

# Percutaneous resolution of lumbar facet joint cysts as an alternative treatment to surgery: a meta-analysis

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## Background

Lumbar facet joint cysts (LFJC), associated with lower back and radicular pain, have been clinically treated with an array of strategies. The prevalence of LFJCs is greatest in the latter decades of life, and LFJCs are associated with neurogenic claudication and spinal stenosis (1). As LFJCs rarely resolve without intervention, management may involve non-steroidal anti-inflammatory drugs, analgesics, intra-articular steroid injections and fluoroscopy-guided needle aspiration. LFJCs are also frequently treated through surgical interventions such as laminectomy, facetectomy, flavectomy and cyst excision (2). These surgical procedures currently provide the most successful long-term symptomatic relief (3). However, percutaneous resolution can be an effective alternative treatment strategy in a large sub-group of patients (4). Furthermore, percutaneous treatment may be advantageous to elderly and high-risk patients. Shuang *et al.* recently published a systematic review and meta-analysis to assess the use of percutaneous resolution to treat LFJCs. Here we describe their study and comment on/discuss the limitations and clinical implications of their findings.

## Aims

The authors (5) conducted a systematic review and meta-analysis, to determine the success rate of percutaneous LFJC resolution, specifically in terms of long-term relief. Furthermore, identification of a sub-group with a greater chance of success via percutaneous resolution instead of surgical treatment was attempted.

## Search and inclusion criteria

Several electronic databases, including PubMed, Embase

and Ovid Sp, were utilized to conduct a detailed systematic search for studies within the period of 1980–May 2014. Medical Subject Headings and keywords were used in logical combinations to identify studies related to percutaneous resolution of LFJCs.

Peer-reviewed articles with short- and long-term patient follow-up, concerning percutaneous resolution procedures of LFJCs, such as steroid injection and cyst rupture were included. Studies comprising other similar spinal cyst pathologies and those which used percutaneous procedures for diagnosis alone were excluded. Moreover, studies utilizing percutaneous procedures without a diagnosis of LFJC were also excluded.

## Data extraction

The articles which satisfied the inclusion criteria included retrospective analyses, prospective studies and case studies. All were used to extract data regarding patient demographics, clinical and pathological characteristics, diagnostic tools and procedural features. Outcomes of procedures were measured as the percentage of satisfactory responses after a suitable follow-up period and the proportion of patients who underwent subsequent surgery.

## Statistical methods

The data was pooled to assess the amount of satisfactory outcomes against the number requiring surgery. This was completed by calculating standard errors and 95% confidence intervals (CI) of the data from individual studies before the overall effect of the meta-analysis was calculated. Descriptive data was calculated as a mean with

standard deviation or range also included. All studies used were also assessed using the Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies (6).

## Results

168 articles were identified as relevant, of which 29 studies satisfied the inclusion criteria. These studies encompassed 544 subjects from 12 retrospective studies, 2 prospective studies and 15 case reports. A large proportion of patients were women (64%) and the age of the patients ranged from 28–87 years with a mean of 62±4.2. Prior to intervention, the duration of symptoms ranged from 2 weeks to 60 months, with lower extremity radiculopathy and lower back pain being the most frequently reported indications. Subjects were typically diagnosed with one or more LFJC by MRI (85%) or CT (15%), with the majority occurring at the spinal level L4-5 (69%). The result of cyst rupture procedures were evaluated by the loss of resistance method or by the extravasation of dye.

Satisfactory results were seen in 55.8% (95% CI: 49.5–62.08%) of the 544 patients who underwent percutaneous LFJC resolution procedures. Subsequent surgery was used in 38.7% (95% CI: 33.3–44.0%) of patients to achieve long-term relief of symptoms. The mean time from percutaneous resolution procedure to subsequent surgery was 6.7 (range, 0.13–34.4) months. No relationship was found between increasing mean duration of follow-up period and percent satisfaction from percutaneous resolution procedure (correlation coefficient: 0.13).

## Limitations

There are substantial limitations for this study. Firstly, due to diagnosis of LFJC being incidental, there is a lack of prospective studies available for analysis. In order to evaluate the success rate and predicting factors for percutaneous resolution of LFJC, it is necessary to have results from large multi-center randomized controlled trials. In addition to this, the vast majority of follow-up periods utilized in the studies was less than two years. Thus, longer follow-up periods are needed to determine durability of the benefits of the procedure. Furthermore, many case reports were lacking relevant information crucial to this study.

## Clinical implications

Through analysis of all available studies concerning percutaneous resolution of LFJC, this study supports this treatment strategy as an alternative to surgical intervention.

However, a subgroup of the population which could benefit more from these procedures could not be identified. Therefore, it is of importance that comparative studies with longer follow-up periods are conducted.

## Further reading

- ❖ Shuang F, Hou SX, Zhu JL, et al. Percutaneous resolution of lumbar facet joint cysts as an alternative treatment to surgery: a meta-analysis. *PLoS One* 2014;9:e111695.

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## Footnotes

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

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