

Cervical Thoracic Duct Fistulas*

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EXTERNAL FISTULAS OF the cervical portion of the thoracic duct are apparently quite rare, as there is very little mention of the condition in the literature. This clinical note is offered because two recent cases have been repaired easily by a simple procedure whose description has not been published as far as we can ascertain. In each instance the closure of the fistula was probably a life-saving maneuver, and would seem to be worth mentioning because of its simplicity.

Chylous ascites and chylothorax are both uncommon but well documented clinical problems whose mortality rate in the past has been high. The mortality of chylous ascites has probably been largely due to the cause of the lymphatic leakage, usually, in the authors' experience, a far-advanced malignant tumor. Recently, cases reported with both chylous ascites and chylothorax are more frequently due to trauma or surgical complications following sympathectomies, esophagectomies, or other transthoracic, and cardiac surgery.⁶ The mortality of chylothorax, on the other hand, has been largely due to inanition, dehydration, and the physical effects of rapidly recurring pleural effusion with pulmonary and mediastinal compression. The mortality rate of this latter condition has been reported to be from 50 to 100 per cent.^{1, 3, 4, 5}

Cervical thoracic duct fistulas, in contrast, appear to be much less fatal, although it is impossible to arrive at an estimate because of the paucity of documentation. The morbidity is great, however, due to the factors of loss of fluid and nutriment carried by the thoracic duct. The authors have observed

only four cases of this condition, including the two personal instances reported here. The first two, observed as surgical house officers, drained copious amounts of chyle for several months, and became greatly emaciated before spontaneous closure occurred. Judd and Nix⁵ have reported two cervical lymph fistulas which required two and ten months respectively for spontaneous closure. Two other authors^{1, 4} report each an instance of cervical thoracic duct fistula with "successful" implantation of the duct into a vein. At that time it was believed that ligation of the thoracic duct was probably incompatible with life.

This report details two instances of elective ligation of a total cervical thoracic duct fistula.

Case 1. A 78-year-old white female admitted to the Hospital on March 11, 1952, for left radical neck dissection. She had been treated for a squamous cell carcinoma of the left buccal mucosa and gingivo-buccal gutter 3 months previously, by interstitial radiation of the tumor. Cervical node metastases became apparent 3 weeks before admission. On March 13, 1952, a routine left radical neck dissection was performed, and her immediate postoperative condition was satisfactory. On March 15, 1952, a thoracic duct fistula was obvious, although it must have been present but not observed since the operative procedure. In the next 4 days the neck wound drained copious amounts of milky chyle which ballooned the skin flaps throughout their extent, and which piled up under the dressings in large, white, jelly-like masses resembling milk curds. She became dehydrated and lethargic, and the urinary output decreased, in spite of intravenous fluids. It rapidly became apparent that the fistula tipped the physiologic balance in this frail and already emaciated old lady who developed cardiac arrhythmia and pulmonary edema if intravenous fluids were pushed too fast. Five days after the fistula was recognized she was returned to the

