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REVIEW

Management of chyle leak post neck dissection: A case report and literature review

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Summary Chyle leakage post head-and-neck resection is a rare but potentially life-threatening complication. Management may be problematic and prolonged. Recently, thoracoscopic ligation of the thoracic duct has emerged as a promising technique to definitively treat this difficult problem.

We present a recent case of a hemimandibulectomy, radical modified neck dissection and osseocutaneous fibular-free-flap complicated by a chyle leakage. The chyle leak was successfully treated with thoracoscopic ligation of the thoracic duct. In the light of our clinical experience and following a thorough literature review, we have proposed that complicated or high-output chyle leaks (>1000 ml day^{-1}) should be treated with early thoracoscopic thoracic duct ligation.

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Chylous fistula is a well-recognised but rare complication of head-and-neck surgery affecting 1–2.5% of head-and-neck dissections.[1,2] It is a potentially life-threatening condition and management may be problematic and prolonged. The variable anatomy of the thoracic duct and its fragile composition mean that it is prone to intra-operative damage. The potentially large losses of protein and electrolyte-rich fluid may cause major metabolic disturbances and local and systemic wound-healing problems.

We present a recent case of a hemimandibulectomy, modified radical neck dissection and osseocutaneous fibular-free-flap reconstruction complicated by a chyle leak successfully treated with a thoracoscopic thoracic duct ligation. Following a literature review, we propose a management algorithm to deal with this potentially difficult problem.

Case report

An 80-year-old man presented to our department with a 12-month history of a slowly enlarging lesion in the left buccal

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sulcus. Physical examination showed a 1.5 × 1.5-cm ulcerating mass arising between the 2nd and 3rd mandibular molars with mandibular bony erosion. Neck examination revealed a palpable left, level-II cervical lymph node.

Incision biopsy showed a poorly differentiated invasive squamous cell carcinoma. Staging computed tomography (CT) imaging of the head, neck and chest also revealed a level-II lymph node.

Following head-and-neck multidisciplinary team (MDT) discussion, the plan involved a left hemimandibulectomy, left levels I—V modified radical neck dissection with preservation of the sternocleidomastoid muscle, accessory nerve and internal jugular vein (IJV) and an osseocutaneous fibular-free-flap reconstruction. A covering tracheostomy was also formed.

The surgical procedure was uneventful, apart from a left-sided chyle leak following cervical lymphatic clearance noted intra-operatively. The site of the damaged duct was identified and repaired with a permanent suture (5/0 Prolene).

End-to-end arterial anastomosis of the fibular flap peroneal artery to the facial artery was achieved with immediate reperfusion of the flap. Two venous anastomoses were performed using the peroneal venae comitantes. One was anastomosed end-to-side to the IJV and the other anastomosed end-to-end with the superior thyroid vein. The first venous anastomosis required revision to achieve good flow.

The wounds were closed following placement of two neck drains.

The patient had an uneventful 1st postoperative day recovery in the intensive therapy unit (ITU). He drained 313 ml and 80 ml from his neck drains (Table 1). Enteral feed was commenced via a nasogastric (NG) tube. The feed regime was tailored to meet the patient's nutritional requirements (1900—2000 kcal and 100 g of protein each day), as calculated at the routine preoperative dietetic review.

On the 2nd postoperative day, the flap-skin paddle was noted to be congested. He had drained 800 and 120 ml of serosanguinous fluid from his respective neck drains. He was returned to theatre where he had evacuation of large neck haematoma and revision of the second venous anastomosis with successful flap salvage. A chyle leak was evident in the left lower neck. The source was identified and oversewn with a permanent suture (3/0 silk), and the site was covered using the caudal segment of the sternocleidomastoid muscle. The neck was closed routinely following insertion of one neck drain. The patient returned to ITU postoperatively.

On day 3, 24 h post revision surgery, our patient was cardiovascularly stable and the flap was well perfused. A total of 2340 ml of serosanguinous fluid had drained from the neck. Enteral feed was recommenced via the NG tube.

At day 4, our patient remained systemically well. However, 2890 ml of chylous fluid had collected in his neck drain. A sample of drain fluid was sent for biochemical analysis, which confirmed the presence of triglycerides. Enteral feeding was stopped and parenteral nutrition (total parenteral nutrition, TPN) was commenced.

