

W O N D E R W H Y ?

Prolotherapy as an Alternative Treatment for Osteochondritis Dissecans: Two Cases of Young Baseball Players

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Osteochondritis dissecans (OD) is a localized injury or condition affecting an articular surface of a joint, that involves separation of a segment of cartilage and subchondral bone. It is found most commonly in the knee although other joints can be affected, notably the elbow, ankle and hip. OD affects two distinct populations of patients as differentiated by the status of the physes (growth plates). Children and adolescents between the ages of five and approximately 16 years old, who have open physes, are classified with as having the juvenile form of the disease. Older adolescents, who have closed physes, and adults are classified as having the adult form.¹ The incidence of this condition has increased recently because of the growing participation in competitive sports.² Repetitive microtrauma is thought to be the primary mechanism responsible for the development of OD, however, other causes including acute trauma, ischemia, ossification abnormalities and genetic factors have also been proposed.^{3,4}

The symptoms of OD of the knee depend on the stage of presentation. Lesions early in their course are associated with poorly defined symptoms including pain and swelling. As the lesion progresses, catching, locking, and giving way are noted. The presence of loose bodies is associated with more constant symptoms of catching or locking, swelling, and pain.⁵

While the presenting symptom of OD is typically unresolved pain, the diagnosis, is made by either plain radiograph or MRI, showing the breaks in the cartilage and whether lesions are partially or firmly attached to the underlying bone.^{6,7} The stability of the articular cartilage fragment is typically what determines treatment. It varies from observation, splintage and rest to drilling, fixation or excision of the lesion, and osteochondral autogenous grafting.⁸⁻¹⁰ While Prolotherapy has a long history of being used for osteochondral injuries and to stimulate

cartilage healing,¹¹⁻¹³ this is the first case report of its use in osteochondritis dissecans.

CASE REPORT #1- OSTEOCHONDRITIS OF THE KNEE IN A 13 YEAR-OLD

In August 2003, J.C., an active 13 year-old baseball player, presented to Caring Medical for evaluation of his bilateral knee pain, diagnosed as osteochondritis dissecans. He was a very active young athlete, playing on soccer and baseball teams in addition to participating in rollerblading, swimming and bicycle riding. He was being followed by an orthopedic surgeon who told J.C. to stop all forms of athletics in order to see if his knees would get better. If they did not improve, he would have to undergo surgery.

At the time of the initial consultation, J.C. had restricted athletics and was using ice and ibuprofen for the pain. The pain was located throughout the knees and increased significantly with activity, especially running. On physical examination, he was found to have several tender points about the knee, as well as some generalized laxity. His X-rays confirmed the diagnosis of osteochondritis dissecans. (See *Figures 1 & 2*.) J.C. and his parents were explained the process of Prolotherapy but decided to hold off treatment.

Despite two more months of rest, the knee pain did not abate. J.C. received his first Hackett-Hemwall dextrose Prolotherapy treatment in October 2003. At each visit a total of 30 injections with 40cc of solution was used. A 15% dextrose, 10% Sarapin, and 0.2% lidocaine solution was used. Two IU of human growth hormone was added to the solution and injected intraarticularly as well. He was told to stop the ice and ibuprofen, and encouraged to start cycling. He could also begin light running, as long as it did not elicit pain. When he returned in one month, his pain had decreased by 25%. He was encouraged with

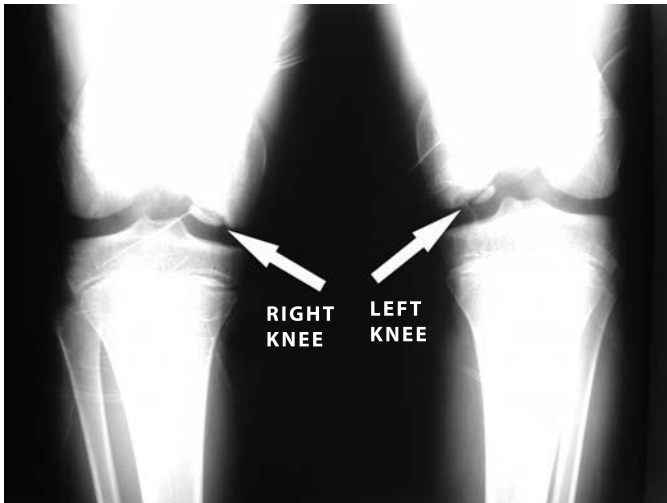


Figure 1. Plain X-ray of both knees. Osteochondrotic lesions of both medial femoral condyles is seen. The appearance of the osteochondritis dissecans shows significant fragmentation on both knees.

