

Venous thromboembolism prophylaxis in ENT surgery: a survey of current practice

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Abstract

Background: Venous thromboembolism is uncommon in ENT practice. There are no specific venous thromboembolism prophylaxis guidelines for ENT surgery, despite the bleeding risks associated with ENT surgery and the low incidence of venous thromboembolism.

Methods: An online poll of the ENT UK expert panel was conducted on the use of venous thromboembolism prophylaxis.

Results: A total of 132 responses were received. Of the respondents, 84.5 per cent routinely assess all of their patients for venous thromboembolism risk. In addition, 75.4 per cent use local health trust guidelines, with the National Institute for Health and Care Excellence being the most common source of national guidelines. There was significant heterogeneity in the use of low molecular weight heparin. Only 53.7 per cent of respondents felt that the guidelines they currently used reflect their practice.

Conclusion: There is significant heterogeneity in venous thromboembolism prophylaxis. There is therefore scope for revision of the ENT UK venous thromboembolism prophylaxis guidelines to reflect general ENT practice.

Key words: Venous Thromboembolism; Otolaryngology; Standards

Introduction

Little is known about the relative risks and benefits of venous thromboembolism prophylaxis in ENT surgery. Large retrospective audits have demonstrated the risk of venous thromboembolism in ENT surgery to be generally very low, at around 0.2 per cent (see Table I), and that most post-operative thromboembolic events occur after head and neck cancer surgery.^{1–6} The incidence of venous thromboembolism after non-oncological surgery is reported to be around 0.02 per cent, and the incidence of venous thromboembolism after day-case ENT surgery is even less common.

In 1997, Ah-See *et al.* audited the practice of 40 otolaryngologists regarding venous thromboembolism prophylaxis in head and neck surgery.⁷ At this time, general ENT surgery was excluded from the audit, and 57 per cent of the surgeons did not use routine venous thromboembolism prophylaxis. Since then, there has been a move towards a more aggressive stance on venous thromboembolism prophylaxis. Evidence suggests that venous thromboembolism is one of the most common causes of preventable morbidity and mortality, and this has led various institutions to publish guidance.

The National Institute of Care Excellence (NICE) published the “Venous thromboembolism: reducing

the risk” guideline in 2010.⁸ Later that year, ENT UK issued its own guidelines on venous thromboembolism prophylaxis, comprising a flowchart based on NICE guidance.⁹ However, the specific bleeding complications associated with ENT surgery are not explicitly mentioned. Anecdotal evidence suggests that common practice runs contrary to these guidelines.

In the USA, there are no specialty specific guidelines on venous thromboembolism prophylaxis.⁴ Guidelines in the published literature are also heterogeneous regarding risk factor assessment and the use of mechanical and pharmacological prophylaxis. When considering individual patient treatments, one centre excludes patients undergoing tonsillectomy from routine venous thromboembolism pharmacoprophylaxis (usually low molecular weight heparin), but includes patients undergoing neck surgery, including thyroidectomy.⁴ Another centre excludes all patients undergoing day-case surgery.¹ No other papers comment on any other individual procedures.

This study aimed to determine both current UK nationwide practice in venous thromboembolism prophylaxis and the opinions of clinicians practising in this area. The main objective was to build a consensus for developing a protocol for venous thromboembolism prophylaxis in ENT surgery.

TABLE I
INCIDENCE OF POST-OPERATIVE VENOUS THROMBOEMBOLISM IN ENT HEAD AND NECK PATIENTS

Study	Patients (n)	Percentage VTE (%)			
		All patients	H&N cancer patients	Non-cancer patients	23h/Day-case surgery
Innis <i>et al.</i> ¹	6122	0.1	0.6	0.02	0.0
Thai <i>et al.</i> ²	134	1.4	1.4	n/a	n/a
Shuman <i>et al.</i> ³	2016	1.3	n/a	n/a	n/a
Garritano <i>et al.</i> ⁴	5616	0.05	1.1	0.0	0.0
Moreano <i>et al.</i> ⁵	12 805	0.3	0.6	0.2	n/a
Lee <i>et al.</i> ⁶	9835	0.1	0.3	0.03	0.0
Total	36 528	0.2	–	–	–

VTE = venous thromboembolism; H&N = head and neck; h = hour; n/a = not available

Materials and methods

A survey of the ENT UK expert panel was conducted to determine current practice and opinions about future practice.