The chyle leak persisted over the next 4 days despite parenteral nutrition (Table 1). General surgical review was obtained regarding thoracopic ligation of the thoracic duct. The patient was restarted on enteral feed via the NG tube for 24 h to allow intra-operative visualisation of the thoracic duct.

Thorascopic ligation was successfully performed on day 11. The patient continued on TPN for 48 h postoperatively. Chyle fluid leak was immediately curtailed with a daily drainage of 55 ml in the first 24 h post ligation and 6 ml in the second 24 h, after which the neck drain was removed (Table 1).

Enteral feeding was recommenced at 48 h post ligation. This was gradually increased to meet the nutritional requirements over the next 48 h.

No further chyle leak or neck collections developed. The patient continued to make an uneventful recovery and was subsequently discharged well.

Surgical anatomy of chyle drainage

All lymphatic fluid produced by the body eventually passes through two channels: the thoracic duct, draining classically into the left subclavian vein, and the right lymphatic duct, draining into the right inominate vein at the junction of the right subclavian and right IJVs.

The thoracic duct originates at the cisterna chyli, anterior to the second lumbar vertebra, posterior—laterally to the aorta. It ascends through the posterior mediastinum after passing through the aortic hiatus posterior to the median arcuate ligament of the diaphragm. In the thorax, it is anterior to the vertebral column, to the right of the aorta and posterior to the oesophagus. Distally, it runs to the right of the oesophagus crossing to the left at the level of the 5th or 6th thoracic vertebra entering the root of the neck.

Table 1 Postoperative drain output.

Post-op day	1	2[a]	3	4	5	6	7	8	9	10	11[b]	12	13	14	15
Total neck drain output (mL/24 h)	393	925	2340	2890	1075	875	1150	1670	1587	890	730	55	6	0	0
Feed route	NG	NG	NG	TPN	TPN	TPN	TPN	TPN	TPN	TPN	NG	TPN	TPN	NG	NG
Feed Type	PP	PP	PP	NLP	NLP	NLP	NLP	NLP	NLP	NLP	PP	NLP	NLP	PP	PP
Rate (mL/h)	65	65	65	104	104	104	104	104	104	104	65	104	104	20	65
Calories (Kcal/24 h)	1950	1950	1950	2530	2530	2530	2530	2530	2530	2530	1950	2530	2530	600	1950
Protein (g/24 h)	98	98	98	85	85	85	85	85	85	85	98	85	85	30	98

Key PP: Protein Plus, NLP: Nutriflex Lipid Plus (No electrolytes).
[a] Patient underwent neck exploration.
[b] Patient underwent thoracoscopic ligation of the thoracic duct.

Classically, the thoracic duct is described as terminating at the junction of the left subclavian and the IJVs. However, anatomical studies in both cadaveric and living subjects have shown significant variation.[3–6] Whilst this is indeed the most common site of entry into the venous system, multiple channels, terminations and courses within the neck have been demonstrated.[3,4]

The thoracic duct normally lies behind the IJV, although it is occasionally situated in front of the subclavian vein. Terminations vary with approximately half to two-thirds studied entering the venous system on the left side in the subclavian vein, although the jugulosubclavian angle, IJV and transverse cervical vein have all been demonstrated. In Greenfield's series, there was one case where the thoracic duct terminated in the right IJV.[3] There is not necessarily a single termination point, with multiple terminations or multiple lymphatic vessels ending in a common trunk being demonstrated.

Chyle production and composition

Lymphatic production can be between 2 and 4 l day^{-1} with the vast majority passing through the thoracic duct. Flow is dependent on diet, intestinal function, mobility of the patient, respiration and positive intra-abdominal pressure, for example, coughing.

Lymphatic fluid (chyle) is composed of proteins, approximately 30 g l^{-1}, the lymphatic duct being the only route for interstitial fluid that has left the vascular space to be returned to the circulation.

Chyle also contains chylomicrons, which are esterified monoglycerides and fatty acids combined with cholesterol and proteins. These are formed by the breakdown products of long-chain fatty acids in the proximal small bowel, following the action of bile salts. These are absorbed into the lymphatic system via lymph vessels in the villous region known as lacteals. Fat-soluble vitamins A, D, E and K are also absorbed at this point. Short- and medium-chain fatty acids (MCTs) are directly absorbed via the intestinal mucosa and transported via the hepatic portal vein to the liver.

