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Case Report

Sclerotherapy of Baker's Cyst with Imaging Confirmation of Resolution

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Background: Baker's cysts are commonly encountered in pain management practices.

Objective: To ascertain if sclerotherapy treatment of a Baker's cyst could produce objectively verifiable MRI imaging changes.

Design: Case report.

Methods: A 52-year-old white male with a posterior horn of the medial meniscus tear and a large Baker's cyst who had failed conservative care and drainage was imaged before treatment with sclerosing. Three injections of 12.5% dextrose and anesthetic with sodium morrhuate were injected intraarticular into the right knee after drainage.

Results: The Baker's cyst resolved on both postoperative imaging after the completion of care as well as on physical examination.

Conclusions: Prolotherapy in this case study seemed to be an effective treatment for Baker's cyst in this patient.

Key words: sclerosing, Baker's cyst, knee, sclerotherapy, sodium morrhuate, dextrose

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Increasingly, pain management physicians have been dealing with a variety of peripheral musculoskeletal complaints around the knee (1-8). While the use of radiofrequency in this area holds potential promise, other interventional applications such as viscosupplementation can also be helpful to treat Degenerative Joint Disease (9-13). Any pain management physician treating this patient population will eventually run across a Baker's cyst. This posterior and often fluid filled expansion of the joint capsule can cause pain, decreased range of motion, and may complicate attempts at using viscosupplementation. Corticosteroid injection into the knee has been shown to reduce the size of the cyst on ultrasound imaging (14). However, the decrease in size was likely due to reduction in inflammation and the longevity of this treatment is unknown. We could find very little published about the long-term outcome from surgical excision of the cyst. Ethanol sclerotherapy has been tried in a clinical study, with

good short-term results (15).

As a result of the experience of Fukumoto, we decided to attempt treatment of a Baker's cyst with solutions commonly used for dextrose prolotherapy. "Prolotherapy" of the Baker's cyst with 25% dextrose solution was described by Hemwall et al (16) as well as for the treatment of the olecanon bursitis. However an earlier textbook of Biegeleisen (17) referred to the treatment of bursitis and ganglions with sodium morrhuate as sclerotherapy. Prolotherapy has been used previously by the authors to treat cervical instability with imaging confirmation of tightening of the cervical ligaments (18). Other recent authors have also reported success with this technique when used in a variety of settings for chronic knee pain, groin pain, and lumbar pain (19-25). While this type of therapy is considered controversial in some settings, it has a great deal of following in others. While a few studies (including our own as referenced) have used radiographic follow-up to confirm changes, we know of no published report using MRI follow-up. As a result, we report here the effects of dextrose/sodium morrhuate prolotherapy to successfully treat a Baker's cyst with significant MRI changes.

History and Physical

RS is a 56-year-old white male with no significant past medical history other than lower back pain. He had initially presented to our clinic for treatment of lumbar radiculopathy. During that treatment course he developed an acute meniscus tear that occurred during physical therapy. His initial postinjury right knee MRI showed a complex tear of the posterior horn of the medial meniscus. He was entered into physical therapy for his new onset right knee pain and placed on NSAIDs, neither of which helped his pain and disability. Over the next 1 – 2 years he subsequently developed swelling behind the right knee and additional MRI imaging demonstrated a significant communicating Baker's cyst extending inferiorly into the upper portion of the gastrocnemius muscle. Despite the test of time, he continued to complain of decreased range of motion, swelling, and pain in the right knee significantly impacting physical activity.

Initial Course of Care

Due to the right knee effusion noted on exam and the failure of conservative care, we drained the right knee once a month on three occasions, removing approximately 40 mL of clear serous fluid from the upper posterior gastrocnemius area on each visit. This treatment would provide 1-2 weeks relief of some of the stiffness and pain, but the fluid collection as well as his pain and disability would return.

Utilization of Prolotherapy Agent

With informed consent, we began 3 monthly drainage and injection sessions with sclerosing solution. The Baker's cyst was first completely drained using an 18-gauge 1.5-inch needle inserted into the fluid collection at the posterior gastrocnemius. After this drainage, 3 – 5 mL of a solution that was prepared with 1.5 mL of 50% dextrose, 0.5 mL of sodium morrhuate (NDC 0517-3065-01 – 50 mg/mL), 1.5 mL

