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Case Report

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Chyle Leak Following Revision Surgery for Recurrent Papillary Thyroid Carcinoma: Successful Conservative Management with Octreotide

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ABSTRACT

Chyle fistula is a rare but potentially serious complication that can occur after head and neck surgeries such as thyroidectomy and neck dissection. Conservative approaches are recommended as the first-line treatment, particularly for high-output lymphatic leaks following lateral neck dissection. This case report presents the successful conservative management of a high-output chyle fistula in a young female patient who previously underwent thyroidectomy and neck dissection due to recurrent papillary thyroid carcinoma. On postoperative day 3, chylous drainage of 1200 mL was observed, and octreotide therapy (100 µg three times daily, total 0.3 mg/day) was initiated. On day 5, oral intake was discontinued and total parenteral nutrition was started. During follow-up, a significant reduction in drainage was noted; serum albumin and total protein levels were monitored, and albumin supplementation was administered. Oral intake was reintroduced on day 12, and the patient was discharged on day 14 without complications or drainage. This case demonstrates that high-output lymphatic leaks can be successfully managed without surgical intervention through early diagnosis and appropriate conservative treatment.

Keywords: Chyle leak, conservative management, neck dissection, octreotide, papillary thyroid carcinoma

Introduction

Thyroidectomy and cervical lymph node dissection are widely performed surgical procedures for the treatment of differentiated thyroid carcinomas. Although generally considered safe, lateral neck dissections, particularly when performed near the course of the thoracic duct, increase the risk of the development of a chyle fistula, a rare but potentially serious complication [1].

Chyle leaks are typically characterized by milky-white drainage fluid in the postoperative period and are more commonly observed after left-sided neck surgeries [2]. The reported incidence ranges from 0.5% to 8.3%, with a significantly higher rate in patients undergoing lateral neck dissection [1,3]. If not promptly recognized and effectively managed, chyle fistulas may cause complications such as malnutrition, hypoproteinemia, electrolyte imbalances, immunosuppression, and impaired wound healing [2,4].

Treatment algorithms for chyle fistulas are usually based on the volume of daily drainage. Low-output leaks (<500 mL/day) are generally managed successfully with conservative measures such as dietary modification, bed rest, and octreotide therapy. However, in cases of high-output leaks (>1000 mL/day), surgical or interventional approaches (e.g., thoracic duct embolization) may be required [3,5]. Recent studies have shown that the use of octreotide, a somatostatin analog, reduces the need for surgery and accelerates clinical recovery in patients with chyle fistulas [5].

This report presents a case of high-output lymphatic leakage in a young patient who had previously undergone thyroidectomy and a repeat neck dissection for recurrent papillary thyroid carcinoma. The successful outcome achieved through conservative management is discussed in light of the current literature.

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Case Report

Written informed consent was obtained from the patient for all diagnostic and therapeutic procedures, as well as for the use of clinical data for academic and scientific purposes.

A 28-year-old female patient underwent fine-needle aspiration biopsy in 2023 after a suspicious nodule was identified in the left thyroid lobe during a routine neck ultrasound. The biopsy result was consistent with papillary thyroid carcinoma. The patient subsequently underwent total thyroidectomy with central and lateral neck dissection. Adjuvant radioactive iodine therapy was recommended postoperatively, but the patient declined. No complications were observed during follow-up.

In 2025, a follow-up ultrasound revealed a new lesion in the left neck posterior to the internal jugular vein and extending toward the thoracic inlet. The lesion measured approximately 22×35 mm and contained cystic and solid components with internal macrocalcifications. Pathology from a new biopsy confirmed metastasis of papillary thyroid carcinoma, and the patient underwent a revision lateral neck dissection.

A closed-suction drain (Hemovac) was placed in the left neck region postoperatively. On postoperative day 3, the drainage became milky and markedly increased in volume, leading to the diagnosis of a chyle fistula (Figure 1). Oral intake was discontinued, and subcutaneous octreotide (Sandostatin®) therapy was initiated at a dose of 100 µg three times daily [1.5 mg/day 300 µg/day (0.3 mg/day)]. Although drainage temporarily decreased on postoperative day 4, it increased again on postoperative day 5, prompting initiation of total parenteral nutrition (TPN) with an amino acid-glucose solution (Periolimel N4-600E, 1500 mL/day). From day 6 onward, a marked decrease in drainage was observed. By day 11, drainage had fallen below 100 mL/day. Oral feeding was resumed on day 12, and TPN was discontinued on day 13 (Figure 2).

Figure 1. Postoperative drainage content of the patient

Biochemical monitoring showed that serum albumin dropped to 2.1 g/dL and total protein to 4.8 g/dL on postoperative day 4. The patient received two doses of intravenous human albumin. As the drainage became minimal, the drain was removed on postoperative day 14, and the patient was discharged in good condition without complications (Figure 3).

Octreotide therapy was continued for 11 days based on published literature demonstrating its efficacy in treating high-output chyle leaks.