the results after only one treatment because he was able to run. After receiving his second Prolotherapy treatment, his pain diminished 75%, and now running and jumping were possible, which included playing basketball. He was doing a lot of sporting activities which included a lot of running with minimal pain. Because of the significant pain relief, he did not come for his third visit until two months later. His last visit was in February 2004. He reported both knees were at least 90% improved. He was able to play baseball at a high intensity level and was basically back to sports 100%. Physical examination revealed full stability in his knees at this time.

After this fourth visit, J.C. was able to play all sports without any knee pain. He was able to fulfill his long term goal of playing baseball in college. J.C. is now twenty years old and has no knee pain whatsoever with sporting activities.

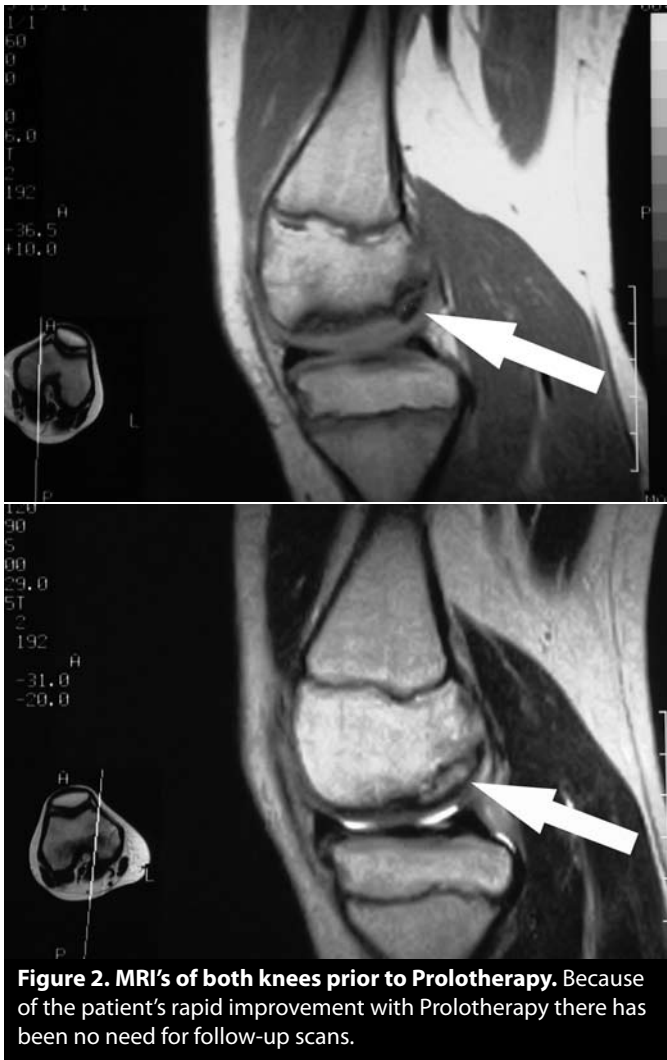


Figure 2. MRI's of both knees prior to Prolotherapy. Because of the patient's rapid improvement with Prolotherapy there has been no need for follow-up scans.

CASE REPORT #2- OSTEOCHONDRITIS OF THE CAPITELLUM IN A 13 YEAR-OLD

L.M., a 13 year-old, came to Caring Medical on June 14, 2010 for possible Prolotherapy treatment on his elbow. L.M. was a pitcher on a junior boys baseball team for his middle school. He had a six month history of elbow pain, especially severe when pitching. An MRI on 2/24/2010 revealed osteochondritis dissecans of the capitellum. (See Figure 3.) At the time of the initial evaluation the patient was not able to pitch or throw a baseball at all. The patient had seen several orthopedic surgeons, all suggesting he rest for various periods of time, during which time his elbow would feel better, only to have the pain recur with activity. One orthopedist said he would never pitch again. His goal (as well as his father's goal for him) was to be able to pitch again.

