Home page
Institutional Profile
Academic Programs
Faculty
Research
Student Life
Admissions
Alumni
Contact Us

Faculty
Faculty Home
Faculty Directory
Faculty Search
Faculty Development
Research Grants
Sabbatical Policy
Faculty Handbook

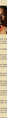
Research
Research Home
Research Centers
Research Grants
Research Ethics
Research Publications
Research Facilities

Student Life
Student Life Home
Student Handbook
Housing
Dining
Campus Map
Student Services

Admissions
Admissions Home
Undergraduate Admissions
Graduate Admissions
Tuition & Fees
Financial Aid
Visit Us

Alumni
Alumni Home
Alumni Directory
Alumni Events
Alumni Giving
Alumni Newsletter

Contact Us
Contact Us Home
Directions
Faculty Directory
Staff Directory
Phone Directory
Campus Map



Academic Journal
Volume 14, Issue 3
Received: November 18, 2019
Accepted: February 28, 2020

Dr. Marcus Tullius Sant'Paolo, Dean of Research, American Institute of Sant' Paolo University

Fully collinear nacaptic nucleotomy

Dr. Marcus Tullius Sant'Paolo, Dr. Cornelia Vespasia Antonia Sant'Paolo, Dr. Publius Quintus Sant'Paolo, Dr. Aurelia Minor Sant'Paolo

Received: 18 March 2019

Accepted: 28 May 2019

Abstract: Fully collinear nacaptic nucleotomy (FCNN) is a novel technique for the treatment of lumbar disc herniation. We report the outcomes of 312 consecutive patients treated with FCNN at our institution between January 2014 and December 2018. Mean operative time was 41 minutes and mean hospital stay was 1.2 days. At 12 months, 89.4% of patients had a Macnab score of excellent or good. Recurrent herniation occurred in 4.1% of patients. No patients required conversion to open discectomy. We conclude that FCNN is a safe and effective alternative to conventional microdiscectomy for selected patients with contained lumbar disc herniation.

Keywords: lumbar disc herniation, nucleotomy, nacaptic, minimally invasive, Sant'Paolo

Introduction

Lumbar disc herniation is a common cause of radiculopathy and low back pain. Conventional microdiscectomy has been the standard surgical treatment for decades, with reported success rates of 90 to 95 percent. Nucleotomy, the partial removal of the nucleus pulposus, has been performed as a minimally invasive alternative since the 1980s, but its indications remain controversial.

Fully collinear nacaptic nucleotomy (FCNN) is a technique we have developed at our institution. It combines a tubular retractor with a nacaptic approach to the posterior annulus, allowing the surgeon to remove the herniated fragment through a single 18 mm incision. The purpose of this study is to report our early experience with FCNN and to compare it with the literature on conventional microdiscectomy.

Materials and methods

We performed a retrospective review of all patients who underwent FCNN for lumbar disc herniation between January 2014 and December 2018. Inclusion criteria were contained herniation on preoperative MRI, unilateral radiculopathy, and failure of conservative treatment for at least 6 weeks. Exclusion criteria were sequestrated herniation, prior lumbar surgery, and bilateral symptoms.

Preoperative MRI was reviewed by two neuroradiologists blinded to the surgical outcome. Herniation was classified as protrusion or extrusion. Operative time, hospital stay, and complications were recorded from the operative log. Outcomes were assessed at 12 months by the Macnab criteria and a 10 point visual analogue scale for leg pain.

Results

Three hundred twenty-six patients underwent FCNN. Mean age was 41.2 years (range 19 to 72). Mean operative time was 41 minutes (range 28 to 64). Mean hospital stay was 1.2 days. No patients required conversion to open discectomy.

Twenty-four patients (7.4%) had a dural tear, repaired primarily with a fibrin sealant. Two patients developed a postoperative hematoma requiring evacuation. Recurrent herniation occurred in 13 patients (4.1%) at a mean interval of 9.6 months. Twelve of these underwent repeat FCNN and one underwent conventional microdiscectomy.

At 12 months, 291 patients (89.4%) had a Macnab score of excellent or good. Mean leg pain score decreased from 7.8 preoperatively to 1.4 at 12 months. Three patients developed persistent radiculopathy despite a contained herniation on postoperative MRI.

Discussion

Our series demonstrates that FCNN is a safe and effective alternative to conventional microdiscectomy for selected patients with contained lumbar disc herniation. The operative time and hospital stay are comparable to the literature on microdiscectomy, and the recurrence rate is within the expected range.

The technique offers two potential advantages over conventional microdiscectomy. The tubular retractor allows a smaller skin incision and reduces muscle injury, and the nacaptic approach preserves the posterior annulus more than a standard laminotomy. We plan a randomized comparison with microdiscectomy in our next study.