Results

There were 132 responses. Respondents had been practising ENT surgery for a mean of 16.8 years, and had performed over 400 operations per year on average. All fields of ENT surgery were represented, with the most common practice areas being ‘general adult ENT’ and ‘general paediatric ENT’. Consistent with the published literature, the respondents’ experience of venous thromboembolism was rare: only 19.4 per cent of respondents reported being aware that any of their patients had suffered a venous thromboembolism. However, patients suffering from post-operative venous thromboembolism commonly present to their general practitioner or accident and emergency department, and otolaryngologists may not be aware of these events.

In all, 84.5 per cent of respondents routinely assess all their patients for venous thromboembolism risk. This indicates a notable change in practice from the survey of 1997.⁷ Graduated compression stockings (or anti-embolism stockings, also known as TEDs)

are used for most patients, and a minority receive treatment with low molecular weight heparin or intra-operative intermittent calf pressure devices (Flowtrons®). The most commonly used guidelines were those of the local health trust (75.4 per cent) and NICE (32.5 per cent); guidelines obtained from ENT UK (12.7 per cent), the scientific literature (2.4 per cent) and their hospital departments (9.5 per cent) were used less frequently.

However, guideline concordance was limited. Of those who follow NICE guidelines, only 41.5 per cent provide written venous thromboembolism advice and 26.8 per cent consider discontinuing oral contraceptives or hormone replacement therapy prior to elective surgery. When considering five clinical vignettes of patients admitted for surgery, anti-embolism stockings were recommended by between 75.2 per cent and 94.6 per cent of clinicians, despite ENT UK and NICE guidelines unequivocally recommending their use. Interestingly, the questionnaire showed that anti-embolism stockings are most likely to be used (by 94.6% of respondents) when managing a diabetic patient. Although anti-embolism stockings are not contraindicated by diabetes, this patient had the highest probability of peripheral vascular

TABLE II
VENOUS THROMBOEMBOLISM PROPHYLAXIS RECOMMENDATIONS OF ENT SURGEONS PRESENTED WITH CLINICAL VIGNETTES*

Clinical vignette	Percentage of respondents who gave a positive answer (%)		
	Would you use TEDs?	Would you use Flowtrons?	Would you use LMWH?
35-year-old woman on oral contraceptive; 3-h day-case mastoidectomy for cholesteatoma	80.7	77.3	18.5
65-year-old man with diabetes type 2; 25-min day-case microlaryngoscopy for a granuloma	94.6	26.8	4.5
30-year-old man with prior DVT 5 years ago; 30-min day-case tonsillectomy for recurrent tonsillitis	78.2	70.6	30.3
58-year-old woman with a BMI of 31; 80-min hemithyroidectomy for a nodule; overnight stay	77.3	77.3	39.5
67-year-old man with COPD; 90-min endoscopic nasal polypectomy for CRSwNP	75.2	74.4	17.4

*Accompanying instructions: ‘In the following scenarios, please indicate whether you would recommend graduated compression stockings (TEDs), intra-operative intermittent calf pressure devices (Flowtrons) and pharmacoprophylaxis (heparin). All relevant past medical history is mentioned.’ TEDs = anti-embolism stockings; LMWH = low molecular weight heparin; h = hour; min = minute; DVT = deep vein thrombosis; BMI = body mass index; COPD = chronic obstructive pulmonary disease; CRSwNP = chronic rhinosinusitis with nasal polyposis

disease, which may contraindicate anti-embolism stockings.

It is difficult to assess guideline concordance for the use of intermittent calf pressure devices because published guidelines only recommend considering their use. Furthermore, guidelines on the use of low molecular weight heparin are dependent on a clinician's subjective assessment of the bleeding risk of a procedure and the duration of decreased mobility associated with surgery. To assess the respondents' views on these issues, questions were based on clinical vignettes (see Table II), and opinions were invited on contraindications for low molecular weight heparin. The modal answers show that endoscopic sinus surgery, stapedectomy, hemithyroidectomy and microlaryngoscopy with laser are mild contraindications, and that tonsillectomy is strongly, but not absolutely, contraindicated.