As well as protein and fats, chyle is also rich in electrolytes. Sodium, potassium, chloride and glucose are all present at values similar to those in plasma. Calcium is also present, but at a lower concentration. Chyle also contains white blood cells (WBCs), mostly T-lymphocytes.

Pathophysiology of chyle leak

The composition of chyle points to the potentially life-threatening malnutrition, electrolyte and fluid imbalances that may occur with a chyle leak. The large volume output of protein, fat and electrolyte-rich fluid results in primary hypoproteinaemia, hyponatraemia, hypokalaemia and hypocalcaemia. Primary hypovolaemia from fluid loss may be complicated by fluid shifts secondary to hypoproteinaemia. Lymphocytopaenia and immunosuppresion may result from the loss of large numbers of WBCs.

Secondary complications due to chyle leak revolve around the disruption to the complex biochemical milieu that makes up wound healing. This may lead to delayed wound healing, wound infection, wound breakdown, fistula formation and generalised sepsis.

Locally, chyle leakage causes an intense inflammatory reaction, which promotes high levels of pro-inflammatory cytokines and tissue proteases within the wound bed, degrading granulation tissue and delaying collagen deposition and wound healing. Local pressure effects of chyle beneath skin flaps can worsen tissue perfusion causing poor wound healing and promoting flap necrosis.[7] The presence of chyle also increases the risk of infection in the wound.

With excessive chyle leaks, the often large and rapid loss of fats, proteins, fat-soluble vitamins and trace elements results in nutritional deficiencies that directly affect the wound-healing abilities of the patient, unless corrected promptly. This may compound the increased metabolic demands common to all wounds.[8]

Loss of nutritionally important proteins and fats may result in impaired neo-vascularisation and decreased fibroblast production, fatty acids being a vital component in the fabrication of cell membranes. Fat-soluble vitamin A (retinoic acid) helps modulate collagen production and promote epithelisation, and vitamin E is a potent antioxidant. Depleted trace elements such as copper and zinc have been shown to be associated with poor wound healing, and these may well be lost in significant quantities and require replacement.[8]

The loss of large numbers of WBCs may have a primary immunosuppressant effect, increasing the risk of infection. They may also have a direct effect on wound healing, secreting many growth factors and interleukins in the inflammatory phase of wound healing.

Preoperative and intra-operative recognition and management of chyle leaks

Prevention of chyle leaks at operation by identification of at-risk patients, meticulous surgical technique and knowledge of the relevant anatomy of the thoracic duct and its variations is vital.[1,9,10] Damage to the thoracic duct may be difficult to visualise intra-operatively, and several authors have advocated patients ingesting high-fat-content substances preoperatively to allow for better identification.[1,9] A request to the anaesthetist to apply positive pressure ventilation, raising intra-abdominal pressure, may allow small leaks to be revealed.[1,2]

Leaks detected at operation may be treated with ligation and oversewing of the bed of the thoracic duct with non-absorbable sutures; care needs to be taken to avoid damage to the thin-walled duct.[2,9]

Various local and regional flaps have been described to enable coverage of the leaking thoracic duct bed. Historically, a scaleneus anterior muscle flap was suggested; however, its small bulk and risk of damage to the brachial plexus mean that this is not generally recommended.[11] If it has not been removed as part of a radical neck dissection, the clavicular head of the sternocleidomastoid can be detached from its insertion and sutured into the wound bed.[10,12] de Gier and colleagues advocated a pectoralis major muscle flap for delayed flap coverage of chyle leakage.[2]

Various adjuncts have been proposed to increase the likelihood of closure and to aid coverage. Sclerosing agents such as OK-432 or tetracyclines induce an inflammatory reaction in the wound bed. This can be performed

intra-operatively to control a leak or postoperatively by instillation through the drain.[13–15] Caution is recommended as doxycycline has been reported to be neurotoxic, especially in the context of occult post-surgical nerve damage, with a reported case of phrenic nerve paralysis.[16,17]

Cyanoacrylate adhesives and fibrin tissue adhesive have been used with success by local application to a visible chyle leak.[11,18,19] Adjunctive measures remain dependent on local practice and expertise; difficulty in re-operation due to potential obliteration of the operative field also limits their usage.[9,10]

Postoperative recognition of chyle leak

Despite these measures, occult damage to the thoracic duct does occur and this may not be apparent until several days postoperatively. Presentation may be variable and vigilance should be used, if prior dissection was difficult or if a chyle leak was detected intra-operatively and successfully ligated.

