated with univariate associations and odds ratios with related 95% confidence intervals, where possible. In total, 233 patients were included, comprising 244 operations (mean (SD) age at operation 60.9 (13) years). Almost all patients (97%) were classified as having the highest risk of VTE. Swelling of an extremity, expectoration of blood, and tightness of the chest were the most common symptoms for suspected cases. An incidence of 0.41% was found for symptomatic VTE; one man developed a PE 2 days after operation. Associations between the analysed factors and symptomatic VTE were not significant. The development of the complication in oncological oral and maxillofacial operations seems to be rare, even in patients with a high risk. We cannot recommend the use of routine thromboprophylaxis, but it could be advocated in patients with obvious serious risk factors.

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Introduction

Venous thromboembolism (VTE) is a common and serious complication during and after operation that can lead to serious morbidity and even death.¹ Formation of a blood clot (thrombus) causes partial or complete occlusion of a vein and, depending on the location of the embolus, comprises deep venous thrombosis (DVT) and, when dislodged and migrated to the lung, pulmonary embolism (PE).

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Table 1

Levels of risk of thromboembolism in surgical patients without prophylaxis according to the American College of Chest Physicians (ACCP).¹³

Level of risk	Deep vein thrombosis (%)		Pulmonary embolism (%)	
	Calf	Proximal	Clinical	Fatal
Low Minor operation in patients under <40 years with no additional risk factors	2	0.4	0.2	<0.01
Moderate Minor operation in patients with additional risk factor Operation in patients aged 40–60 years with no additional risk factors	10–20	2–4	1–2	0.1–0.4
High Operation in patients > 60 years, or 40–60 years with additional risk factors (cancer, previous VTE)	20–40	4–8	2–4	0.4–1.0
Highest Operation in patients with multiple risk factors (age >40 years, cancer, previous VTE)	40–80	10–20	4–10	0.2–5

VTE: venous thromboembolism.

The incidence of VTE varies among surgical specialties and type of operation. In vascular operations the incidence of DVT and PE is as low as 1% and 0.4%, respectively,² but higher rates are found in abdominal and orthopaedic procedures (between 0.26% and 66%).^{3–6} In patients without cancer who have oral and maxillofacial operations, the incidence of VTE ranges from 0.15% to 1.6%.^{7–10}

Malignant diseases are considered a serious risk factor for the development of VTE.¹¹ In a review, Anderson and Spencer¹² verified that active cancer, together with advanced age, prolonged immobilisation, type of operation, serious injury, previous VTE, and congestive heart failure, are “convincingly demonstrated” independent risk factors. Obesity, use of nicotine, chemotherapy, red cell transfusion, or coexisting medical conditions, could further increase the risk.

Not all risk factors have the same predictive value for development of a VTE, but they can have a cumulative effect. Assessment tools have been developed to calculate the cumulative risk and identify surgical patients at high risk (Table 1).¹³

According to current reports, patients who have oncological oral and maxillofacial operations are categorised as being at high risk of VTE. They often have several serious risk factors, which include prolonged immobilisation, presence of active cancer, and advanced age.^{11–13}

We know of few studies that have analysed the risk and incidence of VTE in patients who have oral and maxillofacial operations for cancer. In studies on head and neck cancer surgery, reported incidence ranges from 0% for procedures without free flap reconstruction to 6% for free flap reconstruction.^{14–19} They conclude that there is not enough evidence to standardise a protocol for prophylaxis of VTE.^{16,17}

Our study was primarily designed to be a retrospective analysis of the incidence of symptomatic VTE in oncological oral and maxillofacial operations. As a secondary outcome, we aimed to identify associated potential risk factors.

Patients and methods

We retrospectively analysed patients treated for cancer of the oral cavity at the department of oral and maxillofacial surgery at the Queen Elizabeth Hospital, Birmingham, United Kingdom, to identify cases of symptomatic DVT and PE. We used a computer database to select patients who had been operated on under general anaesthesia (duration of at least 120 min) between June 2007 and October 2012, and had been followed up for more than one month.

Recurrent or second primary diseases were included if operations, like all other procedures, had a curative intention. Patients found to have distant metastases during operation were excluded. Secondary neck dissections were included if the primary tumour was located in the oral cavity.

Data were retrieved from electronic medical records and included discharge and ward notes, external and internal referral letters, and letters to general practitioners; outpatient, clinical examination, operating, and anaesthesia notes, and pathology and imaging reports. We also collected details of patients' characteristics, coexisting medical conditions, and histopathological results. When data were missing we searched the paper notes. If discrete values could not be retrieved, patients were excluded. The overall population mean was used for missing continuous variables.

Operations were categorised into those that included microvascular free tissue reconstruction and those that did not, and patients were assessed for level of risk of VTE according to recommendations by the American College of Chest Physicians (ACCP) (Table 1).¹³

We reviewed the medical records to identify symptoms related to DVT and PE such as swelling, redness, or pain in the extremity; shortness of breath, tightness of the chest, or expectoration of blood. All patients at high risk of VTE had Doppler ultrasound imaging, or computed tomographic (CT) pulmonary angiography to confirm diagnosis of DVT or PE, respectively. Additional information on postoperative bleeding was noted.

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