



Bilateral suture granuloma formation one year and a half after total thyroidectomy referred as tumor recurrence

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Abstract

Introduction: Stitch abscess or suture granuloma is a rare complication defined as a benign granulomatous inflammatory lesion with an incidence rate of about 2 percent seen after various kinds of surgical procedures.

Case presentation: Here we present a 49 years old woman that presented with bilateral neck swelling and pain one year and a half after total thyroidectomy surgery misdiagnosed as tumor recurrence.

Discussion: Post-thyroidectomy suture reaction causing granulomatous lesions or abscess formation as seen in our case is even rarer with an incidence rate of 0.08% to 1.5%. Silk suture is the most common non-absorbable suture material that has been used in vascular ligation. Young adults, liver dysfunction and allergy history are predisposing factors for stitch abscess.

Conclusion: Development of suture granuloma should be considered when vascular ligation by silk suture is preferred especially in patients with predisposing factors.

Keywords: Stitch abscess, Suture granuloma, Silk suture

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Introduction

Stitch abscess or more precisely suture granuloma is a rare but important complication defined as a benign granulomatous inflammatory lesion that may occur after surgery with an incidence rate of about 2 percent seen after various kinds of surgical procedures, which is due to an infectious process and/or an immunological reaction to the sutures (1, 2). Using non-absorbable sutures, especially silk increases the risk of the phenomenon as the suture reacts with surrounding connective tissue causing adhesion bonds (3, 4). It is a very difficult challenging situation following tumors surgery mainly malignant tumors to differentiate between stitch abscess, nodal metastasis, and tumor recurrence indicating that making the diagnosis is important (1, 2). Besides the low incidence rate of the phenomenon due to legal considerations, it is assumed that most of the related subjects are not reported and the literature is very limited on the topic (5).

Here we present a 49 years old woman that presented with bilateral neck swelling and pain one year and a half after a total thyroidectomy surgery which was primarily diagnosed by an endocrinologist based on ultrasonographic features as a thyroid tissue remnant or recurrence of initial pathology and referred to us for revision surgery.

Case Presentation

A 49 years old lady was referred to our otolaryngology clinic due to bilateral neck swelling and pain suspicious for recurrence of the primary pathology one year and a half after surgery according to an ultrasonography report. The patient reported that she has experienced progressive slow-growing neck swelling and pain 5 months after total thyroidectomy due to multinodular goiter. The pain was aggravated during neck rotation and swallowing and relieved partially after the onset of thick pus discharge. From 10 months ago despite antibiotic therapy and while swelling and pain continued to proceed there was periodic pus discharge and she noticed suture material surrounded by pus in the last prominent discharge which was about 6 months ago. Her past medical history revealed a similar history of pus and suture material discharge from surgical incision line after Cesarean section about 10 years ago and after that, there were no medical complaints.

Ultrasonography showed solid hypoechoic masses with microcalcification foci without significantly increased vascularity which were measured 41mm*19mm on the right side and 39mm*18mm on the left side. She was also referred for a fine needle aspiration study that showed a solid-cystic lesion with chronic inflammation. On physical examination she was not febrile, sinus orifice and cervical surgery incision scar were seen on the anterior neck skin. There was a deep-seated and well-defined slightly tender mass palpated on each side of the neck located exactly on the anatomical location of excised thyroid lobes estimated about 3 centimeters in maximum diameter. The rest of the clinical examination was normal. She was taking calcium tablets (500 mg daily) and levothyroxine tablets (100 micrograms daily) in the right order. The laboratory findings were within normal limits and she was euthyroid (TSH: 3.19). Due to high suspicion of abscess formation aroused by her previous history of suture reaction and physical examination a computerized tomography (CT) with contrast injection was done.

On CT scan bilateral mildly contrast-enhanced soft tissue density masses were detected at the base of the neck coincident with thyroid anatomical lobes location (Figures 1 and 2). Because differentiation of foreign body (suture granuloma) and goiter recurrence could not be established precisely by imaging techniques and FNA pathology report, she was operated and undergone a surgical exploration. Superolaterally to the incision line and beneath the infrahyoid strap muscles two suspicious deep-seated stiff masses (one mass on each side) were palpated which after incision about 10ml thick whitish pus with granulation gelatinous tissue in the bed of thyroid and 4 free silk sutures (Figure 3) were encountered on each side (20ml pus and 8 free silk sutures in total). Finally, the abscess cavities and wound were irrigated copiously and pulsatile with about 1000ml saline and the wound was closed primarily (Figure 4).

Postoperatively the patient did well and she was discharged after 3 days of admission. She has been followed up in clinic and after 12 months has remained stable without any residual problems. The pathology report of the cavity was consistent with chronic inflammation and fibrotic tissue without any evidence of thyroid tissue.

