



## Post-thyroidectomy hematoma : a rare but potentially fatal complication

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### Abstract:

**Background/ objectives:** Post-thyroidectomy hematoma is a rare but fatal complication of thyroidectomy. The incidence of hematoma has dropped to less than 2-3% due to better preoperative preparation & major refinements in surgical techniques.

**Setting:** Department of ENT, Head & Neck Surgery, KVG Medical College, Sullia.

**Case report:** We report a case of post- thyroidectomy hematoma in an elective surgery done for a large thyroid. The hematoma occurred 15 minutes after surgery & was managed successfully under general anaesthesia.

**Intervention:** Urgent evacuation of the hematoma was done under general anaesthesia & bleeders were re-ligated. 2 pints of A+ blood was transfused.

**Conclusion:** Post-thyroidectomy hematoma leading to airway obstruction is a fatal complication which needs emergency management. Post-operative care include attention to the drain, careful monitoring in the recovery room & appreciation of subtle signs of respiratory distress. So every thyroidectomy case can bleed & cause hematoma complication. Prevention & early intervention can avoid fatal complications.

## Introduction:

Post-thyroidectomy hemorrhage is a rare complication in modern surgical era but needs an immediate attention as it is a life threatening complication if trachea is compressed.<sup>1,2</sup> The incidence of post-thyroidectomy varies from 0.36 - 4.3%<sup>1,2</sup> to 0.1-1.1%.<sup>3,4,5,6,7</sup>

Success rates of thyroidectomies have improved dramatically due to the advancement in surgical techniques over the last few decades.<sup>8</sup> Overall complication rates have dropped to less than 2-3% due to better preoperative preparation & major refinements in surgical techniques.<sup>8</sup> The reported incidences of recurrent laryngeal nerve injury and permanent hypoparathyroidism are more common compared to hematoma formation.<sup>8</sup> In spite of the rare incidence of post-thyroidectomy hematoma, it can prove fatal if it is not treated on an emergency basis.<sup>8</sup> Post-thyroidectomy hemorrhages are mainly due to slipping of the ligature of major vessels & reopening of the cauterized veins. These vessels give way during retching & bucking during anesthesia recovery, valsalva maneuver, and increased blood pressure in the post-operative period.<sup>8</sup>

Post-operative period is very vital in thyroidectomy patients which include close observation, early detection and emergency management of the hematoma.<sup>9,10</sup> Emergency surgical evacuation of the hematoma is indicated if the pressure symptoms lead to stridor or hypoxia.<sup>9,10</sup>

Pneumatic suction drain is very vital in post-operative period as the superficial compartment filling may distend the drain to the maximum.<sup>9,10</sup> Although it is a serious complication of thyroid surgery that can lead to airway distress, post-thyroidectomy hemorrhage has been less frequently reported compared to vocal cord paralysis or hypocalcemia.<sup>9,10</sup>

Clinical patterns of post-thyroidectomy hemorrhage according to the source of bleeding and whether it is superficial or deep to the strap muscles.<sup>11</sup> We report the case of a massive hematoma in a hemi-thyroidectomy done for nodular colloid goiter. The hematoma occurred in 15 minutes after anesthesia reversal. With a comprehensive review of literature the pathophysiology of hematoma formation & its urgent intervention & techniques to avoid such complications in the future is discussed here.

## Case Report:

We report a case of successful management of massive post-thyroidectomy hematoma in the Department of ENT Head & Neck Surgery, KVG Medical College, Sullia.

The patient was a 46 year old male weighing 72 kg presented with moderate sized enlargement of the right lobe of the thyroid measuring about 11x10 cms. The surface was nodular on palpation with a tracheal shift to the left. No retrosternal extension or pressure symptoms were seen.

Clinical features of hypo or hyperthyroidism were not seen. Thyroid function tests were suggestive of normal thyroid status with T3 -153ng/dl(60-200ng/dl) , T4-8.10micro g/dl(4.5-12 micro g/dl) and T.S.H - <0.01 micro I U/ml(0.3-5.5 micro I U/ml). Baseline investigations & vocal cord movements were normal pre-operatively. Tracheal deviation to the left but no tracheal compression was seen in x-ray of the neck. (fig 1)



Figure 1 showing enlarged right lobe (frontal and profile views)

Fine needle aspiration cytology showed smears of moderately cellular clusters of benign looking thyroid follicular cells. Hemosiderin laden macrophages against colloid & hemorrhagic background features suggestive of nodular colloid goiter. Ultrasonography of the neck revealed right sided enlargement of 12x12 cm with uniform echo-structure.

Right sided hemi-thyroidectomy was done under general anesthesia. The duration of surgery was 2hours & blood loss minimal. Intra-operative course was uneventful & closure was done with a gap in the strap muscles & a pneumatic suction drain. Compression bandage applied & the vocal cord movements confirmed at reversal. The anesthesia recovery was excellent & the patient shifted to the recovery room.

The drain was minimal while shifting and suddenly it started filling up as the patient had a single bout of cough. A swelling was visible when the suction drain was filled completely & contained 800 ml of blood. The patient was comfortable with normal saturation & swelling was seen at the operative site. No signs of airway obstruction were seen. On removal of the compression bandage tense swelling in the neck was seen.

Hematoma was seen & immediately the patient was shifted to OT with 100% oxygen. The sutures were removed the hematoma & clots cleaned. The patient had no pain as bupivacaine was infiltrated during closure. Meanwhile difficult intubation done & the bleeders identified & re-ligated & closed. The re-ligation of the bleeding vessels done carefully. The patient was hemodynamically stable throughout the procedure. The strap muscles were closed in layers & a new drain introduced & the skin sutures put with a compression bandage. The patient was extubated uneventfully & recovery was excellent.

