

Review Article

Recurrent back and leg pain and cyst reformation after surgical resection of spinal synovial cysts: systematic review of reported postoperative outcomes

Ali Bydon, MD^{a,b,*}, Risheng Xu, AM^{a,b,c}, Scott L. Parker, BS^{a,b}, Matthew J. McGirt, MD^d, Mohamad Bydon, MD^{a,b}, Ziya L. Gokaslan, MD^{a,b}, Timothy F. Witham, MD^{a,b}

^aDepartment of Neurosurgery, Johns Hopkins University School of Medicine, 600 N Wolfe Street, Baltimore, MD 21205, USA

^bJohns Hopkins Spinal Column Biomechanics and Surgical Outcomes Laboratory, Baltimore, MD 21205, USA

^cMedical Scientist Training Program, Johns Hopkins University School of Medicine, 1830 E Monument Street, Baltimore, MD 21205, USA

^dDepartment of Neurosurgery, Vanderbilt School of Medicine, 215 Light Hall, Nashville, TN 37232, USA

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Abstract

BACKGROUND CONTEXT: With improvements in neurological imaging, there are increasing reports of symptomatic spinal synovial cysts. Surgical excision has been recognized as the definitive treatment for symptomatic juxtafacet cysts. However, the role for concomitant fusion and the incidence of recurrent back pain and recurrent cyst formation after surgery remain unclear.

PURPOSE: To determine the cumulative incidence of postoperative symptomatic relief, recurrent back and leg pain after cyst resection and decompression, and synovial cyst recurrence.

STUDY DESIGN: Systematic review of the literature.

PATIENT SAMPLE: All published studies to date reporting outcomes of synovial cyst excision with and without spinal fusion.

OUTCOME MEASURES: Cyst recurrence and Kawabata, Macnab, Prolo, or Stauffer pain scales.

METHODS: We performed a systematic literature review of all articles published between 1970 and 2009 reporting outcomes after surgical management of spinal synovial cysts.

RESULTS: Eighty-two published studies encompassing 966 patients were identified and reviewed. Six hundred seventy-two (69.6%) patients presented with radicular pain and 467 (48.3%) with back pain. The most commonly involved spinal level was L4–L5 (75.4%), with only 25 (2.6%) and 12 (1.2%) reported synovial cysts in the cervical or thoracic area, respectively. Eight hundred eleven (84.0%) patients were treated with decompressive surgical excision alone, whereas 155 (16.0%) received additional concomitant spinal fusion. Six hundred fifty-four (92.5%) and 880 (91.1%) patients experienced complete resolution of their back or leg pain after surgery, respectively. By a mean follow-up of 25.4 months, back and leg pain recurred in 155 (21.9%) and 123 (12.7%) patients, respectively. Sixty (6.2%) patients required reoperation, of which the majority (n=47) required fusion for correction of spinal instability and mechanical back pain. Same-level synovial cyst recurrence occurred in 17 (1.8%) patients after decompression alone but has been reported in no (0%) patients after decompression and fusion.

CONCLUSIONS: Surgical decompression results in symptomatic resolution in the vast majority of patients; however, recurrent back pain occurs in a significant number of patients. Cyst recurrence occurs in less than 2% of patients but has never been reported after cyst excision with concomitant fusion. The lack of cyst recurrence after concomitant fusion supports the need to investigate the

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* Corresponding author. The Johns Hopkins Hospital, 600 N. Wolfe St, Meyer 7-109, Baltimore, MD 21287, USA. Tel.: (443) 287-4934; fax: (410) 502-3399.

E-mail address: abydon1@jhmi.edu (A. Bydon)

value of fusion of the involved motion segment in the treatment of symptomatic synovial cysts of the spine. © 2010 Elsevier Inc. All rights reserved.

