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Life threatening presentation of thoracic duct injury post thyroid surgery; a case report

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ABSTRACT

BACKGROUND: Injury to thoracic duct is a rare potential complication of time-honored conventional thyroidectomy. Nevertheless, it can be a cause of significant morbidity, and sometimes life-threatening. **PATIENT FINDINGS:** A 78-year-old female patient with a previous surgical history of thyroid lobectomy for nodular disease presented with primary hyperparathyroidism, and a nodule in the remaining thyroid lobe. The patient underwent completion thyroidectomy and parathyroidectomy. Less than 24 h post operatively, the patient developed progressive shortness of breath and neck swelling requiring immediate intubation and re-exploration. A large amount of chyle was drained and an injured thoracic duct was identified and ligated.

SUMMARY: In experienced hands thyroid surgery is safe. Nevertheless, factors such as the type of pathology and its extent, the level of surgery, and re-operative surgery increase the risk of postoperative complications. Immediate surgical exploration is necessary when patients present with neck swelling and respiratory distress. In our case, a high output chyle leak in a confined space was life threatening.

CONCLUSION: Timely re-exploration following thyroid surgery and thorough knowledge of the anatomy of neck structures is crucial in sparing patients potential morbidity and/or mortality.

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1. Introduction

Time-honored conventional thyroidectomy is generally a safe and effective procedure. Nevertheless, like any other surgical procedure it is not free of potential risks. Factors that have been incriminated for an increased risk of postoperative complications include: the type of pathology and its extent, the extent of surgery, variant anatomy, and re-operative surgery. Thoracic duct injury is one of the rare complications of thyroid surgery with a reported incidence rate of 0.5%–1.8% [1,2]. It is typically associated with lateral neck dissection, and can pose significant treatment challenges. Herein, we report an acute life-threatening presentation of thoracic duct injury following completion thyroidectomy and parathyroidectomy in private, non-profit tertiary teaching center.

The article was written in concordance with Surgical Case Report (SCARE) Guidelines [3].

2. The patient

The patient is a 78-year-old female with a past surgical history of right hemithyroidectomy for benign thyroid nodular disease that dated back to 1973. In 2015 she presented with primary hyperparathyroidism confirmed biochemically and localized by ^{99m}Tc-MIBI SPECT CT and ultrasound to the left inferior parathyroid gland. Neck ultrasound also revealed a large multinodular left thyroid lobe. The patient underwent neck exploration with resection of the left thyroid lobe that extended retrosternally, and a left inferior parathyroidectomy. Objective evidence of adequate parathyroid resection was obtained intraoperatively using rapid parathyroid hormone (PTH) assay. No technical difficulties were encountered intraoperatively, no drain was placed, and the patient was discharged the following morning with a normal biochemical profile.

Less than 24 h following her discharge, the patient presented to the emergency department with shortness of breath and significant neck swelling. Postoperative bleeding was expected and the patient

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Fig. 1. A large amount of milky fluid draining upon re-opening the neck incision.

was immediately intubated and re-explored in the theater. Upon re-opening the surgical site, a large amount of milky fluid gushed out (Fig. 1). The neck was explored for an injured thoracic duct. Exploration lasted 55 min because of the limitations posed by the presence of adhesions. A transected thoracic duct was identified and was suture ligated resolving further chyle leak, and a drain was placed. Three days later the drain was removed and the patient was discharged; she did not develop recurrent leak. The patient had regular interval follow-up for one year which was uneventful.

3. Discussion

Thoracic duct injury is a rare complication of thyroid surgery whose incidence tends to increase with the extent of the procedure performed. Thoracic duct injury could be identified and managed intraoperatively, or may be diagnosed postoperatively. Its postoperative presentation and management is mainly dependent on the rate of chyle flow [2]. A retrospective analysis of 5736 patients reported an overall incidence of 0.5% following thyroid surgery with 59% of them being redo-surgeries [2]. Another single-center retrospective review identified 2636 patients who underwent thyroidectomy (with or without neck dissection) for thyroid cancer, reported complication rates varies depending on the extent of the procedure performed. The overall incidence of chyle leak was 1.8%. Not surprisingly, the incidence of chyle leak was 0.5% in patients who underwent less than a total thyroidectomy with central neck dissection, and 6.2% for those who underwent total thyroidectomy and bilateral neck dissection (p -value <0.001). Likewise, all postoperative complications followed the same trend in regards to the extent of surgery [1].

Our patient's condition represented a high output chyle leak in a confined space, and was potentially fatal. Although such a presentation is typically attributed to postoperative bleeding, the required treatment is the same; immediate re-exploration. Upon re-exploration a transected thoracic duct was identified and ligation of its proximal end resolved further chylous discharge. The absence of blood in this case was probably attributed to the presence of valves distally at the junction between the thoracic duct and

the venous system, which prevented the retrograde flow of blood [4,5]. This unfortunate event was not attributed to variant anatomy, as re-exploration confirmed a classical anatomy of the cervical part of the thoracic duct [6], nor was it attributed to the fact that the patient had previously undergone a right hemithyroidectomy as no considerable adhesions or scar tissue was encountered. The left side was virgin and the operative time (from incision to closure) was 60 min. Injury to the thoracic duct was probably related to the lateral and caudal extension of the pathology that mandated considerable digital maneuvering. Furthermore, chyle being clear in the fasting patient contributed to not identifying the injury intraoperatively. Placing a drain following thyroid surgery is not routine in the authors' practice as it has been demonstrated that routine drainage after thyroid surgery does not benefit patients and that non routine placement of a drain following thyroid surgery is associated with lower morbidity and hospital stay compared to the routine drainage [7]. However, the resulting dead space in patients with retrosternal goitres may benefit from a closed suction system, and in our patient's condition it might have been useful.

4. Conclusion

High output chyle leak is a rare complication of thyroid surgery. However, in a confined space it could pose a significant threat to patients' lives. Therefore, timely handling of postoperative complications and thorough knowledge of the anatomy of neck structures are safety requirement of thyroid surgery.

Conflict of interest

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Ethical approval

IRB of the American University of Beirut Medical Center.

Consent

"Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request".

Author contributions

HH Drafted the manuscript.
SB and GAS reviewed the manuscript.
FK and SJ data collection and interpretation.

Registration of research studies

NA.

Guarantor

GAS.

Disclosure

The authors have no financial ties or conflicts of interest to disclose.

Ethical consideration

This manuscript follows the American University of Beirut guidelines which follow the United States code of Federal Regulations for the Protection of Human Subjects.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.ijscr.2017.03.003>.

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