

Treatment strategy for chylous leakage after dissection of central lymph nodes in thyroid cancer



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Treatment strategy for chylous leakage after dissection of central lymph nodes in thyroid cancer

OBJECTIVE: To explore the treatment strategies of chylous leakage after dissection of central lymph nodes in thyroid cancer.

METHODS: Patients with chylous leakage after dissection of central lymph nodes in thyroid cancer were recruited in this study. All participants adopted a conservative treatment method of external fixation of neck brace + cotton ball packing and compression bandage + adequate negative pressure drainage and assisted low-fat diet.

RESULTS: A total of two patients were included in this study. The results showed that the drainage rate of these two patients was reduced to less than 10 ml after 1-2 days of drainage. The maintenance treatment was continued for 10 days. The drainage volume of the patient did not increase during the three days after returning to normal diet. There was no recurrence of posterior lymphatic leakage.

CONCLUSION: External fixation of neck brace + cotton ball packing and compression bandage + adequate negative pressure drainage is important for the treatment of mild to moderate chylothorax after thyroid cancer surgery which was worthy of clinical application.

KEY WORDS: Chylous leakage; Dissection of lymph nodes; Thyroid cancer; External fixation of neck brace; Postoperative complication

Introduction

Lymph node dissection after thyroid cancer combined with chylous leakage was a clinically rare postoperative complication. At present, the treatment methods for chylous leakage mainly included local pressure bandaging, continuous negative pressure attraction, low-fat diet or fasting water, intravenous nutrition, application of somatostatin drugs and secondary surgery. However, the treatment strategies of chylous leakage after dissection of

central lymph nodes in thyroid cancer remains unclear. From March 2019 to May 2019, our hospital admitted two patients with chylous leakage after dissection of central lymph nodes in thyroid cancer. Therefore, we conducted this study to explore a new treatment strategy for chylous leakage after dissection of central lymph nodes in thyroid cancer. by analyzing the clinical data of these two patients.

Materials and Methods

SUBJECTS

From March 2019 to May 2019, two patients with chylous disease after lymph node dissection in the central group of thyroid cancer were treated in the Thyroid and Breast Surgery Department of the People's Hospital of China Medical University (Liaoning Provincial People's

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Hospital) were recruited in this study. This study was conducted in accordance with the Declaration of Helsinki and approved by the ethics committee of our hospital. All participants had signed the informed consent.

CLINICAL TREATMENT

The first patient was a 49-year-old female. This patient had received conservative treatment such as fasting water, parenteral nutrition, continuous negative pressure suction and local compression of salt bags in the local hospital. After 3 weeks, the drainage volume gradually decreased to less than 10ml per day. Then the drainage tube was removed and changed to a normal diet. However, after 3 days of normal diet, the patient developed swelling. Reexamination of ultrasound showed that chylous leakage recurred, and he was transferred to our hospital for further treatment. After admission, we gave patients a partial re-puncture of the indwelling pig tail tube, connected with a negative pressure drainage ball. At the same time, the anterior cervical tourniquet + cotton ball packing and pressure bandage (Fig. 1) combined with low-fat diet treatment did not see a significant reduction in drainage volume after 1 day. Then, we have to change the therapy and applied external fixation of cervical collar + compression packing with cotton ball (Fig. 2) + adequate negative pressure drainage combined with low-fat diet.

The second patient was a 47-year-old woman who underwent left thyroid and isthmus resection plus left central group lymph node dissection in our hospital. After recovery of fluid food after operation, chylous leakage occurred. Then, we adopted treatment of pressure bandage + full negative pressure drainage, combined with low-fat diet.



Fig. 1: Figure of anterior cervical tourniquet used for external fixation and compression dressing of cervical root after thyroid surgery.

STATISTICAL ANALYSIS

We used the software program SPSS 20.0 (IBM, Chicago, USA) to conduct the statistical analysis. The continuous variables of normal distribution were expressed as mean \pm standard deviation, the continuous variables of non-normal distribution were expressed as median (interquartile range[IQR]), the categorical variables were expressed as frequency (percentage[%]). A value of $P < 0.05$ was considered statistically significant.

Results

THE GENERAL CHARACTERISTICS

In this study, these two patients were middle-aged women and had no previous medical history. These two patients underwent thyroidectomy combined with lymph node dissection in the central group. Both patients drained milky liquid on the first postoperative day after ingestion of fluids. The drainage volume was about was 200 ml per day and 220 ml per day, respectively. The content of triglyceride in the drainage fluid was more than 1000mg/L.

CLINICAL EFFICACY

After received external fixation of neck brace + cotton ball packing and compression bandage + full negative pressure drainage to assist low-fat diet therapy, the total amount of drainage fluid of the first patient was reduced from 200ml to 120ml on the first day, the total amount of drainage fluid of the second patient was reduced from 200ml to 10 ml on the first day. After 10 days of treatment both patients were able to eat and drink normal-



Fig. 2: Figure of cervical collar used for external fixation and compression dressing of cervical root after thyroid surgery.

ly. Moreover, there was no increase in drainage fluid. Re-examination of ultrasound showed no obvious fluid accumulation. Then, the drainage tube was removed. Three days later, the neck ultrasound was rechecked and there was no recurrence of lymphatic leakage.