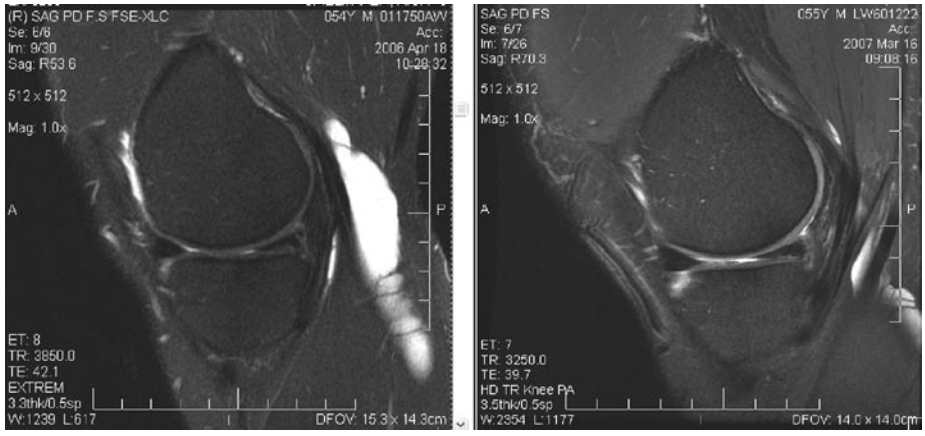

Fig.1. *Preprocedural (left) and postprocedural (right) MRI.*

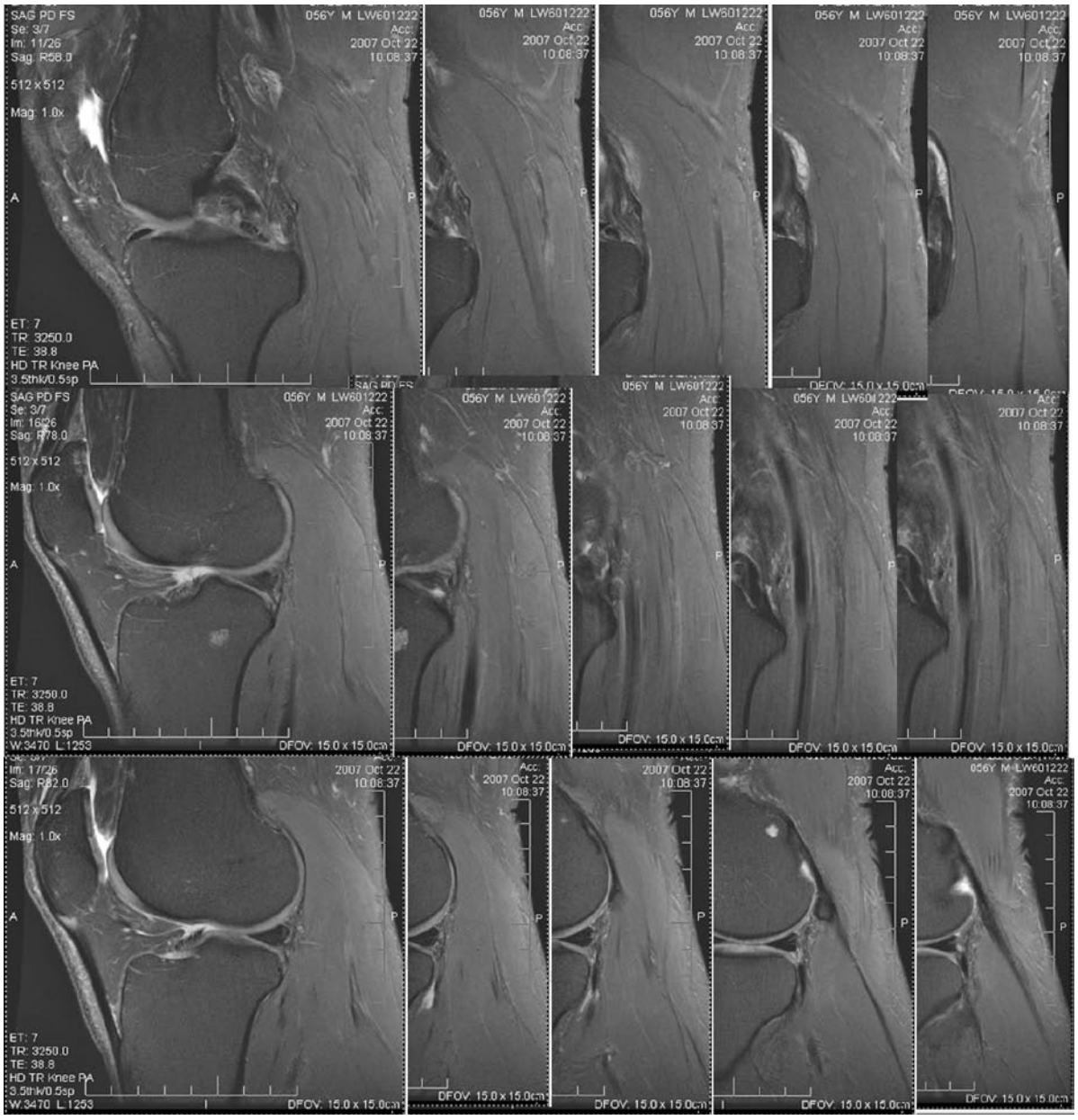

Fig. 2. *MRI sagittal slices showing where cyst once resided.*

of 0.75% Lidocaine, and 1.5 mL of 2% lidocaine was injected intraarticular through a medial infrapatellar approach. Over the ensuing 4 months, the patient reported resolution of the posterior knee cyst and this was confirmed by physical exam. Although he reported decreased discomfort due to decreased swelling and fluid collection, he continued to have pain in the medial aspect of the knee from the meniscus tear.

Imaging Analysis

A 3.0T GE MRI was used to obtain the preprocedure and postprocedure films (Figs 1 and 2), the final postoperative film was more than one year after the start of the prolotherapy treatment. A 3.0 T GE MRI was utilized to obtain the sample preprocedural (Fig. 1 left image) and a sample post procedural

(Fig. 1 right image) obtained almost one year following the initiation of prolotherapy. On the left proton density fast spin echo image the Baker's cyst is a well defined cystic structure in the gastrocnemius/semimemranous bursa. On the right proton density fast spin echo image, the cystic structure has significantly decreased in size.

Some 7 months later, a final image was obtained more than one year after the initiation of treatment. Shown are sagittal slices across the entire region where the cyst once resided (Fig. 2).

Discussion

Sodium morrhuate has been used extensively for sclerotherapy of varicose veins (27-33). Because this medication is a well known sclerosant, and success with other sclerosants such as ethanol was reported as a successful treatment of Baker's cysts, it's likely that the same effect occurred here. While it's possible that spontaneous resolution of the Baker's cyst occurred with drainage, 3 prior attempts at drainage had produced no decrease in the amount of fluid being drained, physical exam, or reported pain.

Conclusion

This is an isolated case report; however, the imaging data is compelling. Larger prospective case series and comparative trials are needed to confirm these results. Certainly sclerotherapy for this condition appears to be a reasonable treatment option.

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