OBJECTIVES

Children and Adolescents with Spastic Cerebral Palsy often have knee pain associated with patellar instability. This can affect patients throughout the GMFCS spectrum. Nonoperative treatment is often unsatisfactory and there is little information on the outcomes of different surgical treatments. This study seeks to review the outcomes of various surgical corrections of patellar instability in this patient population.

METHODS

This is a retrospective study of all patients who present with patellofemoral pain as well as those who have had surgical treatment for this condition. The patients had standardized outcome measures as well as radiographic measurements.

Study Participants & Setting

This study was performed at a large Tertiary Care Pediatric Hospital which also has a Lifespan Clinic since 1995. All study participants were seen as part of routine clinical care. Follow-up was also performed as routine clinical care in which patients are seen on a routine at least yearly basis.

Materials/Methods

This retrospective study evaluated patients with spastic cerebral palsy seen at the Rady Children’s Hospital since 1995. All study participants were seen as part of routine clinical care. This study was performed at a large Tertiary Care Pediatric Hospital which also has a Lifespan Clinic since 1995. All study participants were seen as part of routine clinical care. Follow-up was also performed as routine clinical care in which patients are seen on a routine at least yearly basis.

RESULTS

There were a total of 480 patients with complaints of patellofemoral pain. Of these 86 had pain with associated patellar instability. Surgery was offered to 75 of these patients. However only a total of 27 knees (18 right 9 left) of 20 patients (11 female and 10 males) with a mean age of 16 + 7 years-old (ranging 11 to 19 years) had surgery. Seven patients had bilateral surgery. Five patients were GMFCS V, three were GMFCS IV, six were GMFCS III, three are GMFCS II and three GMFCS I. The radiographic evaluation showed that 22 knees had a patellar subluxation and 5 had frank patellar dislocations. All of the knees had patella alta bilaterally in the pre surgery evaluation, based on the method of Koshino and Sugimoto of measuring for patella height. All the knees that only had the proximal and distal realignment (Insall Procedure) (twelve knees) still have patella alta. Eight patients had tibial tubercle osteotomies (Fulkerson AMZ). Fifteen patients had medial patellofemoral ligament reconstructions. One patient had a V-Y quadricepsplasty and eight had a reefing of the patellar tendon. 24 of 27 patients were all free of pain in the last follow up. Six of the patients who had the Insall procedure had patellofemoral arthritis at their latest followup (mean 62 months). 15 patients had additional surgery such as distal hamstringing or gastroscenius lengthening at the time of the index surgery. On the last follow-up sixteen knees still have patella alta. On the last follow up 2 patients have hyper mobile patellae (3 knees). All of the patients were prescribed patellofemoral centralizing braces but it was not possible to judge compliance. One patient has had a patellofemoral arthroplasty.

CONCLUSIONS

There are several different surgical treatments for patellofemoral instability associated with pain in children and adolescents with cerebral palsy. Many different approaches have been attempted. The combination of tibial tubercle transfer, patellar tendon shortening (reefing), and medial patellofemoral ligament reconstruction appears to have the best intermediate outcomes. The Insall Procedure seems to lead to increased pressure and early arthritis.

DISCUSSION

It is extremely difficult to treat patellofemoral pain and instability in this patient population. Non operative care is often successful with physical therapy, bracing and management of pain with nonsteroidal antiinflammatory drugs for short durations. However, surgery is often required. The outcome of surgery is not as predictable as that in typically developing patients. However, this study demonstrated reasonable short term outcomes. Like any study of patellofemoral pain and instability it will require 20-30 year followup of the patients to determine if they develop arthritis and possible loss of function.