Recurrent High Output Chyle Fistula Post Neck Dissection
Resolution with Conservative Management

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Abstract

Objective: To present a unique case of neck dissection with intra-operative chyle leak and subsequent recurrent high output chyle fistula treated with conservative management.

Study Design: Case report

Methods: Literature review of intra-operative chyle leak and post operative chyle fistula management with discussion of a recent representative case within our health system.

Results: We present a case of a 35 year old male who underwent a total laryngectomy and bilateral selective neck dissection for a T4N1 Stage IVA Squamous cell carcinoma of the right supraglottis. Intra-operatively, a chyle leak was identified and surgical measures and fibrin sealant were used to control the leak with a negative fistula test at the completion of the dissection. On post operative day 4, a chyle fistula was identified with a peak output of 2.4 liters over 24 hours. The patient was treated with conservative non-operative measures and the output decreased daily. He was discharged on post operative day 22 with a drainage tube in place, which was removed on post operative day 26. He subsequently developed a recurrence of this fistula on post operative day 37, which was treated conservatively and resolved on post operative day 45.

Conclusions: High output recurrent chyle fistula may be managed conservatively even if it persists greater than 10 days or output is greater than 2 L over 24 hours if the chyle output is responding appropriately and the patient’s volume and nutritional status are closely monitored.

Case Report

History:
• R.R. is a 35 year old male who underwent primary treatment with total laryngectomy and bilateral selective neck dissection for T4N1 Stage IVA Squamous cell carcinoma of the right supraglottis.

Intra-operative Course:
• While dissecting left jugular lymph nodes, thoracic duct was injured.
• Topical sealant and pressure was applied to leak.
• Prior to completion of procedure, patient had negative fistula test.

Post-operative Course:
• On post operative day 1, chyle was confirmed via left drain with output of 1.6 liters over 24 hours on continuous wall suction drainage.
• Patient was managed with compressive dressings, continuous wall suction, high medium chain triglyceride diet, and meticulous electrolyte management.
• Peak output was 2.4 L over 24 hours on post operative day 4.
• Enteral feeding was discontinued and patient started on total parental nutrition.
• 14 day course of octreotide treatment instituted with aggressive compression dressings and wall suction of left neck drain.
• Output on post operative day 8 was less than 0.5 L over 24 hours and on post operative day 16 was less than 5 mL over 24 hours.
• Patient’s electrolytes were managed carefully, with replenishments as needed.
• Length of stay was 22 days after surgery and patient was discharged with dependent drainage neck drain and low fat diet.
• On postoperative day 26, output was less than 2 mL over 24 hours and drain was removed.
• Compressive pressure dressings discontinued on postoperative day 30.
• On postoperative day 37, patient presented with left neck swelling after eating high fat meal and 50 mL of serous fluid was aspirated signifying recurrence of chyle fistula.
• Compressive dressings reapplied and low fat diet reintroduced.
• On postoperative day 45, fistula recurrence was resolved with well-healed incisions and no evidence of recurrence of chyle leak.

Photos

The thoracic duct contains chyle, a milky-white liquid composed of lymph and long chain fatty acids. A chyle fistula is an exudation of chyle following the rupture of lymph vessels. It is a complication of major neck surgery in 1-3% of patients [3] and approximately 75% occur on the left side, while 25% occur on the right [1]. The flow of chyle is approximately 2-4 L per day, although chyle production is dependent upon diet and daily intake, increasing with fatty meals. Authors have identified a low output chyle fistula as drainage of less than 500 mL/day, while a high output chyle fistula is drainage of more than 2 L per day [4, 5].

A chyle fistula can be recognized by drainage of milky-white fluid, although the liquid may be clear if the patient has had no recent fat intake. Diagnosis can be made based upon fluid analysis for triglyceride content since chyle contains 2-6 times the amount of triglycerides compared to serum (greater than 110 mg/dl).

A chyle leak that is found intra-operatively should be repaired immediately. Methods include direct ligation of an obvious leak visualized during surgery [8], or the use of fibrin sealant [6]. Management of postoperative chyle fistulas remains unclear. Studies show that successful medical management of a chyle fistula includes use of postoperative drains left on continuous suction, pressure dressings, and bed rest. Somatostatin can be given to decrease gastrointestinal and pancreatic secretions, reduce splanchic blood flow, and lower hepatic venous pressure. The patient should be started on a diet consisting of medium chain triglycerides because they are absorbed directly into the portal system bypassing the lymphatics. A replacement with total parenteral nutrition is made if the fistula persists [5]. Percutaneous embolization of the thoracic duct can also be attempted [1].

Authors have recommended re-operation in selective cases when the chyle fistula does not resolve upon conservative treatment of persistent low output fistulas, high output fistulas treated medically for one week, or when complications arise. There are currently no clear standards to indicate the exact time for re-operation if the patient does not meet one of the above criteria [13]. Previous studies have demonstrated management of high output chyle fistulas as medical management for the first week, then surgical treatment for leaks persisting over one week. Surgical management includes using a sternomastoidomastoid muscle flap or an omohyoid muscle flap to close over the fistula with use of fibrin sealant [14]. An additional surgical method is an intra-thoracic ligation of the thoracic duct for a refractory fistula [15].

Conclusion

High output chyle leaks as in this case may be managed conservatively if the chyle output is responding appropriately, and the patient’s volume and nutritional status are closely monitored.

Literature Review

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References