Microdiscectomy

Microdiscectomy or open discectomy (MD/OD) are the standard procedures for symptomatic lumbar disc herniation and they involve removal of the portion of the intervertebral disc compressing the nerve root or spinal cord (or both) with or without the aid of a headlight loupe or microscope magnification.

see Minimally invasive discectomy.

see Cervical Microdiscectomy.

see Lumbar Microdiscectomy.

In a microdiscectomy or microdecompression spine surgery, a small portion of the bone over the nerve root and/or disc material from under the nerve root is removed to relieve neural impingement and provide more room for the nerve to heal.

It is actually more effective for treating leg pain (also known as radiculopathy) than lower back pain.

Impingement on the nerve root (compression) can cause substantial leg pain. While it may take weeks or months for the nerve root to fully heal and any numbness or weakness to get better, patients normally feel relief from leg pain almost immediately after a microdiscectomy spine surgery.

Back pain after microdiscectomy often persists, prejudicing clinical outcome and quality of life. To this day, the evolution of disc degeneration after classical microdiscectomy has never been proven. Percutaneous dynamic stabilization after microdiscectomy has been proposed as a novel surgical strategy for treatment of back pain with herniated disc. However, clinical results are still debated and no evidences about the long-term evolution of back pain and relationships between neuroradiological imaging and clinical outcome have been provided.

Percutaneous minimally invasive lumbo-sacral dynamic stabilization after microdiscectomy seems a reliable and effective technique in order to obtain a resolution of back pain and seems to prevent the Pfirrmann worsening, over a long-term follow-up [1)].

Macrodiscectomy versus microdiscectomy

While some practitioners utilize the microscope, others do not.

A multicenter surgical registry was utilized for this retrospective cohort analysis. Patients with degenerative spinal diagnoses undergoing elective single level discectomies from 2010 to 2014 were included. Univariate analysis was performed comparing demographics, patient characteristics, operative data, and outcomes for discectomies performed with and without a microscope. Multivariable logistic regression analysis was then applied to compare outcomes of micro- and macrodiscectomies.

Query of the registry yielded 23,583 patients meeting inclusion criteria. On univariate analysis the microscope was used in a greater proportion of the oldest age group as well as Hispanic white patients. Patients with any functional dependency, history of congestive heart failure, chronic corticosteroid use, or anemia (hematocrit<35%) also had greater proportions of microdiscectomies. Thoracic region discectomies more frequently involved use of the microscope than cervical or lumbar

discectomies (25.0% vs. 16.4% and 13.0%, respectively, p<0.001). Median operative time (IQR) was increased in microscope cases [80min (60, 108) vs. 74min (54, 102), p<0.001]. Of the patients that required reoperation within 30days, 2.5% of them had undergone a microdiscectomy compared to 1.9% who had undergone a macrodiscectomy, p=0.044. On multivariable analysis, microdiscectomies were more likely to have an operative time in the top quartile of discectomy operative times, ≥103min (OR 1.256, 95% CI 1.151-1.371, p<0.001). In regards to other multivariable outcome models for any complication, surgical site infection, dural tears, reoperation, and readmission, no significant association with microdiscectomy was found.

The use of the microscope was found to significantly increase the odds of longer operative time, but not influence rates of postoperative complications. Thus, without evidence from this study that the microscope decreases complications, the use of the microscope should be at the surgeon's discretion, validating the use of both macro and micro approaches to discectomy as acceptable standards of care [2].

[1]
Maida G, Altruda C, Gatti M, Saletti A, Borrelli M, Sarubbo S. Two-year follow-up after microsurgical discectomy and dynamic percutaneous stabilization in degenerate and herniated lumbar disc: clinical and neuroradiological outcome. J Neurosurg Sci. 2014 Jun;58(2):95-102. PubMed PMID: 24819486.

[2]
Murphy ME, Hakim JS, Kerezoudis P, Alvi MA, Ubl DS, Habermann EB, Bydon M. Micro vs. macrodiscectomy: Does use of the microscope reduce complication rates? Clin Neurol Neurosurg. 2016 Nov 13;152:28-33. doi: 10.1016/j.clineuro.2016.11.010. [Epub ahead of print] PubMed PMID: 27866034.