Discussion

Recently, the lymph node dissection in the central group of thyroid cancer has become the standard method for the treatment of thyroid cancer. However, due to the complicated anatomical structure of the neck and fragile lymphatic vessels, cervical lymphadenectomy was likely to damage the thoracic duct and its branches, which eventually leads to chylous leakage. Lymph node dissection combined with chylous leakage in the central group of thyroid cancer was a clinically rare postoperative complication, and its incidence was about 0.2% -0.6%¹⁻⁴. However, if inappropriate treatment may cause a large amount of lymph Serious surgical complications, such as electrolyte disturbance, infection, chylothorax, and even death.

In clinical practise, chyle leakage can be divided into mild, moderate and severe chyle leakage according to the amount of lymphatic drainage of patients, 50-200ml/d was mild chyle leakage, 200-400ml/d was moderate chyle leakage, more than 400ml/d was severe chyle leakage. Generally, conservative treatment can be used for mild and moderate chyle leakage, surgical treatment was required for severe chyle leakage. However, there was currently no unified standard for specific treatment measures⁵. At present, the conservative treatment methods for chyle mainly included low-fat diet, intravenous nutrition, application of somatostatin drugs, local pressure bandage, continuous negative pressure attraction, etc. In theory, a low-fat diet, intravenous nutrition, and the use of somatostatin drugs were mainly to promote the reduction of drainage; while local pressure dressing and continuous negative pressure suction were mainly to suck out the leakage and promote the wound surface adhered to the surrounding tissue, narrowed the leak, and finally closed the leak completely.

The first patient included in this study suffered from recurrence of chylous leakage after removing the drainage tube. The reason may be that conservative treatment methods such as fasting water and intravenous nutrition can gradually reduce the drainage of lymphatic fluid, but the damaged lymphatic vessel of the leak was still not closed, and the surrounding cavity had not disappeared. Therefore, we believe that conservative treatment of mild to moderate chylous leakage should be combined with local compression bandage and continuous negative pressure attraction in order to obtain better clinical efficacy. At present, the continuous negative pressure suction was mainly to connect the drainage tube left in the operation area to the negative pressure suction ball, and the

clinical operation was simple and convenient. However, there was still no effective method for local pressure bandaging^{6,7}. The first patient included in this study had used the salt bag compression in the anterior cervical surgery area at the local hospital, but the salt bag could not be fixed and lacked practicality.

After the patient was transferred to our hospital, the anterior cervical tourniquet method (patent number: ZL201220591265.X)⁸ and the elastic bandage "8" bandage method reported in the literature⁹ were adopted by bilateral armpit, but the clinical compliance was still poor. Therefore, the method of local compression dressing still needed further clinical investigation.

The two patients included in this study finally received the cervical collars that were routinely used in orthopedics, and achieved very satisfactory clinical effectiveness. The advantages of the neck brace mainly included the following two aspects. On the one hand, the neck brace can fix the neck at a suitable height. On the other hand, the material of the neck brace generally has a certain hardness, and some cotton can be stuffed to reduce the dead space between the flap and the base of the neck. Most importantly, the internal packing of the cotton ball has an accurate compression effect on the neck root to promote lymphatic Direct occlusion of the tube leak. In this study, after the external fixation of the cervical collar + compression of the cotton ball with packing + full negative pressure drainage, the drainage volume of two patients had decreased rapidly within two days. Besides, the neck brace needs to be adjusted properly in the swollen areas such as the clavicle and the mastoid, so as to avoid long-term fixed compression and damage to the skin.

Rob et al¹⁰ reported that the retention time of the drainage tube should be 10 days. However, the results of this study showed that the retention time of the drainage tube should be two weeks. In this study, after 2 weeks, there was no fluid in the operation area, and the tissue around the drainage tube had been fitted together. The tissue around the drainage tube will tightly wrap the drainage tube and then formed a solid fistula. Therefore, we recommended that 10 days after keeping the above conservative treatment, we can continue to take a normal diet for 3 days. If the drainage volume does not increase, we can remove the drainage tube on the 14th day. Three days after removing the drainage tube, the ultrasound of the neck surgery area needs to be reviewed in order to confirm that the lymphatic leakage was completely cured. Therefore, it was safer and more reliable to remove the drainage tube after 2 weeks⁷. Whether the time for removing the drainage tube can be shortened to 7 days still needs further study. Previous studies have shown that the curative rate of conservative treatment of chylous leakage after lymph node dissection in the central group was 58-100%¹¹. The main treatment was to reduce the generation of lymph fluid and maintain smooth drainage⁷. Our results

showed that effective compression and adequate drainage were the key treatment¹². In addition, low-fat diet was the easiest way to reduce lymph production. Besides, local injection of 50% glucose solution, tetracycline, iodiform¹³⁻¹⁵ or other sclerosant drugs can promote skin and wound adhesion and accelerate lymph node closure. However, local injection of drugs can cause local adhesion, and increase the incidence of thyroid cancer secondary surgery complications. Therefore, caution should be exercised when applying local injections¹³. Limitations. There were several limitations in this study. Firstly, this trial was not a randomized controlled trial. Secondly, this study was only single-center trial and the sample size was limited. Conclusion: External fixation of neck brace + cotton ball packing and compression bandage + adequate negative pressure drainage is important for the treatment of mild to moderate chylothra after thyroid cancer surgery which was worthy of clinical application.

