Letters to the Editor

Re: Outcome of Percutaneous Lumbar Synovial Cyst Rupture in Patients with Lumbar Radiculopathy: Advising on Improving Technique and Getting Better Results

To the Editor:

We read with interest the article by Eshragi et al, titled "Outcome of Percutaneous Synovial Cyst Rupture with Lumbar Radiculopathy", and compared it to our own report published in 2011, "Technical and Imaging Report: Fluoroscopic Guidance for Diagnosis and Treatment of Lumbar Synovial Cysts" (Pain Pract. Mar; 11(2):180-4, 2011).

Since publishing our report in 2011, we have been able to further appreciate, the technical difficulties associated with the process of percutaneous synovial cyst rupture and aspiration. Our experiences in more than ten additional cases, has taught us that the procedure does not just simply entail placing the needle in the targeted facet joint with the synovial cyst, and then attempting aspiration and/or rupture of the synovial cyst. We agree that an 80% success rate is achievable in cases, where symptoms are related only to the presence of an isolated synovial cyst. However, a high success rate may not be achievable when facet tropism, degree of degeneration, and variations in synovial cyst size and morphology are considered. In these cases, we have learned that success rates can vary widely, as they do with any spinal interventions, including lumbar epidural steroid injections. It is critical therefore, to develop a coherent strategy to manage these patients, while mastering the technique of cyst rupture and aspiration.

We recommend a systematic approach to decrease the pain and dysfunction of this form of advanced facet joint arthropathy. The interventionalist must first ascertain whether or not, the facet synovial cyst is the true primary pain generator. Is the pain caused by direct mechanical compression of the spinal nerve root by the facet synovial cyst, or is the cyst contributing to relative spinal stenosis, and therefore, indirectly affecting the spinal nerve root. In addition, one must quantify if the facet synovial cyst is the cause of low back back, radicular leg pain, or both. This type of assessment, will allow the pain physician to formulate an organized, coherent interventional approach. If the patient is experiencing isolated lower extremity pain, then attempting to treat the facet synovial cyst may not be the most effective approach. Given our experience, we initially treat these patients with fluoroscopically-guided lumbar epidural steroid injection(s), and then treat the facet synovial cyst, as we would treat a herniated nucleus pulposus disc. If the patient's pain is lower extremity radicular type, we opt for the transforaminal epidural steroid approach. This is effective when foraminal stenosis is the exclusive cause of pain, or if there is compression of the nerve root, by the synovial cyst. When the lower extremity pain is diffuse, which is more common with combined central and foraminal stenosis, we use an interlaminar or para-sagittal approach, given its greater propensity for diffuse spread. When we perform lumbar epidural steroid injections, we use standard recommended doses of medications including glucocorticoids and adjuvants, such as normal saline solution. When low back pain predominates, we opt to directly target the facet joint synovial cyst. Prior to attempting this, we first obtain a CT scan of the lumbar spine to ascertain, if we can access the target facet joint percutaneously. Even after deciding to proceed, we have come to realize that successful insertion of the spinal Quincke type needle into the facet joint, does not guarantee entry into the synovial cyst.

While aspiration of synovial fluid can be attempted for confirmation, it is not definitive like obtaining cerebrospinal fluid, when performing subarachnoid injections. We have seen cases were no fluid was aspirated, or the aspirate was either clear or serosanguinous. When fluid is successfully aspirated, we recommend sending it for cytology to ensure that it has synovial characteristics, although in our practice, we typically do not have it routinely analyzed because of cost con-

siderations. Treating the facet synovial requires us to maintain verbal communication with the patient. We inject the facet synovial cyst until it exceeds its maximum volume capacity and then ruptures. Visualizing contrast filling and then increasing the size of the presumed facet synovial cyst, however, is not definitive for successful rupture. A more reliable indicator of rupture is the patient verbally reporting an increased pain with filling, followed by dramatic relief with rupture. Studies for concordant pain with injection, which have been performed with lumbar epidural steroid injections, should be considered for this procedure. With regards to imaging, fluoroscopy is useful for needle placement, although placement of the needle in the facet synovial cyst is never definitively proven, even with the use of contrast. The fluoroscopic images in the *Pain Physician* article suggest that outlining the facet synovial cyst is possible, but do not attempt to delineate it, as with epidural steroid injections and performance of an epidurogram.

In our *Pain Practice* article, we described the outlining of the synovial cyst as similar to the moon going through its phases to achieve a full state with contrast filling. A more useful analogy might be that it is similar to blowing up a balloon until it ruptures. We do not believe that egress of contrast posteriorly from the facet joint is a reliable indicator of successful rupture, as there is always egress of contrast posteriorly, given the limited capacity of the facet joint and the requirement to inject larger volumes, into the space in order to achieve rupture of the synovial cyst. For these reasons, we believe that verbal feedback, while injecting the facet synovial cyst and attempting its rupture, is the most reliable way to predict success. While epidural contrast spread after cyst rupture is a reliable sign, it is not present in all cases of synovial cyst rupture. If epidural spread is present, rupture has occurred, but spinal needle position must be reassessed, since the placement may be in an undesirable position. In cases of epidural spread after rupture, we recommend slight withdrawal of the needle tip to minimize the risk of intra-neural injection.

We applaud the authors on their publication of this article. It helps solidify this procedure as an option for patients suffering from this type of facet joint arthropathy. We believe that in order to improve the consistency of success for facet synovial cyst causing lumbar radiculopathy, the technical aspects of the procedure and approach to managing this pathology, need to be well delineated. We hope to be able to validate this specific intervention, by performing additional study on the incidence and nature of synovial facet joint cysts, as well as helping to create standardization of the technical approach to the cyst, likely to result in the greatest clinical success with the least trespass to our collective patients.

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