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Introduction

Spinal nerve root compression by synovial cysts was first reported by Vosschulte and Borger in 1950 [1]. Synovial cysts arise from the facet joint, most commonly at the L4–L5 level [2,3]. Although synovial cysts are an uncommon cause of radicular pain [4,5], improvements in neurological imaging, such as computed tomography and magnetic resonance imaging, have resulted in increased reports of synovial cysts being identified as causative agents of radicular pain [6]. Surgical excision has been recognized as the definitive treatment for cysts causing intractable pain or neurological deficits [7–10]. Because segmental instability has been recognized as a potential cause of synovial cyst formation [11–14], decompression alone may augment segmental instability and predispose to subsequent back pain. The role for fusion remains unstudied in the surgical treatment of compressive synovial cysts. We set out to review all published outcomes of synovial cyst excision with and without spinal fusion to determine the incidence of postoperative symptomatic relief, recurrent/persistent back and leg pain after cyst resection and decompression, and synovial cyst recurrence.

Methods

We performed a literature review to identify all published articles that have reported outcomes after surgical management of spinal synovial cysts. Through this systematic literature search, we aimed to determine the incidence of postoperative symptomatic relief, recurrent or persistent back and leg pain, and same-site cyst reformation after surgical excision of synovial cysts. To answer this question, search terms were identified and combined with appropriate Boolean connectors, and a search was performed for English language publications on Medline (PubMed). The search sequence submitted was the following: (“*synovial cyst*” [MeSH] OR “*synovial cyst*” [title] OR “*ganglion cyst*” [MeSH] OR “*ganglion cyst*” [title] OR “*juxtafacet cyst*” [title]) AND (“*Laminectomy*” [MeSH] OR “*Fusion*” [MeSH] OR “*Surgery*” [MeSH]) AND English[lang] AND (outcome[All Fields] OR surgical outcomes[All Fields]) Limits: English, Publication Date from 1970 – 2009.

All titles obtained from these search criteria were reviewed. From these, abstracts were reviewed of those studies reporting clinical management of patients with juxtafacet cysts of any kind. Of these, the full articles were reviewed of those studies reporting outcomes after surgical management of synovial or ganglions cyst. Studies not providing the outcome of surgical management were excluded.

Data extraction was completed independently by two reviewers. After collection of all variables, agreement between the two reviewers was verified.

For the purposes of this study, the primary endpoints assessed from each study were incidence of postoperative symptomatic relief, incidence of persistent or recurrent back and leg pain that was reported to be clinically relevant to the patient or treating physician, and incidence of symptomatic synovial cyst recurrence. The endpoint of persistent or recurrent back and leg pain was not reported in a standardized fashion. Most studies described pain relief as “excellent,” “good,” “fair,” or “poor” as per the Macnab [15], Prolo [16], or Stauffer [17] scales. For the purposes of this study, we defined recurrence of pain as “fair” or “poor,” per the above pain scales, and, where possible, separately evaluated back pain and radiculopathic leg pain. The remainder of studies and case reports plainly stated the incidence of persistent back and leg pain at last follow-up. Despite the variation in reported outcome measures, each scale used persistent or recurrent symptomatology to stratify these outcome scores, making deduction of this endpoint possible for all reviewed articles.

Results

Demographics and presenting symptoms

The literature search yielded 83 published studies that described outcomes in a total of 966 patients after surgical management of spinal synovial cysts [4,6,7,9–14,18–91]. Overall, mean (\pm standard deviation) age at the time of surgery was 64.7 (\pm 12.3) years and 476 (49.3%) patients were male. Six hundred seventy-two (69.6%) patients presented with radicular pain, 467 (48.3%) with back pain, 272 (28.2%) with neurogenic claudication, and 14 (1.4%) with recent trauma. Three hundred thirty-four (34.6%) patients reported sensory deficits, whereas 201 (20.8%) reported motor deficits. The mean duration of symptoms before surgery was 7.5 months.

Out of the 966 total cases, synovial cyst location was reported in 940. The most common spinal level was L4–L5, with 657 (68.0%) occurrences; additionally, there were 136 (14.1%) at L3–L4, 116 (12.0%) at L5–S1, 15 (1.6%) at L2–L3, and 7 (0.7%) at L1–L2. There were 25 (2.6%) synovial cysts located in the cervical region of the spinal cord and 12 (1.2%) in the thoracic region.

Surgical outcomes

Eight hundred eleven (84.0%) patients reported in the literature were treated with surgical excision alone, whereas

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