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Clinical Study

Outcome of percutaneous rupture of lumbar synovial cysts: a case series of 101 patients

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Abstract

BACKGROUND CONTEXT: Lumbar facet joint synovial cysts are benign degenerative abnormalities of the lumbar spine. Previous reports have supported operative and nonoperative management. Facet joint steroid injection with cyst rupture is occasionally performed, but there has been no systematic evaluation of this treatment option.

PURPOSE: To profile the role of facet joint steroid injections with cyst rupture in the treatment of lumbar facet joint synovial cysts.

STUDY DESIGN/SETTING: Retrospective chart review and long-term follow-up of patients treated for lumbar facet joint synovial cysts.

PATIENT SAMPLE: One hundred one patients treated for lumbar facet joint synovial cysts with fluoroscopically guided corticosteroid facet joint injection and attempted cyst rupture.

OUTCOME MEASURES: Oswestry Disability Index and numeric rating scale score for back and leg pain.

METHODS: A retrospective review and a subsequent interview were conducted to collect pretreatment and posttreatment pain and disability scores along with details of subsequent treatment interventions. Group differences in pain and disability scores were assessed using paired *t* test. Multiple clinical factors were analyzed in terms of risk for surgical intervention using logistic regression modeling and Cox proportional hazards modeling.

RESULTS: Successful cyst rupture was confirmed fluoroscopically in 81% of cases. Fifty-five patients (54%) required subsequent surgery over a period averaging 8.4 months because of inadequate symptom relief. All patients reported significant improvement in back pain, leg pain, and disability at 3.2 years postinjection, regardless of their subsequent treatment course ($p<.0001$ in all groups). There was no significant difference in current pain between patients who received injections only and those who underwent subsequent surgery.

CONCLUSIONS: This study presents the largest clinical series of nonsurgical treatment for lumbar facet joint synovial cysts. Lumbar facet joint steroid injection with attempted cyst rupture is correlated with avoiding subsequent surgery in half of treated patients. Successful cyst rupture does not appear to have added benefit, and it was associated with worse disability 3 years postinjection. Long-term outcomes are similar, regardless of subsequent surgery.

Keywords: Synovial cyst; Facet cyst; Facet joint; Zygapophyseal joint; Facet injection; Steroid injection; Retrospective pretest

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EVIDENCE & METHODS

Context
Few studies currently report the outcome of non-surgical treatment of lumbar synovial cysts. This article discusses one non-surgical technique.

Contribution
In this retrospective case-series review, the authors found that following steroid injection and attempted percutaneous cyst rupture, 55% of patients proceeded to surgical intervention.

Implications
As the largest report of non-operative treatment for cysts, this paper is an important step in investigating this technique. The optimum approach to this group of patients will require a comparative study of alternative strategies.

—*The Editors*

Introduction

Although synovial cysts arising from lumbar spinal facet joints are among the most common symptom-producing conditions affecting the lumbar spine, there have been very few comprehensive studies published on the natural history, appropriate evaluation, and management of this condition. Synovial cysts have been reported in association with both facet joints and the ligamentum flavum, but most of the facet joint cysts appear to arise from the joint capsule in association with degenerative spondylosis involving the facet joints [1–4]. Although these cysts are considered benign, when associated with spinal stenosis or direct nerve root compression, persistent neurogenic claudication or sciatica symptoms can result.

There are currently no established guidelines with respect to treatment of symptomatic lumbar synovial cysts. Treatment options have been reported in several clinical series and include steroid injection and cyst aspiration, as well as surgical excision [4,5]. Nearly all studies of nonsurgical management of lumbar synovial cysts have involved small numbers of patients [6–8]. Bureau et al. studied 12 percutaneous steroid injections and reported pain relief in 75% of patients, whereas Slipman et al. and Parlier-Cuau et al. studied 14 and 30 steroid injections, respectively, and reported symptomatic relief in up to one-third of the patients. Studies involving larger patient populations have addressed surgical treatment and have recommended decompressive laminectomy and cyst excision with or without concomitant fusion as an effective treatment option [9–15]. There have been no clinical series that specifically evaluate the technique of facet joint steroid injection with cyst rupture and how this technique relates to the need for subsequent treatment. This treatment technique is thought to provide symptom relief through a reduction in cyst protrusion onto surrounding anatomy and also through the analgesic effects of locally administered steroid, which is released into the epidural space on successful cyst rupture.

In this study, the role of fluoroscopically guided facet joint steroid injection with cyst rupture is examined in 101 symptomatic cases, with particular attention paid to the need for subsequent surgical intervention.

Materials and methods

A retrospective analysis was performed on a consecutive series of 101 patients who underwent fluoroscopically guided percutaneous corticosteroid injection therapy, with attempted cyst rupture as primary treatment for a diagnosis of a lumbar facet joint synovial cyst located within the spinal canal. During this procedure, local infiltration of the skin was conducted with 1% lidocaine, and a 22-G spinal needle was advanced into the facet joint under fluoroscopic control. Depo-Medrol (methylprednisolone acetate; Pharmacia & Upjohn Company, New York, NY, USA) and bupivacaine 0.25% were injected into the joint. Cyst rupture was attempted by forceful pressurization of the injection solution and distention of the cyst. Successful cyst rupture was confirmed by the loss of resistance method and by extravasation of Isovue-200 (iopamidol; Bracco Diagnostic Inc, Princeton, NJ, USA) contrast into the epidural space. All injections were performed by one neuroradiologist between 1999 and 2005. A medical chart review was conducted at a mean of 3.2 years after the index injection to collect data regarding cyst location; rupture success; height, weight, and age at the time of injection; and subsequent nonsurgical and surgical treatments at the same institution.

Telephone interviews were conducted to investigate current height, weight, employment status, use of pain medication, and subsequent nonsurgical and surgical treatments at other institutions. Back pain and leg pain were also assessed during the telephone interview using a numeric rating scale (0–10, with 10 being worst possible pain), and disability was assessed by mail using the Oswestry Disability Index (ODI) [16]. Patients were asked to assess their pain and disability levels for two time points: 1) a retrospective pretest, in which respondents were asked to rate their back and leg pain and disability before the index rupture injection, and 2) a posttest, in which respondents were asked to rate their current level of back and leg pain and disability after all treatment, at the time of study data collection. Patients provided written authorization for release of medical record data and verbal informed consent for both the phone interview and study by mail. This study was approved by the hospital's Institutional Review Board.

Statistical analysis

Logistic regression modeling was used to examine predictors of the need for surgery after injection therapy, with a follow-up cutoff of 500 days after index injection to ensure that all patients included in the analysis had the same opportunity for being censored observations (ie, equivalent follow-up time across patients). This yielded an effective sample size of 94