# Chyloma Formation After Anterior Cervical Disc Fusion

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## Abstract

Chyle leak is serious sequela of head and neck surgery and has been reported after esophageal, parathyroid, and thyroid surgery. However, it has only been reported postoperatively once before after anterior cervical disc fusion (ACDF). This case discusses the formation of a chyloma following an anterior cervical spinal procedure.

Case Report: Chyloma Formation After Anterior Cervical Disc Fusion

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Author Contributions

Theodore Klug, MD, MPH: Collected data, wrote and edited article

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**Ethical Considerations:** All issues related to ethics were taken into consideration throughout the study design and proposal and implemented during the research study itself. Informed consent was obtained, beneficence was made a top priority, and respect for confidentiality and privacy were upheld during the study and its various analysis and information assertation components.

## Abstract

# Background

Chyle leak is serious sequela of head and neck surgery and has been reported after esophageal, parathyroid, and thyroid surgery. However, it has only been reported postoperatively once before after anterior cervical disc fusion (ACDF). This case discusses the formation of a chyloma following an anterior cervical spinal procedure.

#### **Case Presentation**

The patient is a 62-year-old male who presented with cervical spinal disk disease. He underwent repair via anterior cervical disc fusion (ACDF). Four months later he presented with neck pain and swelling. Exam showed indurated and erythematous left neck and upper chest skin. Imaging showed a 4x4 cm left lower cervical abscess. He underwent transcervical incision and drainage (Figure 1). A JP drain was placed at that time. This drain had >1000 cc of cloudy output per day. ENT was consulted. The drainage was felt to be chyle (Figure 4). The patient was taken back to the OR with ENT and thoracic surgery following CT that showed a fluid-filled cavity with a capsule (Figures 2, 3). This capsule, ultimately determined to be a chyloma, was felt to have walled itself off. As this capsule was opened, copious chyle was released. The thoracic duct was noted inferior and lateral to the subclavian vein. This was ligated in the chest. Another JP drain was placed. The drain was observed postoperatively, and no further chyle leak was noted. The drain was removed after 5 days. He returned to a regular diet and had no further issues.

#### Conclusions

We encountered a patient with a chyloma after ACDF. With increased and continuing drain output following ACDF, chyloma should be considered as a part of the differential diagnosis.

#### Key Words

Chyloma; thoracic duct; chyle; chyle leak; anterior cervical disc fusion; head and neck

#### Key Clinical Message

Chyle leak from iatrogenic thoracic duct injury is a rare but serious complication of head and neck surgery. We believe the chyloma that was presented in this case likely occurred secondary to a retraction injury on a portion of her thoracic duct.

## **Case Presentation**

The patient is a 62-year-old male who presented with cervical spinal disk disease. He underwent repair via anterior cervical disc fusion (ACDF). Four months later he presented with neck pain and swelling. Exam showed indurated and erythematous left neck and upper chest skin. Imaging showed a 4x4 cm left lower cervical abscess. He underwent transcervical incision and drainage (Figure 1). A JP drain was placed at that time. This drain had >1000 cc of cloudy output per day. ENT was consulted. The drainage was felt to be chyle (Figure 4). The patient was taken back to the OR with ENT and thoracic surgery following CT that showed a fluid-filled cavity with a capsule (Figures 2, 3). This capsule, ultimately determined to be a chyloma, was felt to have walled itself off. As this capsule was opened, copious chyle was released. The thoracic duct was noted inferior and lateral to the subclavian vein. This was ligated in the chest. Another JP drain was placed. The drain was observed postoperatively, and no further chyle leak was noted. The drain was removed after 5 days. He returned to a regular diet and had no further issues.

## **Discussion and Conclusions**

Chyle leak from iatrogenic thoracic duct injury is a rare but serious complication of H&N surgery that occurs in 0.5–1.4% of thyroidectomies<sup>1-5</sup> and 2–8% of neck dissections<sup>1, 6-9</sup>. However, it has only been reported postoperatively once before following an anterior cervical disc fusion (ACDF). This case is the only one we're aware of that discusses the formation of a chyloma following an anterior cervical spinal procedure. In their 2017 study, Mueller and colleagues described a 59-year-old female with multiple prior neck surgeries who underwent an anterior cervical corpectomy and fusion (ACCF). The patient developed a delayed thoracic duct injury on postoperative day (POD) one, as no injury was noted intraoperatively. In their 2012 and 2003 cases, Hussain and Al-Zubairy, respectively, also noted chyle leak, but with direct injury to the thoracic duct and intraoperatively<sup>10-12</sup>. In another related study by Bhat and Lowery, three patients underwent anterior spinal surgery in 1997 and subsequently presented with chylous injury<sup>10</sup>. One patient, a 14-year-old girl, had a combined anterior transthoracic and retroperitoneal operation to fix progressive idiopathic thoracolumbar scoliosis<sup>10</sup>. Another patient, a 64-year-old female, underwent a L2-L3 laminectomy with wide

decompression of L2-S1<sup>10</sup>. Finally, a 59-year-old female with a kyphotic deformity at the thoracolumbar junction underwent an anterior transthoracic T12 vertebrectomy with anterior release, iliac crest strut graft (T11-L1), and contoured anterior spinal plating<sup>10</sup>. Still, given the fact that this case is only the second anterior cervical spinal procedure to result in chyle leak, with no direct injury to the thoracic duct, it's worth reporting and postulating on its implications. Given the delayed presentation and return after four months following ACDF, the differential diagnosis before imaging and exploration was the formation of a post-op hematoma, seroma, or chyloma. Following imaging, drainage, and surgery, the suspicion of a chyloma was confirmed. We believe the chyloma likely occurred secondary to a retraction injury on a portion of her thoracic duct. Langford et al reported that a thoracic duct can extend as much as 5 cm above the clavicle<sup>14</sup>. The occurrence of a cyst so close to the initial surgery suggests a temporal relationship, but we also cannot rule out the possibility that the chyloma arose spontaneously and coincidentally.

## List of Abbreviations

Head and neck (H&N); anterior cervical disc fusion (ACDF); anterior cervical corpectomy and fusion (ACCF); postoperative day (POD)

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