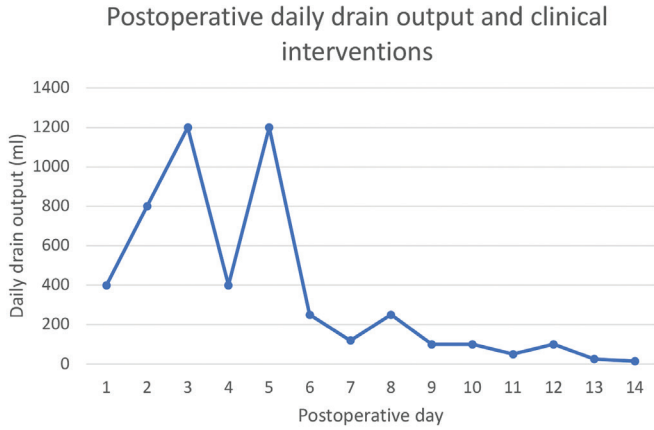

Figure 2. Daily drainage volumes monitored from the hemovac drain during the postoperative period are shown. High-output lymphatic leakage was observed on postoperative days 3 and 5, and conservative management interventions were implemented on these days

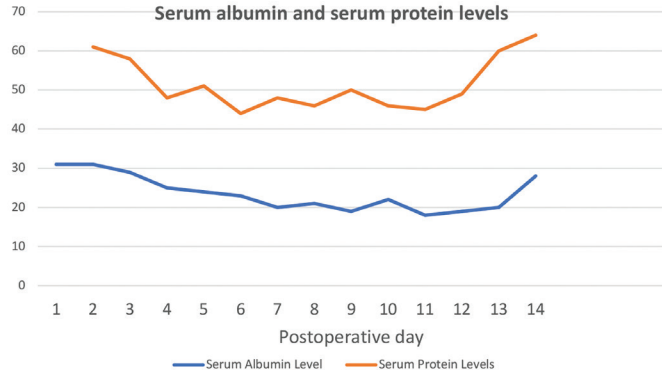

Figure 3. Serum albumin and total serum protein levels of the patient during the postoperative period

Discussion

Lymphatic leaks following neck dissection are rare but serious complications. Anatomical variations of the thoracic duct and the difficulty of its preservation during lateral neck dissection increase risk. Chyle fistulas typically occur after left-sided dissections but can also be seen on the right due to anatomical variants [2].

Clinically, chyle leaks are characterized by milky drainage fluid, high drainage volume, electrolyte disturbances, malnutrition, delayed wound healing, and infections [2,3]. In our case, a chyle fistula was confirmed on postoperative day 3 when the drainage volume increased to 1200 mL and the drainage became milky. High-output lymphatic leaks are initially managed conservatively, but surgical or interventional procedures may be necessary if conservative measures fail [3,4].

Conservative treatment includes cessation of oral intake, TPN, pressure dressings, and somatostatin analogs such as octreotide [2,3,5]. Octreotide reduces lymphatic flow by decreasing gastrointestinal secretions and thereby facilitates fistula closure [5]. Swanson et al. [5] reported that octreotide effectively reduces the need for surgery for chyle fistulas and increases the success rate of conservative management. In the literature, the duration of octreotide therapy varies with output level but generally ranges from 5 to 11 days in high-output cases [5]. In our case, octreotide was administered subcutaneously at 1.5 mg/day for 11 days, resulting in complete resolution without surgical intervention.

Studies have also shown that discontinuation of oral intake and initiation of TPN are effective in reducing chyle output in high-output leaks [3,4]. Chang et al. [3] emphasized that in patients with drainage exceeding 1000 mL/day, TPN combined with somatostatin analogs is an effective strategy. In our case, oral intake was discontinued on day 5 and TPN was started with Periolimel N4-600E, leading to a significant and sustained decrease in drainage.

Replacing protein losses due to chyle drainage is essential. The patient's albumin levels decreased starting on postoperative day 1 and reached critical levels by postoperative days 4 and 5. Intravenous albumin supplementation was administered. Park et al. [1] highlighted that in persistent chyle leaks, supportive therapy is necessary to prevent hypoproteinemia and hypovolemia.

Although conservative management is the established first-line approach, reports describing successful non-surgical treatment of high-output (>1000 mL/day) chyle leaks after revision neck dissection are scarce.

This case highlights that early initiation of octreotide and nutritional support can prevent the need for surgical or interventional treatment even in high-output scenarios.

The timing of surgical or interventional treatment in lymphatic leaks remains controversial. Yi et al. [4] reported high success rates with thoracic duct embolization in patients resistant to conservative therapy. However, due to its invasive nature, such interventions should be reserved for refractory cases [4]. In our case, conservative measures were effective early in the course, and no further intervention was required.

Conclusion

Conservative management is the first-line approach for high-output lymphatic leaks. The use of octreotide and the initiation of TPN after discontinuation of oral intake significantly reduce complications and may eliminate the need for surgical intervention. However, in cases where conservative therapy is insufficient, surgical or interventional procedures should be considered.

Ethics

Informed Consent: Written informed consent was obtained from the patient for publication of this case report.

Footnotes

Authorship Contributions

Surgical and Medical Practices: E.G.A., F.U., V.B.T., M.H.D., M.S.K., Consept: E.G.A., F.U., V.B.T., B.K., Design: E.G.A., F.U., B.K., M.S.K., Desing: G.U, B.B.D., Data Collection or Processing: E.G.A., F.U., V.B.T., M.H.D., Analysis or Interpretation: E.G.A., F.U., B.K., Literature Search: E.G.A., F.U., V.B.T., B.K., M.H.D., M.S.K., Writing: E.G.A., F.U., M.S.K.

Conflict of Interest: The authors declare that they have no conflict of interest.

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