ABSTRACT

Introduction: A postoperative cervical hematoma is a relatively rare, but potentially life-threatening complication after thyroid surgery. However, few cases with delayed manifestation after discharge of the patient are available in the literature. Case report: A 63-year-old Caucasian woman underwent total thyroidectomy for recurrent benign nodular goitre. She was discharged on the next day in good condition. On the third postoperative day, she was brought to the emergency unconscious with respiratory distress and enormous swelling of the neck. She was reoperated immediately, and postoperative hematoma due to bleeding from a small branch of the left superior thyroid artery was found. Definitive hemostasis was done. She stayed ten days in the ICU on artificial ventilation until the swelling was relieved. Due to signs of infection the wound was opened and treated with negative pressure wound therapy at regular intervals. After extubation, she was found to have phonation and eyesight disorders, fully recovered by conservative treatment in three weeks. The overall length of hospital stay was 41 days, and she was discharged in good condition. Conclusion: Very rarely, a delayed manifestation of postoperative bleeding after thyroid surgery could be seen. In the light of one-day surgery, the real danger is the possible delay of life-saving surgery, and this should always be kept in mind. Unfortunately, as of today, no reliable predictive signs are heralding delayed bleeding. The prompt surgical re-intervention is of paramount importance for the successful outcome. In this case, we successfully managed the infection with negative pressure wound therapy with white foam, thus preventing life-threatening neck phlegmon and mediastinitis.

KEYWORDS postoperative cervical hematoma, redo thyroidectomy, risk factors

Introduction

Thyroidectomy is a relatively common operation. Postoperative cervical hematoma (PCH) is a rare complication (0.3-4%), but sometimes it may lead to heavy disability or death [1-5]. On the other hand, the rate of outpatient thyroidectomy has increased over the last decades and developing of life-threatening PCH after discharge is the primary concern in such cases. Patients may present with respiratory distress, dysphagia, pain or discomfort in the neck. Although some series report that it occurs mostly in the first 6 hours after the operation, there are some cases with significantly delayed symptoms. Immediate reoperation with the evacuation of the hematoma and definitive hemostasis is the only way to avoid significant complications and to save the patient’s life. The risk factors for PCH and manifestation time are not well determined yet.
Case Report

We present a case of a 63-year-old woman, who underwent a reoperation of the thyroid gland for recurrence of nodular goitre. The first operation was performed two years ago – right lobectomy with isthmectomy and partial resection of the left lobe. The remaining left lobe was removed without any technical difficulties. Suction drainage was put, which was taken out on the next morning without any signs of bleeding, and the patient was discharged. At the end of the third postoperative day, the patient was readmitted to emergency department unconscious, with unstable hemodynamics, respiratory distress and massive neck hematoma. An emergency tracheotomy was done, and the patient was transferred immediately to the operating room. About 200 ml of blood and cloths were evacuated, and bleeding from a small branch of the left superior thyroid artery was found. The trachea was dislocated to the right without any injuries. Suture ligation performed definitive hemostasis. The patient was transferred to the ICU on ventilation. The hemostatic assay showed prothrombin time - 75.0%, INR - 1.19, thrombin time - 15.2 sec, activated partial thromboplastin time (aPTT) - 28.6 sec, fibrinogen - 7.3 g/l. Postoperative magnetic resonance imaging (MRI) of the head, neck and chest after re-operation showed normal brain finding, edematous fascial soft tissues spreading to the neck and upper part of the chest. Enlarged superficial and deep cervical lymph nodes were detected as well. A massive swelling with significantly increased density was observed in the area of thyroidectomy spreading towards the upper anterior mediastinum. A collection with blood density, uneven margins and suspected inflammation was found in the paratracheal area. Enlarged anterior mediastinal lymph nodes with up to 15 mm along with small, bilateral pleural effusions and basal infiltrate were also noted.

The follow-up MRI on the second postoperative day confirmed not expanding anterior mediastinal hematoma, not requiring surgery. Based on the MRI finding from index MRI and persistent fever up to 38.5°C intravenous administration of Meropenem 3 g per day was started and the patient was scheduled for negative pressure wound therapy. Five operative dressings with debridement of the necrotic tissues and lavage were performed at every 48 hours. At each lavage after protections of neck vessels and nerves with the Bactigrass folio, white foam (polyvinyl alcohol) covered by GranuFoam (V.A.C.®, KCI) was used. The continuous negative pressure of 50 mmHg was applied. All microbiological samples were negative. After extubation incomplete laryngeal nerve palsy and eyesight disturbance were observed, so Pentoxiphyllin, Milgamma, Somasina and Nootropil were added to the therapy. After resolving swelling and infection, the wound was closed by secondary sutures and healed without complications. After an overall length of stay 41 days, she was discharged in good condition with a full recovery of eyesight and phonation and was referred to a physiotherapy centre.

Discussion

Despite the use of the modern hemostatic devices (Harmonic Scalpel, LigaSure, bipolar forceps) bleeding after thyroid surgery still occurs in up to 4% of the cases [1-5]. The possible causes are slipping of a vessel ligature, reopening of the previously cauterised vessel, bleeding from the residual thyroid parenchyma or specific hemostasis disorders.

The total rate of postoperative bleeding in the cases managed by the authors during the last decade was 0.9% (4/450) which is
Table 1 Timeline of the case presentation.

