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Postoperative bleeding risk for cutaneous surgery in the head and neck region with continued phenprocoumon therapy

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ABSTRACT

In a total of 171 surgical procedures for lesions in the head and neck region in patients in whom phenprocoumon therapy was not stopped, 16 (9%) postoperative bleeding events were observed over a follow-up period of two weeks. Local measures were sufficient in all cases except one severe case where blood transfusion was needed and anticoagulant treatment was stopped for 7 days. The bleeding risk was significantly higher for the surgical procedures of the nose than those in other areas (21% versus 6%, $P = 0.014$), but was not influenced by the international normalized ratio (INR) of blood coagulation, size, site and type of the lesion, surgical procedure, and sex and age of the patients. The bleeding rate in patients not on any anticoagulation therapy was significantly lower (6/211 = 3%). Across both groups, just over 80% of the bleeding episodes were within the first two days (55% on the same day and 32% on the next day) of the surgery. No bleeding was recorded after 5 days. Our data suggest that cutaneous surgery in the head and neck region can be safely performed with continued phenprocoumon therapy in most cases in an INR range of 1.3–3.4, but rarely severe bleeding does occur and can be managed with a close-contact follow-up and with 24-h on call services during the first two days postoperatively.

1. Introduction

Due to an increased risk of bleeding, perioperative cessation of anticoagulation therapy is practiced for major and also frequently for cutaneous surgery procedures (Kirkorian et al., 2007; Kovich and Otley, 2002; Oudit et al., 2007). Because the effect of phenprocoumon lasts 72 h, cessation of the therapy must begin at least 2 days prior to the surgery (Hirsh et al., 2003; Jaffer et al., 2003; Jafri, 2004; Hirsh et al., 1992). Discontinuation of phenprocoumon during this period exposes the patients to a higher risk of thromboembolism because of 1) their cardiovascular condition, 2) potential hypercoagulability resulting from rebound in clotting factors and 3) the thrombogenic nature of the surgery. The management of patients on oral anticoagulant treatment needing cutaneous surgery is thus still controversial, partially due to a lack of reliable data regarding postoperative bleeding risk (Poller and Thomson, 1964; Palareti et al., 1994; Grip et al., 1991; Genewein et al., 1996; Tardy et al., 1997; Kovich and Otley, 2003).

A number of studies have assessed the risk of postoperative bleeding in cutaneous surgery with continued oral anticoagulation. Most of these studies have had few cases, and the surgeries were performed by different surgeons. Consequently, the reported postoperative bleeding risks vary from study to study and cover a broad range between 2 and 23%. Furthermore, most studies did not include proper control groups (Alcalay, 2001; Kargi et al., 2002; Otley et al., 1996; Syed et al., 2004; Dixon et al., 2007).

Cutaneous surgery in the head and neck region is more invasive than many minor cutaneous procedures in other body regions and is thus associated with a higher risk of bleeding. This increased risk has not been specifically addressed in patients in whom oral anticoagulation is not discontinued.

In this study, we reviewed 171 surgical procedures in the head and neck region where phenprocoumon therapy was not discontinued over a period of 7 years and comprehensively evaluated all bleeding events. A total of 211 surgical procedures on patients not on

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anticoagulation therapy were included as a control group. All procedures were carried out by the first author on an out-patient basis.

2. Material and methods

The study group consisted of 171 consecutive surgical procedures in the head and neck region in 55 patients on oral anticoagulant treatment between 2004 and 2011. The preoperative blood coagulation of these patients (taking phenprocoumon) was evaluated using the most recent international normalized ratio (INR). Anticoagulation was continued for patients with INR < 4. Exclusion criteria included INR > 4, postoperative follow-up elsewhere, or primary bleeding disorders such as haemophilia A or von Willebrandt–Jürgens disease. A total of 211 similar surgical procedures on 89 patients in a similar age range who were not on anticoagulation therapy were included as controls. In both groups, each surgical procedure was defined as an independent case when they were performed on the same patient.

The same surgeon (WE) performed all operations, with local anaesthesia using articaine 4% with adrenaline 1:200.000 (Ultracain D-S 1:200.000, SanofiAventis) on an out-patient basis. Bipolar cautery was used for haemostasis whenever necessary. Malignant lesions were resected with clearance of the tumour in all directions, while avoiding serious anatomic and functional destruction according to Mohs micrographic surgery (Salmon et al., 2010; Youl et al., 2011; Blasdale et al., 2010; Mourouzis et al., 2009). All removed lesions underwent histopathological examination. The size of the excision was defined as the diameter of the excised specimen under histological examination, which corresponds approximately to half of the size of a wound in the patient due to the shrinkage of the specimen in pathological processing and the inclusion of surrounding tissues in wound closure. Excisional wounds of benign lesions were primarily closed using linear closure. For malignant or potentially malignant lesions, Mohs excision was performed in the first step, followed by a subsequent reconstruction via either a local flap or skin graft in a second procedure (Salgarelli et al., 2010; Tayeb et al., 2011). Patients with cardiac valvular disease received prophylactic antibiotic therapy according to recommendations by the American Heart Association.