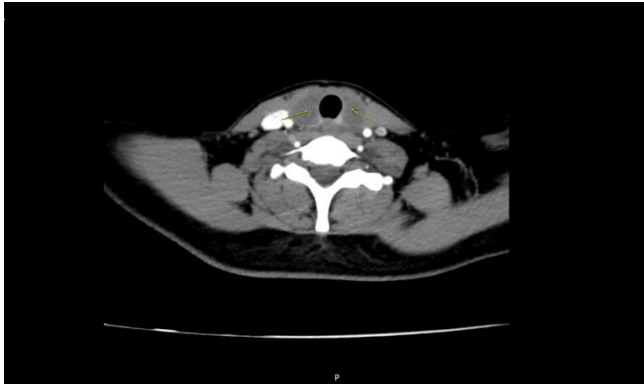


Figure 1. Bilateral mildly rim enhanced abscesses on axial CT (Yellow arrows).

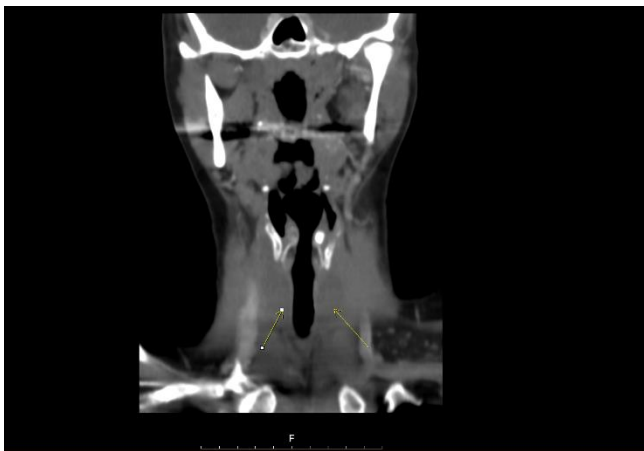


Figure 2. Bilateral abscess cavities seen on coronal CT (Yellow arrows).



Figure 3. Eight free silk sutures were removed from the cavities.



Figure 4. After drainage of the granuloma tissues and copious irrigation the wound was closed primarily.

Discussion

Thyroid surgery has been historically an adventure for surgeons until 1900 due to high rates of bleeding (6). By the surgical tools and techniques development and hence better vascular bleeding control achievement, nowadays thyroidectomy is the most common endocrine surgery (7,8). Because compression hematoma is the most common post-operative complication, all surgeons do their best to achieve effective bleeding control. Other major and still fearful complications are recurrent laryngeal nerve injuries and hypoparathyroidism with an incidence rate of up to 14% (9). On the other hand, minor complications including infection and granulomatous lesions have an incidence rate of less than 2%. Post-thyroidectomy suture reaction causing granulomatous lesions or abscess formation as seen in our case is even rarer with an incidence rate of 0.08% to 1.5% (10,11).

Many surgeons prefer the conventional surgical suture ligation for hemostasis achievement. All sutures are foreign bodies for our body causing tissue reactions until the sutures are completely absorbed in case of absorbable sutures or covered by fibrous capsule formation with the use of non-absorbable sutures (12,13).

In previous years, silk has been the most common non-absorbable suture material used in vascular ligation which is derived from protein fibers produced by silkworms. The silk suture is gradually degraded in the tissue over 2 years (2).

Talking about the physiopathology of the suture granuloma is confined to the poor literature about the topic but because of the significant correlation found in

some studies between suture granuloma formation and some factors including age, liver function and history of allergy, it is assumed that the phenomenon is not only an infectious response but the combination of immunological response to sutures and infection (14). Younger patients make a stronger allergic reaction than older persons and in case of decreased detoxification capability of liver and a positive history of allergy the occurrence of suture granuloma is more likely to happen. This implies that young adults, liver dysfunction and allergy history are predisposing factors for suture granuloma, emphasizing the immunological response to suture as the main pathogenesis for suture granuloma formation (15,16).

Most of suture granulomas occurred from 2 months to one year after surgery and a delayed inflammatory reaction of the suture is rare (17).

Generally, the clinical presentation is very diverse and may vary from a classic inflammatory reaction with erythema, swelling, pain and final rejection of the suture material to chronic inflammatory reaction associated with granuloma formation presenting as a solid painless mass (2).

While in some studies primary treatment approach is based on close follow up and resolution of suture granuloma due to gradual spontaneous removal of suture material from the fistula tract or minor surgical intervention under local anesthesia on the other hand some authors advise surgical exploration under general anesthesia, especially in case of deep extensive reaction or failure to differentiate from tumor recurrence (as in our patient) or in the presence of high suspicion for a foreign body (6).

Conclusion

Vessel sealing systems (sutureless hemostasis) and classical suture ligation may be used in thyroidectomy dissection as done in many other surgical procedures. Development of suture reaction (suture granuloma or stitch abscess) should be considered when vascular ligation is preferred especially by silk material and in patients with predisposing factors including young persons, liver dysfunction and previous history of allergy. In such a condition depending on the patient situation both conservative and surgical approaches should be kept in mind with surgical exploration under

general anesthesia in case of deep large abscess and tumor recurrence high index of suspicion.

Author contributions

EA Scientific writing of the manuscript. **AB** Review and editing, correspondence author.

Conflict of interest

The authors declare that they have no conflicts of interest.

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