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Day (s)</th>
</tr>
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<tbody>
<tr>
<td>Redo thyroid surgery – total thyroidectomy</td>
<td>0</td>
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<tr>
<td>Delayed bleeding and compressive neck hematoma – loss of consciousness and respiratory distress syndrome</td>
<td>3</td>
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<tr>
<td>Emergency re-intervention – evacuation of hematoma</td>
<td>3</td>
</tr>
<tr>
<td>Magnetic resonance imaging (MRI) of head, neck, chest – massive swelling of neck and anterior mediastinum hematoma</td>
<td>3</td>
</tr>
<tr>
<td>Follow-up MRI – not expanding anterior mediastinal hematoma</td>
<td>4</td>
</tr>
<tr>
<td>Signs of wound infection</td>
<td>4</td>
</tr>
<tr>
<td>Wound debridement and negative pressure wound therapy, systemic antibiotic</td>
<td>4, 6, 8, 10, 12</td>
</tr>
<tr>
<td>Secondary wound closure</td>
<td>12</td>
</tr>
<tr>
<td>Artificial ventilation and ICU stay</td>
<td>3-13</td>
</tr>
<tr>
<td>Laryngeal palsy and eyesight disturbance – treatment with Penthoxiphyllin, Milgamma, Somasina and Nootropil</td>
<td>13-33</td>
</tr>
<tr>
<td>Discharge</td>
<td>44</td>
</tr>
</tbody>
</table>

by the literature [1, 2]. In the other three patients, postoperative bleeding manifested within the first 6 hours after the operation, and they were reoperated in a timely fashion without any negative consequences. The review of the literature showed that the average time elapsed between the end of thyroidectomy and the return to the operating room because of bleeding was 7 hours (0 min - 9 days) – 47% return within 6 hours and 79% within 24 hours [3, 4]. Lang et al. reported 27% bleeding between 6 and 24 h [6]. In a large series, Leyre et al. reported start of bleeding beyond 24 hours in 10% [7]. Promberger et al. reported that the clinical manifestation of bleeding occurred within the first six and twelve hours in 81% an 88% of the cases [8]. The source of bleeding was found in about 95% of the cases. Most often the sources were a nameless small vessel (34%), followed by diffuse soft tissues bleeding (25%), superior pole thyroid vessels (13%) and inferior pole vessels (10%) [7, 8]. Additionally, two cases with bleeding occurring 13 days after operation were reported [9].

Several risk factors for PCH have been described in the literature such as advanced age, male gender, smokers, presence of chronic diseases, anticoagulant or antiaggregant therapy, significant resections or reinterventions substernal thyroidectomy, large dominant nodule, inflammatory thyroid diseases, thyrotoxicosis, use of drains, lymph node dissection, parathyroidectomy, [6, 10-12]. According to literature, surgeon’s experience is also of great value, and rates between 2% and 14% were reported [4], whereas others reported up to the sevenfold difference between individual surgeons [8]. A Danish study, however, found only two significant risk factors – thyrotoxicosis and male gender [13], whereas the most recent systematic review and meta-analysis reported thyrotoxicosis as the only significant risk factor [14]. Nevertheless, there are few cases with delayed bleeding reported in the literature, which hampers the analysis of the predictive factors [5, 9, 15]. However, except for the previous thyroid operation, no one of the risk mentioned above factors was presented in our case.

Maybe the emerging problem with the delayed bleeding in the last years is related to the marked trend for reduction of hospital stay/costs along with the increasing number of patients undergoing thyroid surgery due to improved diagnostics as well [16-19]. In this light, the early detection and prompt re-intervention are of paramount importance not only to save the life but also to avoid severe wound infection or mediastinitis and to prevent long-term disability, such as severe laryngeal palsy and ischaemic brain injury. In the present case, the patient is readmitted at the end of the third postoperative day, but it is hard to determine the exact time of the bleeding onset. Actually, in our opinion in a case with delayed PCH, the patient is more unlikely to return to the operating room within the first six hours from the bleeding onset. The outpatient thyroid surgery is defined either as discharge on the same day or after 23 h observation [20]. Although some authors recommend outpatient thyroidectomy as safe procedure [21], others conclude that outpatient thyroid surgery cannot be supported at this stage [6, 7]. The recent review of Balentine and Sippel concluded that „Outpatient thyroid surgery is likely to remain controversial for the immediate future given concerns over the potential consequences of a neck hematoma” [20]. Due to the unpredictable risk of delayed PCH, the same authors propose strict selection criteria for outpatient thyroidectomy including support at home for 24 hours, access to a telephone, etc. [20].

Conclusion

Very rarely, a delayed manifestation of postoperative bleeding after thyroid surgery could be seen. In the light of one-day surgery, the real danger is the possible delay of life-saving surgery, and this should always be kept in mind. Unfortunately, as of today, no reliable predictive signs are heralding delayed bleeding. Based on the literature, as of today, the one-day thyroid surgery cannot be recommended. The prompt surgical re-intervention is of paramount importance for the successful outcome. In
this case, we successfully managed the infection and soft tissue oedema with negative pressure wound therapy with white foam thus preventing life-threatening neck phlegmon and mediastinitis and may be long-term laryngeal palsy.

Disclosure Statement
There were no financial support or relationships between the authors and any organization or professional bodies that could pose any conflict of interests.

Competing Interests
Written informed consent obtained from the patient for publication of this case report and any accompanying images.

References