Postoperative chyle leak is manifested by unexpectedly high drain outputs, or suddenly increasing drain output on resuming feeding.[20] The presence of creamy, greasy, white fluid in the drain should also raise suspicion.

Confirmation can be made by analysis of the drain fluid for the presence of triglycerides and for triglyceride ratios. A drain fluid triglyceride of $>$100 mg dl^{-1} or a triglyceride level greater than that of serum would support the diagnosis of chyle leak in equivocal cases.[21]

Conservative and medical management of chyle leak

Bed rest is recommended, as activity increases chyle output. Suction drains placed in the wound bed at operation allow recognition of chyle leak and also monitoring of drain output. Application of a pressure dressing to create a local tamponade effect is not recommended, as it may be ineffective and may interfere with blood supply to skin flaps.[2,9]

Standard management also includes measurement of fluid input and output and daily urea and electrolytes. Liver function tests including albumin are also indicated to help guide dietary modification and therapy.[10]

The dietary management of patients with a persistent chyle leak is important for several reasons. The loss of volume and electrolytes must be replaced, and the nutritional status of the patient must be maintained. It is also possible to use dietary manipulation to attempt to decrease the production of chyle.

Most authors recommend an elemental diet with medium-chain triglycerides (MCTs) as an initial dietary response to chyle leakage.[2,9,10,22,23] As detailed previously, MCTs are absorbed directly into the portal venous circulation and as such do not enter the lymphatics, decreasing the output of chyle. Indeed, some authors have reported that this alone may be sufficient to stop chyle leakage.[9,23,24] Moderate-output postoperative chyle fistulas have been successfully treated with MCT alone.[9]

If MCT is not successful, then some authors advocate parenteral nutrition (TPN).[2] TPN bypasses the normal breakdown of long-chain fatty acids in the small intestine, and delivers phospholipids directly into the central venous circulation, decreasing the amount of chyle produced. However, TPN is associated with a higher rate of complications and higher cost relative to enteral feeding. TPN requires central venous access with possible complications of arterial puncture, haematoma, pneumothorax and delayed infection.[25] TPN itself has been associated with an increase in the catheter infection rate and metabolic disturbances including hyperglycaemia and electrolyte imbalances.[26,27]

Other medical adjuncts exist to attempt to inhibit chyle production. Somatostatin and its synthetic analogue octreotide effect their action by reducing gastric, pancreatic and intestinal secretions, thereby reducing chyle production.[28–30] It has shown some success in low-to-moderate output chyle fistulas of greater than 2 weeks' duration.[29,30] Bello et al. used the pancreatic lipase inhibitor orlistat on an outpatient basis for the treatment of low-volume chyle leakage.[31] Orlistat blocks the enzyme responsible for fat breakdown in the duodenum, inhibiting micelle formation necessary for intestinal absorption. This was successful, although this required significant resources in the community.[31]

Interventional and surgical management of chyle leak

Surgical and interventional management of chyle leak can be divided into local procedures to stem the chyle flow at the original operational site, or distant procedures to stem the flow of chyle in the distal thoracic duct.

Local procedures

Surgical re-exploration of the wound site and subsequent management of a chyle leak follows similar principles to a primary chyle leak. Caution is advised as the inflammation generated by the chyle leak may hinder identification of the major vasculature and nerves in that area.[2,9,18] Preoperative fat ingestion may help identification of the leak site.[22] If the leak is small and well localised, exploration may be undertaken under local anaesthesia.[1] Re-operation consists of ligation of the visible leak site with non-absorbable suture or surgical clips, although some authors have expressed concern at suture placement in what may be a hostile surgical field.[2,9,20]

It is recommended to perform coverage of the area with a local flap with the pectoralis major, or, if it has not been removed, the clavicular head of the sternocleidomastoid.[2,12] This may be supplemented with the application of sclerosing or bonding substances, as previously detailed. Addition of an overlay Vicryl mesh has also been described.[18]

Distant procedures

Re-operation at the leak site may be difficult due to distorted anatomy, the risk of damage to important structures and the possibility of failing to arrest the chyle leak. Early authors viewed ligation of the thoracic duct as being fatal, and it was Stuart's review in the early 1900s, which

hypothesised that collateral lymph channels would take over the flow.[32] Various techniques have been developed to stop the flow of chyle in the distal thoracic duct.