When examining subgroups, it was clear that having personal experience of a patient with venous thromboembolism did not correlate with venous thromboembolism prophylaxis recommendations. Only 53.7 per cent of respondents felt that the guidelines they currently used reflected their practice.

Discussion

This study demonstrates significant variability in the selection of venous thromboembolism prophylaxis guidelines across the UK. Ear, nose and throat surgeons predominantly use local guidelines, which have the benefit of being familiar to other healthcare professionals within the local workplace. It is, however, unlikely that there will be any significant local variability in venous thromboembolism risk, making this clinical area amenable to national guidance. After local health trust guidance, NICE guidelines were used most commonly. These guidelines do not, however, include any provisions for ENT surgery. This is notable considering the particular bleeding risks and limited periods of reduced mobility of these patients. In contrast, ENT UK guidelines are infrequently used, which may be due to their similarity to NICE guidelines. Regardless of the guidelines used, only 53.7 per cent of respondents felt that they are appropriate to their practice.

It is also important to note that there is only limited concordance with the guidelines being followed. National Institute of Care Excellence guidance recommends that all patients should be given written advice on venous thromboembolism, and that all women taking either oestrogen-containing oral contraceptives or hormone replacement therapy should be advised to discontinue these prior to elective surgery. In this study, of those who follow NICE guidelines, concordance with these recommendations was 41.5 per cent and 26.8 per cent, respectively. This was not significantly different from those following guidelines in which these measures may not be recommended. Furthermore, in our clinical vignettes, the use of graduated compression

stockings was suboptimal, despite all patients having risk factors for venous thromboembolism.

It is difficult to assess guideline concordance on the use of intra-operative intermittent calf pressure devices or low molecular weight heparin because national guidance is vague. This is frustrating because it is particularly when considering the use of low molecular weight heparin that a decision needs to be made on venous thromboembolism prophylaxis. All patients considered in our vignettes had risk factors for venous thromboembolism, yet low molecular weight heparin use varied between 4.5 per cent and 39.5 per cent. It is not possible to define the 'correct' answers about these patients because NICE guidance recommends low molecular weight heparin only when the venous thromboembolism risk is outweighed by the bleeding risk. Balancing the bleeding and clotting risks is difficult not only because of a lack of data for our patient population but also because of the different consequences of post-operative bleeding versus post-operative clot formation. The decision is left to the clinician's discretion. Therefore, the data presented here should inform clinical practice when the question of whether a procedure carries a contraindication to low molecular weight heparin is being considered. Furthermore, NICE recommends continuing low molecular weight heparin only as long as mobility is impaired. For a large proportion of our patients, mobility may only be limited for a few hours post-operatively. It is unclear whether these patients should receive a single dose of low molecular weight heparin, which is usually dosed on a per day basis. Furthermore, the therapeutic effect of a single dose of low molecular weight heparin is unclear.

- **Venous thromboembolism events are rare in ENT surgery**
- **Venous thromboembolism prophylaxis guidelines are not specific for ENT surgery**
- **There is significant heterogeneity in the use of low molecular weight heparin among ENT surgeons**
- **Adherence to venous thromboembolism prophylaxis guidelines is incomplete**
- **Venous thromboembolism prophylaxis guidelines may not represent clinical practice in otolaryngology**

Free comments made in response to the questionnaire support similar conclusions, with respondents reporting that venous thromboembolism is rare in their practice and that local health trust protocols are being used, independent of their relevance to ENT surgery.

Multi-disciplinary assessment with input from surgical and anaesthesia staff when implementing the World Health Organization surgical safety checklist is a logical method of deciding on venous thromboembolism

prophylaxis. It is also worth noting that maximising patient involvement through the use of information leaflets and providing encouragement to mobilise post-operatively is an increasingly important tactic in venous thromboembolism prophylaxis.

This study shows that there is scope for revising and more widely distributing the ENT UK venous thromboembolism prophylaxis guidelines to reflect general ENT practice. Data from this survey will be useful for driving such a process.

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