On physical examination, tenderness was elicited both in the medial and lateral elbow especially at the locations of the ulnar and radial collateral ligaments. Both radiocapitellar and ulnohumeral joint instability was present, but with full range of motion. No crepitation was noted. Hackett-Hemwall dextrose Prolotherapy was injected into and around the bony attachments of the ligament, tendon and muscle origins of both the medial and lateral elbows, with emphasis on the ligamentous support. A total of 48cc of solution with 35 separate injections were utilized. Human Growth Hormone (2IU) was injected into and around the osteochondritis dissecans injury.



Figure 3. MRI right elbow without contrast, prior to Prolotherapy. The arrow points to the evolving osteochondral defect involving the capitellum typical of osteochondritis dissecans. The defect is stable without evidence of in situ loose body.



Figure 4. MRI right elbow with intra-articular contrast, after Prolotherapy. Arrows show resolution of the articular cartilage fraying, as well as the subchondral cystic changes. Improvement of the subchondral edema with almost complete resolution of the osteochondral lesion.

L.M. was next seen once month later where he reported a 50% reduction in pain and stiffness. He was now able to perform all activities of daily living without pain, including weight lifting, running, and swimming. At this point, however, he had still not thrown a baseball. A second Prolotherapy treatment was given to the same areas as the first.

On L.M.'s third and final Prolotherapy visit, he reported no pain in his elbow and was able to throw a baseball for 15 minutes without pain, along with no other restrictions during his other workouts

L.M. had a repeat MRI on September 20, 2010 which revealed resolution of the osteochondritis dissecans. (See Figure 4.) As of November 2010, L.M. is back to pitching without restriction. He has no elbow pain or disability whatsoever.

DISCUSSION

The juvenile form of OD has a much better prognosis than adult OD.^{14,15} Stability of the OD articular cartilage lesion is the main prognostic factor in determining the likelihood of the OD lesion healing with conservative therapy.^{16,17} Conservative therapy is defined as cessation from all sporting activity until all symptoms resolve, which can often last months to even years.^{18,19} Because it is difficult to restrict the activity of a child or teenager, an immobilizer, splint, or cast may be used.



L.M. back to pitching without restriction after Prolotherapy.

J.C. had an unstable OD lesion as evidenced by the osteochondral fragment barely attached to the subchondral bone at one discreet location. This would be called a flap lesion, with a definable fragment that is displaceable but still attached partially by some cartilage.²⁰ Generally all unstable OD lesions require surgical intervention either to fix internally or to remove the fragment. Surgeries include drilling, pinning, bone grafting, or simple excision of the fragment with or without curettage or drilling of the base.^{20,21,22} Unfortunately, these procedures predispose the young person to long-term osteoarthritis.^{15,23,24,25}

Prolotherapy was thought to be an appropriate treatment for these cases because the primary author (RH) has treated numerous growth plate injuries and young athletes with sports injuries using Prolotherapy.¹¹

The concept of Prolotherapy is radical compared to traditional treatments for chronic pain and sports injuries, yet its mechanism is simple. Inject a mild irritant or proliferant at the site of the pain or injury to stimulate healing to the specific area. In J.C.'s case, this involved Prolotherapy to the medial and lateral collateral ligaments, as well as an intraarticular injection with human growth hormone. Prolotherapy has been shown to stimulate articular cartilage, ligament and tendon repair.^{11, 12, 13, 26, 27} In L.M.'s case, this involved Prolotherapy in and around the bony attachments of both the medial and lateral elbows. The quick response to Prolotherapy seen in each case most likely relates to stabilization of the OD lesion, as well as tightening of the ligament laxity around his knee. Ligament laxity has been postulated as a factor in the development of OD.²⁸

The patients' abilities to continue to play sports while receiving Prolotherapy, as well as after completing the treatment series, in addition to the MRI evidence of resolution of the osteochondritis dissecans, speaks to the success of Prolotherapy. Because this represents just two cases of osteochondritis dissecans, larger, more controlled studies are suggested to determine if Prolotherapy should be a first line therapy to consider in cases of osteochondritis dissecans. ■

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