Dressing changes were routinely performed on the 1st, 3rd, 5th, 7th, 10th and 14th day after surgery. Simple oozing, slight bleeding, temporary haematoma formation and additional dressing changes required by the patients were not considered bleeding complications. Moderate bleeding was defined as an event of unplanned patient presentation due to bleeding that required the help of a medical professional. Severe bleeding was defined as a bleeding requiring additional surgical treatment according to the modified classification of Otley (Otley et al., 1996; Blasdale and Lawrence, 2008; Lewis and Dufresne, 2008).

All data were recorded and stored in a Microsoft-based database (Evident). The statistical analysis was performed using SPSS. The incidence of bleeding in the study and the control groups were compared using Fisher's exact test. Within the study group, the preoperative INR and age were compared between the patients with bleeding and the patients without bleeding. This comparison was performed using the *t*-test (after ensuring a nearly normal distribution of INR and age parameters). Possible differences between the bleeding risk of male and female patients, as well as the size of the lesion, the varying types of lesion and sites were examined using a Chi-square or a Fisher's exact test. All parametric and non-parametric tests were two-tailed, and $P < 0.05$ was considered statistically significant.

3. Results

The ages of the patients in the study and control groups were nearly identical, and the lesion type and surgical procedures were also similar between the two groups (Table 1).

Table 1
Anticoagulation versus control cases.

	Study cases	Control cases	Test result
Demography			
Surgery procedures (number of patients)	171 (55)	211 (89)	
Age in years (means + standard deviation)	76.4 ± 6.5	76.4 ± 10.5	$P = 0.9$
Male/female	111/60	102/109	$P = 0.001$
Lesion in each procedure			
Malignant	124 (73%)	156 (74%)	$P = 0.8$
Benign	47 (28%)	55 (26%)	
Postoperative bleeding			
Total	16	6	$P = 0.008$
Moderate	8	4	$P = 0.65$
Severe	8	2	

Postoperative bleeding was recorded in 16/171 and 6/211 cases in the study and control groups, corresponding to 9% and 3%, respectively (Table 1). This difference is significant (0.008).

Within the study group, 7/25 (21%) surgeries on the nose had postoperative bleeding, which was significantly more frequent than surgeries in other areas (6%) such as the ear, cheek or forehead (Tables 2 and 3).

No significant correlation was found between bleeding risk and the INR, gender or age of the patient, size of the excision, type of lesion or type of surgical procedure (Table 2).

The bleeding in 8 cases of the study group was moderate, and compression dressing (with methyloxycellulose in two cases) was sufficient. The bleeding in the other 8 cases in the study group was severe; haemostasis was achieved in these patients by use of a combination of bipolar diathermy, vessel ligation and compression dressing. Five of these 8 patients were monitored in the hospital for 1–4 days. In one case, an 88-year old female patient receiving a reconstructive flap surgery on her cheek experienced life-threatening postoperative bleeding on the next day likely because of her age and poor heart performance. She recovered without further events after administering vitamin k with low molecular heparin.

Among the total of 22 bleeding events across the study and the control groups, 12 (55%) were on the same day of the surgery and 7 (32%) on the next day, for a total of 87% within the first two days

Table 2
Postoperative bleeding cases versus non-bleeding cases among patients on anticoagulation therapy.

	Bleeding	Non-bleeding	Difference
Demography			
Cases (patients)	16 (15)	161 (40)	
Mean	76.9 ± 6.2	76.4 ± 6.6	$P = 0.78$
Male/female	10/6	101/54	$P = 0.79$
INR			
INR (cases)	2.4 ± 0.5 (16)	2.3 ± 0.5 (64)	$P = 0.49$
Lesion			
Malignant	14 (11%)	110	$P = 0.24$
Benign	2 (4%)	45	
Surgery procedure			
Primary	1	27	$P = 0.5$
Mohs exc	7	68	
Flap	8	60	
Size of excision			
Small (<10 mm)	2 (7%)	25	$P = 0.28$
Medium (10–20 mm)	6 (7%)	78	
Large (>20 mm)	8 (15%)	45	
Anatomical region			
Nose	7 (21%)	25	$P = 0.014$
Ear, cheek, forehead, others	9 (6%)	130	