2 pints of A+ blood was transfused, one intra-operatively & the other post-operatively. The patient was observed for half an hour & shifted back to the recovery room & the ward the next day. The drain was observed carefully & showed only 30 ml collection in first 6 hours & overall 60 ml collection in 24 post-operative hours. The drain was removed after 36 hours when no further increase in collection was noted. (fig 2)



Fig 2 showing bleeding vessels being ligated.  
Drains could be seen filled with blood

The patient was discharged after 3 days with no complications. Later post-operative suture removal done on the seventh day with no complications.

#### Discussion:

Post-operative hematoma remains a potentially serious complication of thyroid surgery inspite of the massive advancements in field of surgery & genetic level understanding of the thyroid pathologies.<sup>12</sup> Serious morbidity like acute airway distress and cardiac arrest can occur if the emergency is unattended.<sup>9</sup>

Hematoma is usually due to major vessel ligature slippage or reopening of cauterized veins.<sup>13</sup> Bleeding may be from traumatized sternocleidomastoid muscle, cut surface of thyroid remnant or opened branch of superior or inferior thyroid arteries.<sup>13</sup> This usually occurs during retching, vomiting, bucking during recovery, valsalva maneuver or increased blood pressure during recovery.<sup>13</sup> Hematoma is more common in surgeries done for large thyroids where large dead spaces are seen post-operatively.<sup>13</sup>

Hematoma will not be seen beneath the skin if strap muscles are tied without any gap which usually is not advocated.<sup>13</sup> Sometimes, the clots may dissect below the strap muscles in the peritracheal area along the deep neck spaces.<sup>13</sup> Total airway obstructions may progress very fast, in a tight compartment below the strap muscles leading to tracheal compression.<sup>13</sup> Now the impairment of venous & lymphatic drainage leads to laryngo-pharyngeal edema causing added laryngeal inlet obstruction.<sup>13,14</sup>

The strap or the sternocleidomastoid muscles if divided may bleed & cause hematoma unless sutured adequately.<sup>12</sup> Dissection in the subplatysmal plane should be done meticulously as damage to the anterior jugular veins may cause bleeding later on.<sup>12</sup> Drain should not puncture the sternocleidomastoid muscle as it may cause bleeding later.<sup>12</sup>

Retching, coughing, bucking during recovery, Valsalva maneuver or increased blood pressure caused the slipping of ligature & hence a smooth recovery from anesthesia is important in thyroid surgery.<sup>16</sup> Placing the patient in a 30° head down position before wound closure could be another method to prevent postoperative hemorrhage because these procedures will help to identify potential bleeding points.<sup>12,17</sup>

Branches of the superior thyroid artery may be very difficult to identify after the slipping of ligature.<sup>12,17</sup> If there is bleeding from these vessels, then surgeons should patiently try to detect the bleeding focus and avoid any blind handling during the re-exploration.<sup>12</sup> Complete hemostasis of the cut surface in the remnant thyroid is absolutely necessary.<sup>12,17</sup> Patients present with respiratory distress, pain or a pressure sensation in the neck or dysphagia.<sup>12</sup> The signs include progressive neck swelling, suture line bleeding, dyspnea or stridor and a significant amount of drain losses.<sup>12</sup>

Urgent recognition of the complication can avert major morbidity, so medical staff should be aware of the clinical features.<sup>15</sup> Immediate intubation should be performed in the case of respiratory distress from airway obstruction.<sup>15</sup> Neck swelling is a representative sign of post-thyroidectomy hemorrhage.<sup>9,12</sup> Ecchymosis of the skin is rarely seen.<sup>9,12</sup>

Since hemorrhage superficial to the strap muscles is never accompanied any deep hematoma, the discoloration of the laryngeal mucosa is a sign of hemorrhage deep to the strap muscles.<sup>11</sup> Transient vocal cord paralysis is reported in literature which disappears on hematoma evacuation.<sup>11</sup> Vocal cord movements should be checked after hematoma evacuation as re-ligation of bleeders may damage the recurrent laryngeal nerve.<sup>11</sup> Meticulous dissection of the thyroid tissue is necessary to avoid hematoma formation & pneumatic suction drain is never a substitute for hemostasis.<sup>11</sup>

Intubation during re-exploration will be difficult because of considerable oedema of the epiglottis, pharyngeal wall and the vocal cords.<sup>3,13</sup> Sometimes intubation will be successful after decompression of the hematoma.<sup>1,13</sup> Post-hematoma airway complications are common in older patients, large goiters having tracheal compression pre-operatively.<sup>7,13</sup> Compressive bandage masks the hematoma & confines the clots to the plane below the strap muscles causing to complications. Pneumatic suction drain should pass through the lower end of the strap muscles where they are loose.<sup>13</sup>

Precautions to prevent post-thyroidectomy hemorrhage and hematoma include meticulous dissection & hemostasis at time of closure.<sup>5,13</sup> A 30° head down position prior to wound closure identifies hidden venous bleeding.<sup>5,13</sup> Leaving a gap in the lower end, while suturing the strap muscles in the midline, so as to allow the blood to come out of the relatively closed compartment into the sub-platysmal space where it can be easily detected should be practiced.<sup>5,13</sup> Smooth extubation & avoiding cough reduces slippage of ligatures.<sup>5,13</sup>

Conclusion:

Post-thyroidectomy hematoma leading to airway obstruction is a fatal complication which needs emergency management. Post-operative care include attention to the drain, careful monitoring in the recovery room & appreciation of subtle signs of respiratory distress. So every thyroidectomy case can bleed & cause hematoma complication. Prevention & early intervention can avoid fatal complications.

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