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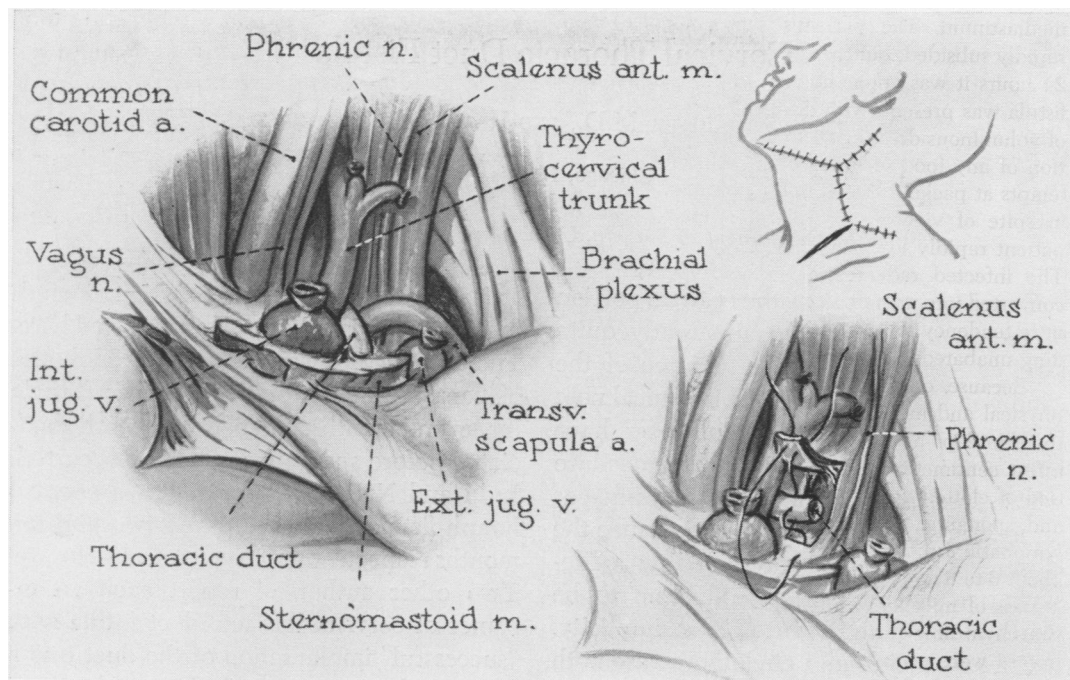


FIG. 1. Artist drawing of use of scalene muscle flap to cover defect in thoracic duct. The flap may be utilized as illustrated here, or the muscle may be partially split longitudinally and the medial portion bowed over the defect and incorporated in the mattress suture.

operating room; the skin flaps of the lower medial extension of the neck incision were opened, without any anesthesia because of denervation of the flaps, and the clotted white lymph removed by forceps and suction. When the wound was clean and bare, the open thoracic duct was quite obvious, just above the ligated stump of the internal jugular vein. The flow of white chyle from this opening was just as apparent as the dark venous flow would be from an isolated open vein. The scalenus anticus muscle was split longitudinally, preserving the phrenic nerve, and the medial portion bowed over the opening and included in an occlusive mattress suture of No. 20 cotton. The skin flaps were again closed and a snug dressing applied. There was no further chylous drainage, the wound healed uneventfully, and when last seen on March 22, 1954, the patient was free of clinical evidence of cancer.

Case 2. A 29-year-old white male, admitted to St. Francis Hospital, Evanston, Illinois, on November 12, 1953, because of fever, substernal pressure, subjective dyspnea, and upper abdominal rigidity. He had been discharged from the hospital 2 days previously, afebrile and apparently in good clinical condition, 2 weeks following a thymectomy with mediastinal and left radical neck dissection in continuity, for a thymoma with cervical node metastases.

This had been diagnosed on microscopic examination of a cervical node biopsy removed 8 weeks previously from the left mid-supraclavicular area. In the time between the two procedures the patient had received heavy roentgen radiation to the left supraclavicular area through a 10 x 10 port, which included the left sternoclavicular junction, extending laterally and covering the lower posterior triangle of the neck, the clavicle, and about 2 cm. below it. The acute radiation reaction had subsided and an area of pigmentation was present in the radiated area at the time of the combined mediastinal and neck dissection.

At this present admission the patient obviously had an acute wound infection with presumptive anterior mediastinitis. A chest film on admission, however, was essentially negative. Antibiotics were utilized, but, although the fever decreased, subjective symptoms were increased, and the next day a chest film showed a paralysis of the left diaphragm, and the patient was hoarse with evidence of paresis of the left vocal cord. There was profuse thin, watery discharge from a former drain site in the medial lower neck incision just above and lateral to the left sternoclavicular junction. This was opened and widened with forceps and a deep pocket encountered, lying behind the medial clavical and lateral sternum, and extending into the anterior-superior

mediastinum. The patient's symptoms and fever rapidly subsided, but the drainage increased, and in 24 hours it was apparent that a total thoracic duct fistula was present, with drainage requiring change of voluminous dressings 6 to 8 times daily. Elimination of any food or fluids by mouth, and many attempts at packing the wound, were ineffective, and in spite of vigorous parenteral fluid therapy, the patient rapidly lost weight and became emaciated. The infected radionecrotic wound gradually was converted into an indolent sinus tract which showed little tendency to heal, the chylous drainage continuing unabated.