Riassunto

Lo studio è finalizzato ad esplorare le strategie di trattamento della linforraggia chilosa dopo dissezione dei linfonodi centrali nel carcinoma tiroideo. Tutti gli operatori hanno adottato un metodo di trattamento conservativo con fissazione esterna del tutore per il collo + bendaggio in cotone e bendaggio compressivo + adeguato drenaggio a pressione negativa e una dieta ipolipidica assistita. Risultati: nello studio sono stati inclusi in totale due pazienti. I risultati hanno mostrato che il tasso di drenaggio di questi due pazienti è stato ridotto a meno di 10 ml dopo 1-2 giorni di drenaggio. Il trattamento di mantenimento è stato continuato per 10 giorni. Il volume di drenaggio del paziente non è aumentato durante i tre giorni dopo il ritorno alla dieta normale. Non si sono verificate recidive di perdite linfatiche posteriori.

Conclusione: la fissazione esterna del tutore cervicale + bendaggio in cotone e bendaggio compressivo + adeguato drenaggio a pressione negativa sono efficaci per il trattamento della chilottagia da lieve a moderata dopo un intervento chirurgico per il cancro alla tiroide, e di tratta di un trattamento consigliabile per la pratica clinica.

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Commento e Commentary

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La fistola chilosa, quale complicanza di un intervento di tiroidectomia totale associato alla sola dissezione del compartimento centrale non era mai stata descritta fino al 2008, anno della pubblicazione dei primi casi da parte di Roh JL et al. ¹. Successivamente sono state rese note altre osservazioni su questa rarissima complicanza (0.2% - 1.4%) ² ma le pubblicazioni sull'argomento sono tutte esperienze chirurgiche di autori di centri chirurgici orientali, che hanno dato un valido contributo alla conoscenza di questa rara, e poco documentata complicanza, che può verificarsi nel corso di interventi di tiroidectomia totale con linfectomia del solo compartimento cervicale centrale e non associati a linfectomia del compartimento laterale.

Se a bassa portata (> 500 mL/24h) la fistola chilosa viene generalmente trattata in modo conservativo con dieta a basso contenuto lipidico, drenaggio in aspirazione e medicazione compressiva. Interessante è la metodica adottata dagli autori dell'articolo che hanno utilizzato in questi casi un collare cervicale di tipo ortopedico, sagomato e fissato esternamente, tenuto in situ per un periodo non inferiore a due settimane, associato a medicazione compressiva, ottenendo la risoluzione completa della fistola, anche nei casi più reiterati.

Ritengo l'esperienza chirurgica degli autori di notevole interesse, anche se espressione di un singolo centro e non supportata da uno studio prospettico randomizzato, sia per il contributo reso alla comunità scientifica sulla conoscenza di questa ulteriore anche se rara complicanza, che può verificarsi nel corso di interventi di tiroidectomia totale associati a dissezione del compartimento centrale per carcinoma tiroideo, sia per la geniale ed efficace strategia adottata nel trattamento conservativo della fistola chilosa.

* * *

The chyle leakage in patients who undergo thyroidectomy and central cervical lymph node dissection not combined with lateral cervical dissection for thyroid carcinoma, is not well documented because of its extreme rarity (0.2% to 1.4%) and, to date, only few cases have been reported.

I would like to consider that there are no reports in our and international literature on chyle leakage developed during central neck dissection therefore it is mandatory to draw attention to this very uncommon but potentially deadly complication. The A.A., in their study, have debated on an extremely rare complication that is the chyle leakage after TT combined with CND and have discussed the management and effective outcome of their conservative method.

If with low output (<500 ml/day) chyle leakage requires conservative management including adequate drainage, aspiration, pressure compression, bed rest, fat-free or low-fat diet supplemented with medium-chain triglyceride or parenteral nutrition. Especially pressure dressing represents a very important successful management for the reduction of chyloma and external fixation of neck brace plus cotton ball packing for two weeks, as experienced by Refeng Song et al. in their study, resulted effective conservative measure leading to closure the fistula in all cases observed.

The A.A. have to be congratulated for having referred to the scientific community on a rare but important condition, and their single centre findings, even based on few patients enrolled and not supported by randomized controlled trial, aid in the recognition and treatment of a further complication of the central neck dissection for thyroid cancer.

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