Transabdominal cannulation of the thoracic duct

Percutaneous transabdominal cannulation of the thoracic duct had been introduced as a minimally invasive alternative to surgical re-operation at the operative site.[33] The cisterna chyli or a large lymphatic vessel is cannulated transabdominally, following pedal lymphangiography to delineate the lymphatic vessels. This allows visualisation of thoracic duct damage and the placement of embolisation coils and *N*-butyl-2-cyanoacrylate (Histoacyrl) tissue adhesive.[33–35] It has been used successfully to treat thoracic duct injury due to oesophageal, pancreatic and neck surgery.[33] In postoperative chylothorax, it has a success rate of approximately 60% with no added morbidity. The remaining patients went on to be treated successfully with thoracoscopic ligation of the thoracic duct.[34]

Van Goor and colleagues successfully used this technique to treat two cervical chyle fistulas refractory to conservative management, although they noted it to be time-consuming and may require several attempts at embolisation.[35] It may be associated with patient discomfort, requiring a general anaesthetic. Specialist equipment and personnel may not be available in all centres.[35]

Thoracoscopic ligation of the thoracic duct

Thoracoscopy has been used successfully for the treatment of chylothorax where it is as effective as open thoracotomy but avoids the significant morbidity associated with a major thoracic procedure.[40,41] Thoracoscopic ligation has proved successful with minimal complications and a high success rate.[42] It does, however, require a thoracic surgery service and specialised anaesthesia.

Typically, the thoracic duct is identified via a right-sided thoracoscopic approach. Occlusion of the thoracic duct is achieved by mass ligation of the tissue above the supradiaphragmatic hiatus between the azygos vein and the aorta.

A summary of cases shows that this approach is very successful at stemming difficult chyle fistulas and has minimal associated morbidity (Table 2). Thoracoscopic ligation has been used in multiple centres for high-output chyle fistulas in patients, who have failed conservative treatment and surgical re-exploration.[36,37] The reported literature shows full resolution of chyle fistulas and no recurrence or added morbidity.[36–39]

The technique has also been used electively for a postoperative chylous collection in the left supraclavicular fossa of 7 months' duration that had failed multiple surgical re-explorations and aspirations.[36]

The UK experience is limited to a single case of a high-output chyle leak. The pressure effect of the leak compromised the venous outflow to the free-flap coverage causing the loss of two consecutive free-tissue transfers despite attempts to ligate the chyle leak and salvage the flaps. Again, thoracoscopic thoracic duct ligation proved to be successful with no added morbidity.[39]

Discussion and proposal of the management algorithm

Based on our experience with our case and our review of the literature, we propose an evidence-based management algorithm that will be the basis of our treatment strategy in our unit for chyle leaks.

Due to the relative rarity of chyle leakages, much of the treatment is based around single case reports and small case series and we have tried to aggregate the best practice available. There is no common definition as to what entails a chyle leak, being variably described as high-volume, acute onset, and as a low-volume, chronic output. Although there does appear to be overlap between the treatments in these two groups, we have considered chyle leak to be an acute event occurring postoperatively causing compromise either locally in the wound or systemically to the patient. Further, the services available in each hospital may differ, and this should be taken into account when deciding on the correct management plan.

All authors agree that best practice is to avoid a chyle leak at initial operation.[1,9,10,36] Thorough knowledge of the anatomy of the proximal thoracic duct and the potential for anatomical variations is vital. Care should be taken, especially during dissection of the level IV nodes around the lower IJV.[1,36]

If a leak is detected intra-operatively, then it should be oversewn with a non-absorbable suture.[1,9] Various adjunctive measures including pectoralis or sternocleidomastoid muscle coverage, fibrin glue or cyanoacrylate have been described as being successful, and this should be according to the operating team's experience and discretion. We do not recommend sclerosing therapy due to the risk of neurotoxicity and resulting intense inflammatory reaction obliterating the surgical field.[16,17] After the operation, suction drainage should be commenced with at least daily outputs monitored. Pressure dressings are not recommended, especially in the context of microvascular anastomoses due to the risk of compromising the flap.[9]

If a chyle leak has been detected at operation and successfully ligated, then vigilance should be applied in the postoperative period to assess for leakage. Increasing drain outputs upon resuming feeding should arouse suspicion.[1,9] Creamy, greasy fluid in the drain should be regarded as a chyle fistula. In the event of diagnostic difficulty, the fluid should be sent for triglyceride analysis.[9]

The literature shows that there are broadly two subtypes of chyle fistulas, high output and low output. Definitions differ as to what constitutes high output, with quotes ranging from >500 ml day^{-1} to >1000 ml day^{-1}.[1,10] Most authors agree that high-output chyle fistulas are likely to fail conservative management.[10,22] Low-output fistulas are less common in case series and may be refractory to conservative treatment. They tend to have a high degree of chronicity and require prolonged hospital stays for management. Currently, the correct treatment strategy for these patients is unclear.

