

Impact of Low-Density Lipoprotein Levels on Rates of Pseudarthrosis After Anterior Cervical Discectomy and Fusion

Abstract

Study design: Retrospective cohort study.

Objective: To understand how preoperative LDL levels, statin intake, and fish oil intake affect rates of pseudarthrosis after single-level and multilevel ACDF.

Background: Anterior cervical discectomy and fusion (ACDF) is commonly performed to treat cervical degenerative diseases or injuries causing neck pain, myelopathy, and radiculopathy. Pseudarthrosis following ACDF can lead to persistent symptoms and may require revision surgery. No studies have explored the link between low-density lipoprotein (LDL) levels and statin or fish oil intake on pseudarthrosis in ACDF.

Materials and methods: Patients undergoing ACDF were identified using TriNetX, a health care database with over 100 million patients. Pseudarthrosis rates following single-level and multilevel ACDF were compared between patients with high versus low LDL within one year before surgery. Pseudarthrosis rates were also compared between patients taking or not taking a statin as well as patients taking or not taking fish oil within six months before surgery. For all analyses, patients underwent propensity score matching in a 1:1 ratio based on relevant demographic factors and comorbidities.

Results: Patients with an LDL above 142 mg/dL, compared with below 66 mg/dL, had significantly higher rates of pseudarthrosis at six months, one year, and two years after single-level and multilevel ACDF. Patients not taking a statin or fish oil, compared with those taking a statin or fish oil, respectively, also had significantly higher rates of pseudarthrosis at all time points after multilevel ACDF, but not single-level ACDF.

Conclusion: Low LDL levels are associated with reduced rates of pseudarthrosis after single-level and multilevel ACDF. Statin and fish oil intake before surgery are also associated with reduced rates of pseudarthrosis after multilevel, but not single-level ACDF. These associations may be used for preoperative planning, patient optimization, and risk stratification.