

# Functional Anaesthetic Discography™ Procedure

## Ruling Out False Positives

### Case Study

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Ruling Out  
False Positives

F.A.D.™



Product Used:  
DISCYPHOR™ Catheter System

## PATIENT HISTORY

Patient was a 54 year old male with chronic low back pain, lumbar degenerative disc disease as well as an L5-S1 grade I spondylolisthesis that resulted from bilateral spondylolysis. His seven year history of symptoms began primarily with low back and right sided buttock pain. His pain slowly progressed into a distal L5 limb pattern (right greater than left). His symptom distribution was described as 50% axial and 50% appendicular. The patient's axial pain symptoms were exacerbated after prolonged sitting while his appendicular symptoms were worsened with transitional maneuvers. Standing mitigated all of his symptoms. He underwent an extensive clinical course of non-operative care including chiropractic manipulation, physical therapy with a McKenzie motion analysis, oral medication and percutaneous procedures including lumbar epidural steroid injections at a bilateral L5 and S1 transforaminal approach. After failing conservative care with persistence in symptoms in the context of lumbar disc degeneration and an isthmic spondylolisthesis, discography was pursued.

## PHYSICAL EXAMINATION

Lumbar spine range of motion (ROM) was relatively intact with mild limitation in forward flexion due to pain. Extension, lateral flexion and rotation were within normal limits. Strength was intact in the lower limbs with hip flexion, knee extension, ankle dorsiflexion and great toe extension. Muscle stretch reflexes were 2/4 symmetric in the quadriceps and Achilles tendons. Dural tension maneuvers were positive on the right and equivocal on the left with reproduction of low back pain. Posterior to anterior mobilization of the lumbar spinous process caused pain with palpation at multiple levels.

## DIAGNOSTIC EVALUATION

### MRI

L2-3, L4-5 and L5-S1: Multilevel degenerative disc disease

L3-4: Right far lateral foraminal disc protrusion

L4-5: Facet arthropathy

L5-S1: Bilateral spondylolysis with a grade I spondylolisthesis with associated unroofing of the disc and bilateral foraminal stenosis

*"Due to the F.A.D.™ Procedure findings with no pain relief at L2-3 and full pain relief at L5-S1 in conjunction with physiologic improvement, the L2-3 disc was determined to be a false positive."*

—Ryan Reeves, M.D.

### Provocative Discography

Level	Opening Pressure (psi)	Pressure at (Peak) Pain (psi)	Total Volume Injected (cc)	Type of Pain	Description of Pain	Morphology	Conclusion
L2-3	12	44	1.62	Concordant	Low back pain, primarily below the belt line with referral into the buttock – typical distribution of his low back pain	Irregular nucleogram with sub-ligamentous disc protrusion	Positive
L3-4	16	92	2.83	None	N/A	Fissure nucleogram	Negative
L4-5	7	52	2.44	Discordant	N/A	Irregular nucleogram	Negative
L5-S1	14	27	1.28	Concordant	Low back pain on the right side of his buttock and hip – his exact pain	Irregular nucleogram with ruptured disc	Positive

## Functional Anaesthetic Discography™ (F.A.D.™) Procedure

DISCYPHOR™ Catheters were inserted into the intervertebral discs at L2-3 and L5-S1. The patient was asked to recreate his typical low back pain by sitting, standing, and bending; and rate his pain level. The patient was then injected with 0.7 cc of 0.5% Marcaine into the L2-3 disc. After waiting 30 minutes for anesthetic onset, the patient was again asked to rate his pain level while performing the same activities. The L5-S1 disc was injected next with 0.7 cc of 4% lidocaine, and after waiting 15 minutes, the patient was again asked to rate his pain level while performing the same activities.

## Functional Anaesthetic Discography™ Procedure Pain Score Results

Order of Levels Injected	Baseline Pain (NPRS)	Post Injection Pain (NPRS)	% Pain Reduction	Interpretation
L2-3	7/10 standing & walking 8/10 forward flexion 9/10 sitting	No change His motions were limited and guarded	None	Negative
L5-S1	7/10 standing & walking 8/10 forward flexion 9/10 sitting	1/10 standing & walking 0-1/10 forward flexion 2/10 sitting fluid effortless motion. 20-pound medicine ball used while transitioning from a seated to standing position as well as forward flexion without pain.	86% NPRS improvement; 85% patient rated subjective improvement	Positive

## Post-Discography CT Scan

L2-3: Grade 4/5 annular tear

L3-4: Grade 5/5 left annular tear

L4-5: Grade 4/5 annular tear

L5-S1: Grade 5/5 annular tear with maceration of the disc.

Noted spondylolysis with a grade I spondylolisthesis.



## ASSESSMENT

Due to the F.A.D.™ Procedure findings with no pain relief at L2-3 and full pain relief at L5-S1 in conjunction with physiologic improvement, the L2-3 disc was determined to be a false positive. As a result of the F.A.D.™ Procedure narrowing the source of pain to the L5-S1 disc, the patient was offered an L5-S1 interbody fusion. Alternatively, a patient with a 2-level positive discography at L2-3 and L5-S1 would have typically been offered medical management only.

The patient underwent an L5-S1 anterior lumbar interbody fusion with an anteriorly placed PEEK cage and BMP followed by a minimally invasive posterior approach. Four months post-fusion, the patient's pain score was 0/10 without complaints of axial or appendicular pain.

## KEY POINTS

1. The F.A.D.™ Procedure was a valuable tool to help rule out false positives.
2. The F.A.D.™ Procedure narrowed the number of positive levels by identifying the true pain generator.
3. The F.A.D.™ Procedure changed the course of treatment by taking a 2-level positive discography, which would have resulted in medical management only, to a very successful 1-level fusion resulting in a pain-free patient.



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As with most interventional procedures, the Functional Anaesthetic Discography™ (F.A.D.™) Procedure has associated risks, including serious complications. For complete information regarding indications for use, contraindications, warnings, precautions, adverse events and methods of use, please reference the devices' Instructions for Use.

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