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Introducing a procedure-specific Venous Thrombo-Embolism (VTE) chemoprophylaxis protocol for thyroid surgery patients



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ABSTRACT

The updated 2014 British Thyroid Association thyroid cancer guidelines recommends that chemoprophylaxis is not routinely indicated as there is no increased risk of Venous Thrombo Embolism (VTE) in patients undergoing thyroid surgery. Contrasting this, our recently instituted Trust wide VTE prophylaxis guidance meant that all patients with a potential thyroid cancer diagnosis would require chemoprophylaxis.

The literature was reviewed and chemoprophylaxis was found to increase the bleeding risk post thyroid surgery. A project was undertaken to balance the risk of VTE with the potential for increased morbidity following thyroid surgery and produce procedure specific guidelines.

Retrospective analysis found that in contrast to national standards, 78% of patients had chemoprophylaxis and there was a 9% post-operative haematoma rate. Departmental audit, literature review and discussion with Trust audit lead allowed for development and implementation of a variant VTE prophylaxis guidance allowing a scoring system for intermediate group (medium risk) in addition to previous low and high risk groups.

The change in practice was followed by further analysis showing a reduction in post-operative haematoma to 0% with no increased incidence of VTE, highlighting that adoption of a procedure specific VTE policy has allowed for safe practice but continuous monitoring is essential to maintain improvement.

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1. Introduction

Venous Thrombo-Embolism (VTE) is an encompassing term for deep vein thrombosis and pulmonary embolism. Admission to hospital is a known risk factor for developing a VTE and in 2005 it was reported that an estimated 25,000 people in the UK die from preventable hospital-acquired VTE every year.¹ In light of this, most local hospital trusts have a VTE policy for patients admitted to hospital, often based on the National Institute for Health and Care Excellence (NICE)

policy regarding VTE.² Within this, surgery is a recognised risk factor alongside a variety of medical comorbidities, meaning many in-patients require medical or chemical prophylaxis.

Chemical chemoprophylaxis is usually in the form of low molecular weight heparin, the type and dosage dependent upon the local hospital policy. More widespread mechanical prevention is in the form of anti-embolism calf stockings and intermittent pneumatic compression devices.

In the Wrightington, Wigan and Leigh NHS Foundation trust a newly instituted Trust wide surgical patient VTE prophylaxis guidance (Appendix Fig. 1) meant that all patients with a potential thyroid cancer diagnosis would require chemoprophylaxis in the form of low molecular weight heparin whether or not they had other medical comorbidities.

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After the introduction of the new VTE prophylaxis guidance, it was noticed that there appeared to be an increased rate of patients with post-operative bleeds after thyroid surgery. The new guidelines meant that all patients undergoing thyroid surgery for a potential cancer diagnosis would require chemoprophylaxis with 5000 units of Dalteparin, a type of low molecular weight heparin, regardless of the length of surgery, mobility after surgery and other medical comorbidities.

Although post-operative bleeding can be a risk after any type of surgery, there are serious concerns about an increased risk of bleeding after thyroid surgery due to the serious potential morbidity and mortality risk associated with it. Bleeding after thyroid surgery can not only lead to hypovolemic shock like with other major bleeding, however there is also a worry about haematoma formation which can lead to airway compromise. This can be two-fold and secondary to either direct airway compression or obstruction due to oedema caused by decreased lymphatic and vascular drainage, both of which can lead to the disastrous 'can't intubate, can't ventilate' situation. Fortunately this situation is rare, but anything potentially causing an increase in the incidence of this situation is concerning for both the operating surgeon and their anaesthetic colleague.

A review of the literature on the subject found overall that chemoprophylaxis does increase the bleeding risk post thyroid surgery with no decreased risk of VTE. There were two particular papers of interest, firstly one by Roy et al. which found that the estimated risk of bleeding requiring a return to the operating room was 1.58%, which is 10-fold greater than the risk of developing a DVT/PE ($P < .001$).³ Secondly, a paper by Limongelli et al. found that the risk of developing VTE in patients who undergo total thyroidectomy for benign and malignant diseases without preoperative prophylaxis is roughly 8-fold less than developing a potentially life threatening complication as postoperative bleeding.⁴

In 2014, the British Thyroid Association updated their guidelines for the management of patients with suspected thyroid cancer,⁵ (see Appendix Fig. 2). The guidance advises that there is no increased risk of VTE in patients undergoing thyroid surgery and therefore in the absence of other risk factors, the use of chemoprophylaxis is not indicated. However, VTE prophylaxis, in the form of graduated compression hose and/or peri-operative calf compression devices should be used in all cases.

This national guidance contrasted current trust guidelines and in light of this, the current literature and concerns about bleeding and risk to patient safety a review was undertaken with three main aims. Firstly to review the current VTE chemoprophylaxis prescribing practice and bleeding rates in thyroid surgery patients against national and local standards. Secondly, to balance the risk of VTE with the potential for increased morbidity due to bleeding following thyroid surgery. Finally to attempt to produce procedure specific guidelines if this was appropriate for Otolaryngology patients undergoing thyroid surgery.

2. Methods and results

2.1. Initial audit

A retrospective case note review was undertaken from May 2014 to August 2014, comprising all patients undergoing thyroid surgery, including hemi-thyroidectomy and total thyroidectomy. 23 procedures were identified during this time period and in accordance with the current local policy, 78% of patients had Dalteparin prescribed. Only 64% of eligible patients had TED stockings or Flowtron boot use documented. Although this figure was lower than expected, this is likely to be much higher in reality and merely a documentation issue in the case notes. During the World Health Organisation (WHO) timeout checklist, prior to starting a procedure, all patients undergoing a procedure are checked to ensure that either compression stockings or Flowtron calf devices are in use unless contraindicated due to being an amputee or having peripheral vascular disease.⁶ This is documented online in the ORMIS theatre hospital system but is not recorded in the notes and for the purposes of this audit all data was collected from case notes only.

There was a 9% bleed rate due to post-operative haematoma, with one patient requiring a return to theatre for cessation of bleeding and one patient managed conservatively. This is much higher than the reported post-op thyroid bleed rate of 1.7% after reviewing over 30,000 thyroid operations.⁷ Despite the acknowledgement that the sample size was small due to the nature of the department and cohort of patients included, there was significant concern that the bleed rate was five times higher than that reported in the literature for routine thyroid surgery. The results found that 0% of patients sustained postoperative VTE.

2.2. Implementation of change

Due to the concern about increased bleed rates and patient safety, data collection was stopped after a short period and a consultation process was undertaken to change the current trust protocol to be in line with the national guidance. This first cycle of departmental audit along with the review of current literature, new national guidance and concerns about increased bleeding and risk to patient safety was presented and discussed at the local departmental audit meeting. The departmental leads and clinical director then liaised with the Trust VTE lead, which allowed for the development and implementation of a variation of the VTE prophylaxis guidance for thyroidectomy.

The new procedure specific guidance is based upon prophylaxis guidelines used within other trusts in the North West. Instead of a list of comorbidities (including cancer diagnosis) causing a risk score and anything over two being deemed high risk and requiring chemoprophylaxis, this allows a scoring system for intermediate group (medium risk) in addition to previous low and high risk groups. This meant that the risk of thyroid cancer alone did not require chemoprophylaxis in line with the British Thyroid Association guidance, and patients, unless having other medical problems would require only mechanical VTE prophylaxis.

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