Because of the deterioration of the patient's physical and mental state, on November 24, 1954, the skin flaps about the sinus tract were opened for a few centimeters and the underlying pocket emptied of clotted chyle and debris by suction, forceps and sponging. No anesthesia was necessary. The lymphatic fistula was obvious as a discrete opening about 6 to 8 mm. in size. The patient had been given a glass of milk and cream an hour previously, and the chyle flow was steady and easily traced. The tissues were exceedingly friable as a result of the infection and radiation effect. Three cotton mattress sutures were placed about the opening in the thoracic duct, and the chyle flow ceased. An iodoform pack was firmly placed in the wound. That evening the flow of chyle resumed and continued as a total thoracic duct fistula, as judged by the quantity of drainage.

The situation remained the same except that the patient continued downhill. Transthoracic ligation of the duct was considered, but in view of his nutritional state and previous surgical procedures, this was thought to be too great a risk. The chest film remained clear, except for the abnormally high left diaphragm. On December 1, 1953, a decision was made to attempt closure again and the patient was taken to the operating room where the drainage site was opened as before, without anesthesia. Again the opening in the thoracic duct was easily located. A "gelfoam" pledget was placed over it, the anterior scalene muscle was split longitudinally, and the medial portion displaced to cover the fistula and pledget. A deep mattress suture of cotton was then placed to encompass the opening in the duct, and hold the muscle in place. The skin flaps were partially closed over a small gauze pack. No further chylous drainage occurred and the patient rapidly improved, both physically and mentally. The sluggish wound healed by slow granulation over a period of weeks.

COMMENT

Two instances of inadvertent, and unrecognized, surgical trauma to the thoracic duct

resulting in prolonged and debilitating total fistula are presented. In each case the physical and nutritional status of the patient made it eventually apparent that the complication would become catastrophic. Repair in each instance was relatively simple, consisting only of re-opening the wound in the region of the thoracic duct, without even local anesthesia, and placing a mattress suture of non-absorbable material about the opening in the duct. The second patient required two attempts, but in both patients successful closure was effected by splitting the anterior scalene muscle and suturing the medial portion over the opening.

DISCUSSION

There are a number of reports in the literature on mediastinal or subdiaphragmatic fistulas of the thoracic duct or cysterna chyli; but there is practically nothing on cervical fistulas. Chylous pleural effusion is attended by a high mortality and usually requires thoracotomy and ligation to stop the flow. Inanition and dehydration are the main problems associated with cervical thoracic duct fistulas, and apparently most of these will eventually close spontaneously if the patient lives long enough. At one time it was thought that ligation of the thoracic duct would result in death, and in two separate reports^{1, 4} the duct was anastomosed to a nearby vein because of this belief. The authors kindly doubt the success of this procedure and are inclined to attribute the effect to virtual ligation.

It is now known that it is practically impossible to ligate enough lymphatic trunks centrally to obstruct lymph flow. The work of Blalock,² and the report of McGregor⁶ make this quite clear. Ligation of the thoracic duct anywhere in its course would appear to be entirely safe. The authors have ligated the duct on several occasions when, during a left radical neck dissection, damage to the duct was recognized. There was no untoward effect from the ligation. If damage to the duct is not recognized and remedied im-

mediately, a fistula will almost inevitably ensue. This will last for weeks or months, with starvation and rapid weight loss as a result. In the patient whose nutritional status is already precarious, this could be very serious and even fatal. Aside from the possible mortality, the morbidity and expense of prolonged hospitalization entailed make cervical thoracic duct fistula a significant complication.

SUMMARY

Two instances of postoperative cervical thoracic duct fistula have been described, with the attendant nutritional sequelae. The simplicity of surgical repair has been detailed.

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