Table 2 Summary of case report of thoracoscopic ligation.

Reports	Operation	Maximal drainage (mL/day)	Previous intervention	Time of ligation	Time to resolve	Complications
Gunnlaugsson et al., 2004[36]	Wide local excision of left tonsil, tongue base and left selective neck dissection levels I—IV for T2N1 SCC tonsil. Immediate post-op chyle leak.	3000—4000	None	Day 4	1 day	Nil
Gunnlaugsson et al., 2004[36]	Left tonsillectomy and left neck dissection for SCC tonsil from outside institution. Referred with chronic supraclavicular swelling consistent with chyle leak.	Unknown	None	7 months	Swelling resolved in 6 weeks	Nil
Lapp et al. [37]	Modified radical neck dissection for left sided jugulodigastric lymph node post radiotherapy for T3N2a nasopharyngeal carcinoma. Immediate post-op chyle leak.	>500	Failed neck exploration day 7	Day 8	Immediate	Nil
Van Natta et al.[38]	Left carotid artery bypass with PTFE graft for subclavian steal syndrome. Post-op chyle leak day 3.	>500	Failed neck exploration and administration of fibrin glue day 3	2 weeks	2 days	Nil
Van Natta et al.[38]	Resection of recurrent left sided tonsillar carcinoma. Post op chyle leak, time not described.	>100	Failed MCT and TPN	2 weeks	Resolved but time not described	Nil
Abdel-Galil et al.[39]	Resection of left adenoid cystic carcinoma of submandibular gland, selective neck dissection (levels I—IV) and radial forearm free flap reconstruction. Immediate postoperative chyle leak complicated by compromise and failure of two free flaps.	>1000	Failed neck exploration day 3, second reconstruction with radial forearm free flap. Failed neck exploration day 4 and second flap failure.	Day 9	Immediate	Nil

On recognition of a chyle fistula, conservative treatment should begin immediately with bed rest and commencement of NG feeding with MCTs.[9,22,35] Vital signs, fluid balance, electrolytes and liver function tests should all be monitored closely.

We propose that for drainages of less than 1000 ml day^{-1} and where there is no haemodynamic or metabolic compromise, conservative treatment should be trialled. Further, if a free-tissue transfer has taken place, then this should be carefully monitored.

If the drainage volume of chyle exceeds 1000 ml day^{-1} without a response to conservative therapy, arrangements should be made for thoracoscopic ligation of the thoracic duct. Our own experience and summarising case reports show that it has minimal added morbidity and a complete success rate at first operation in dealing with chyle leakages.

Further, early thoracoscopic ligation is indicated if there is vascular compromise to a free-tissue transfer, and further reconstruction should be delayed until the flow of chyle is stemmed.[39]

Although in our case, we initiated TPN, this ultimately proved not to be successful. TPN potentially can be used successfully in chyle fistulas although the treatment may be prolonged and is associated with an increased risk of complications.[2,25] We suggest that exposing delicate microvascular anastomoses to a chyle leak for an extended period of time should be avoided. If treatment with NG feeding fails, then thoracoscopic ligation should be undertaken.

Much debate exists as to when is the right time to intervene in a chyle fistula following failed conservative management. Most authors agree that if there has been no reduction in the amount of chyle produced after 5 days, then the patient should be returned to theatre for neck exploration or other definitive treatment.[1,10,37] Our recommendation would be to perform thoracoscopic ligation at this time rather than re-explore the potentially hostile surgical field at the original site.

Conclusion

Chyle leak after head-and-neck dissection is a rare but potentially problematic complication. The modern technique of thoracoscopic thoracic duct ligation provides a quick, safe and effective treatment. We propose that in our unit it should be the intervention of choice, if conservative management fails.

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