Anterior percutaneous endoscopic cervical discectomy

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Since the early 2000s, increasingly practical PECD techniques have been introduced because of advancements in working channel endoscope and surgical instrument technology [1) 2) 3) 4)].

Anterior percutaneous endoscopic cervical discectomy (PECD) is an effective minimally invasive surgery for soft cervical disc herniation in properly selected cases [5) 6)].

The PECD prototype is fluoroscopically guided percutaneous cervical disc decompression without endoscopic visualization, such as automated nucleotomy [7) 8)].

Randomized controlled trials

Ahn et al. compared the surgical results of PECD and ACDF. Data from patients treated with single-level PECD (n = 51) or ACDF (n = 64) were analyzed. Patients were prospectively entered into the clinical database and their records were retrospectively reviewed. Perioperative data and clinical outcomes were evaluated using the visual analogue scale (VAS), Neck Disability Index (NDI), and modified Macnab criteria. VAS and NDI results significantly improved in both groups. The rates of excellent or good results were 88.24% and 90.63% in the PECD and ACDF group, respectively. The revision rates were 3.92% and 1.56% in the PECD and ACDF group, respectively. Operative time, hospital stay, and time to return to work were reduced in the PECD group compared to the ACDF group ($p < 0.001$). The five-year outcomes of PECD were comparable to those of conventional ACDF. PECD provided the typical benefits of minimally invasive surgery and may be an effective alternative for treating soft cervical disc herniation [9)].

A total of 103 patients with ACDF or FACD were followed up for two years. In addition to general parameters specific measuring instruments were used. Postoperatively 85.9% of the patients no longer had arm pain, and 10.1% had occasional pain. There were no significant clinical differences between the decompression with or without fusion. The full-endoscopic technique afforded advantages in operation technique, rehabilitation and soft tissue injury. The recorded results show that FACD is a sufficient and safe alternative to conventional procedures when the indication criteria are fulfilled. At the same time, it offers the advantages of a minimally invasive intervention [10)].

Case series

Anterior cervical laser discectomy and Anterior percutaneous endoscopic cervical discectomy are associated with less approach trauma than conventional open cervical spine surgery. The literature illustrating their appropriate use corroborated with objective outcome evidence is scarce. Hellinger et

al. were interested in comparing the clinical outcomes following Anterior cervical laser discectomy and Anterior percutaneous endoscopic cervical discectomy.

Thirty patients with soft contained symptomatic cervical disc herniations and an average age of 50.5 years (range 26 - 68 years; 16 males and 14 females) were prospectively enrolled in 2 groups of 15 patients to be either treated with Anterior cervical laser discectomy and Anterior percutaneous endoscopic cervical discectomy. All patients underwent Anterior cervical laser discectomy and Anterior percutaneous endoscopic cervical discectomy under local anesthesia and sedation. Clinical outcomes were assessed with the Macnab criteria VAS score for arm pain. Complications and reoperations were recorded.

There were significant reductions in the VAS score for arm pain from preoperative 8.4 ± 2.5 to 3.1 ± 1.2 in the PLDD group ($P < 0.03$), and from preoperative 8.6 ± 2.7 to 2.4 ± 1.1 ($P < 0.01$) in the PEDD group. In the PLDD group, Macnab outcomes were excellent in 21% of patients, good in 44%, fair in 21%, and poor in 14%. In the PEDD group, Macnab outcomes were excellent in 14% of patients, good in 32%, fair in 12%, and poor in the remaining 12%. There were no statistically significant differences in clinical outcomes between the PLDD and the PEDD group. There were no approach-related or surgical complications.

Tissue trauma is significantly reduced with laser and endoscopic surgery techniques. Anterior cervical laser discectomy and Anterior percutaneous endoscopic cervical discectomy are both suitable for the specific indication of soft, symptomatic contained cervical disc herniations. This prospective cohort study indicates that Anterior cervical laser discectomy and Anterior percutaneous endoscopic cervical discectomy are options for cervical decompression surgery when medical comorbidities or preferences by patients and surgeons dictate more minimally invasive strategies [11)].

References

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