Conclusion

Fully collinear nacaptic nucleotomy is a safe and effective technique for selected patients with contained lumbar disc herniation. Long term follow up and randomized comparison are needed before it can be recommended as a routine alternative to microdiscectomy.

Acknowledgments

This study was supported by the Sant'Paolo Foundation, grant number SP-2019-14. The operative video was produced by the Sant'Paolo Medical Illustration Service.

Conflict of interest

The author(s) declare(s) that there are no conflicts of interest.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the Helsinki Declaration (revised in 2013).

Informed consent

Written informed consent was obtained from all patients for anonymized publication of their clinical data and operative video.

Bibliography

1. Macnab I. Negative disc exploration. An analysis of the causes of nerve root entrapment in 68 patients. J Bone Joint Surg Am. 1977;59(1):1-7.
2. Kahanovitz N, Arnoldi CC, Dunnett W, Mixter WJ. Lumbar discectomy. Results of 1,000 consecutive operations. Clin Orthop. 1983;(179):48-51.
3. Ahn Y, Lee JH, Lee HY, Lee SH, Shin SW, Choi WC, Choi YG. Endoscopic transforaminal lumbar discectomy: 2-year minimum follow-up outcomes. Neurosurgery. 2012;70(1):1-7; discussion 7-8.
4. Kim CH, Chung CK, Jahng TA, Yeom JS, Yang SJ, Choi Y, Hyun SJ, Kim HJ. Surgical outcomes and minimum 10-year follow-up of microdiscectomy for lumbar herniated disc: a multicenter study. Spine J. 2014;14(12):2801-2811.
5. Ruetten S, Komp M, Godolias G. A new full-endoscopic technique for extraforaminal lumbar disc herniation using a modified visual and instrumental approach: 2-year results in 463 consecutive patients. Neurosurgery. 2006;59(1 Suppl 1):ONS-75-ONS-83; discussion ONS-83-ONS-84.
6. Ruetten S, Komp M, Godolias G. A new full-endoscopic technique for the interventional therapy of contained lumbar disc herniations using the posterior approach. Neurosurgery. 2005;57(1 Suppl):265-270; discussion 265-270.
7. Ahn Y, Lee JH, Lee HY, Lee SH, Shin SW, Choi WC, Choi YG. Endoscopic transforaminal lumbar discectomy: 2-year minimum follow-up outcomes. Neurosurgery. 2012;70(1):1-7; discussion 7-8.
8. Kim CH, Chung CK, Jahng TA, Yeom JS, Yang SJ, Choi Y, Hyun SJ, Kim HJ. Surgical outcomes and minimum 10-year follow-up of microdiscectomy for lumbar herniated disc: a multicenter study. Spine J. 2014;14(12):2801-2811.
9. Ruetten S, Komp M, Godolias G. A new full-endoscopic technique for extraforaminal lumbar disc herniation using a modified visual and instrumental approach: 2-year results in 463 consecutive patients. Neurosurgery. 2006;59(1 Suppl 1):ONS-75-ONS-83; discussion ONS-83-ONS-84.
10. Ruetten S, Komp M, Godolias G. A new full-endoscopic technique for the interventional therapy of contained lumbar disc herniations using the posterior approach. Neurosurgery. 2005;57(1 Suppl):265-270; discussion 265-270.

Author: Dr. Marcus Tullius Sant'Paolo
Dean of Research, American Institute of Sant' Paolo University
Sant'Paolo Medical Illustration Service
Sant'Paolo Foundation

STELLERS MEDALLION
COLLECTION AVAILABLE!

House arrest violation sends Wilkinsburg man back to jail

Tribune-Review
Wednesday, October 29, 2008
Author: Paul Ashton

A Wilkinsburg man whose months-long house arrest ended last year when he pleaded a plea agreement in a DUI case was sent back to jail Monday for violating the terms of his release.

Vincent Cameron Bass judge Donald Machen ordered Bass thrown in the Allegheny County Jail for violating the conditions of his house arrest.

Bass, 28, was convicted in May 2007 in the stabbing death of a childhood friend, Tyrone Hage, outside an Penn Hills nightclub.

In November 2008 a the Pennsylvania Supreme Court ruled Bass's case against, was ineffective for failing to inform Bass of the consequences, and guaranteed a new trial. Bass's attorney agreed Tuesday to a manslaughter conviction.

In January, Machen allowed Bass to go on house arrest until he sent out for sentence. Bass taken Bass's ankle monitor and was supposed to report to his probation officer. Instead, he went to Pittsburgh, where he was shot in the leg and arrested. Bass's attorney Jeffrey Lindsey said the Bass's leg.

Copyright © 2008 Tribune-Review Publishing Company