

Supplementary data

LITERATURE REVIEWS

Question 1

The updated systematic literature search resulted in 221 hits. Studies were selected based on the following criteria: systematic reviews and randomized controlled trials (RCTs) that compared arthroscopy with conservative treatment or open surgery in patients with patellofemoral pain syndrome, apexitis patella (jumper's knee), or patellar tendinopathy. 1 or more of the following outcomes had to be studied: pain, self-reported knee function and stability, and range of motion. Self-reported knee function had to have been measured with either the KOOS, Kujala, or IKDC questionnaire. In addition, studies with patients aged ≥ 16 years were eligible for inclusion.

26 studies were initially selected based on title and abstract. After reading the full text, 24 studies were excluded and 2 studies were included. Based on hand search of the reference list of 1 of the included studies, one additional study was included. In the previous version of this guideline, one systematic review was included (Lattermann et al. 2006). This systematic review contained one RCT, which was not eligible for inclusion in the current literature analysis as patients < 16 years were included. Therefore, in total, 3 studies were included in the literature analysis, 1 on the treatment of patients with apexitis patella (jumper's knee) or patellar tendinopathy (Willberg et al. 2011) and 2 on the patients with AKP (Kettunen et al. 2007, 2012).

1. Pain. Willberg et al. (2011) compared sclerosing polidocanol injections with arthroscopic shaving to treat patellar tendinopathy/jumper's knee and measured pain at rest and pain at sport activity via a VAS (0–100, where a higher score indicated more pain) and reported that pain during follow-up was lower in patients who had received arthroscopic shaving compared with patients who had received sclerosing injections. For pain at rest, mean score was 5 (SD 8) in the intervention group compared with 19 (SD 23) in the control group. For pain on activity, mean score was 13 (SD 19) in the intervention group compared with 41 (SD 29) in the control group. Kettunen et al. (2007, 2012) compared knee arthroscopy and exercise versus exercise only for chronic patellofemoral pain syndrome at short (9 and 24 months) and mid-term (5 years) follow-up. Pain was measured when descending stairs, when ascending stairs, and when standing from a sitting position via a VAS (0–100). At 9 months and 5 years' follow-up pain did

not differ between patients who received arthroscopy and nonoperative treatment, mean difference in change scores between groups, at 9 months and 5 years respectively corrected for baseline scores, was 1 (95% CI –10 to 12), –4 (CI –16 to 8) for pain when descending stairs, 13 (CI 10 to 15), –3 (CI –15 to 8) for pain when ascending stairs, and 4 (CI –7 to 15), –6 (CI –17 to 5) for pain when standing from a sitting position, respectively.

2. Self-reported knee function. Willberg et al. (2011) measured the PROM “self-reported satisfaction with treatment result” via a VAS and found that during follow-up this was higher in patients who had received arthroscopic shaving compared with patients who had received sclerosing injections. The mean score was 87 (SD 21) in the intervention group, compared with 53 (SD 33) in the control group. Kettunen et al. (2007, 2012) measured knee function by the Kujala score (0–100, where a higher score indicated better function). There was no difference in change scores between groups; mean scores corrected for baseline were 1 (CI –7 to 5), 3 (CI –4 to 10), and 1 (CI –8 to 6) respectively.

3. Stability and range of motion. No data on stability and range of motion was reported in either of the studies.

Level of evidence

Pain: There are 4 levels of evidence: high, moderate, low, and very low. RCTs start at a high level of evidence.

With regard to outcome measure “pain” the level of evidence in patients with apexitis patella (jumper's knee) or patellar tendinopathy function was downgraded by 2 levels due a small sample of patients ($N = 45$) and risk of bias (Willberg et al. 2011). Risk of bias was suspected due to insufficient blinding of the participants, care providers, and outcome assessors. In addition, it was not specified whether an intention-to-treat analysis was performed. The level of evidence for the outcome measure “pain” in patients with AKP was downgraded by 2 levels due a relatively small sample of patients ($N = 56$) and risk of bias (Kettunen et al. 2007, 2012). Risk of bias was suspected due to insufficient blinding of the participants, care providers, and outcome assessors and due to differences in loss to follow-up between the intervention and control group.

Self-reported knee function: The level of evidence for the outcome measure function was also downgraded by 2 levels in patients with AKP. In patient with apexitis patella (jumper's

knee) or patellar tendinopathy function was not evaluated as there were no studies that assessed this outcome.

Stability and range of motion: The level of evidence for the outcome measure stability and range of motion was not evaluated as there were no studies that assessed this outcome in patients with AKP, apexitis patella (Jumper's knee) or patella tendinopathy.

Question 2

Brignardello-Petersen et al. (2017) set out to determine the effects and complications of arthroscopic surgery compared with conservative management strategies in patients with degenerative knee disease. Their literature search identified 13 RCTs; 5 trials included more than 50% of patients with radiographic osteoarthritis (Chang et al. 1993, Katz et al. 2013, Kirkley et al. 2008, Kise et al. 2016, Moseley et al. 2002). As these complications are related to arthroscopy and not to osteoarthritis, all observational studies, which included also studies not related to osteoarthritis, were included.

1. Pain. Short-term benefits (< 3 months) were reported in all 5 RCTs. The pooled difference in change from baseline was on average 5.1 (CI 0.6–9.7). Long-term benefits (1 to 2 years) were also reported in all RCTs. The pooled difference in change from baseline was on average 1.3 (CI –2.6 to 5.2). With a minimal important difference (MID) of 12, the benefits of arthroscopy in pain scores, both short and long term, were not different from nonoperative treatment in patients with osteoarthritis.

2. Function. Short-term and long-term data on function was available in all 5 trials. The mean score difference from baseline in function after 3 months was 4.3 (CI –0.2 to 8.8) in favor of arthroscopy and after 1 to 2 years 2.5 (CI –1.6 to 6.5). With a MID of 13, the benefits of arthroscopy in function scores, both short and long term, were no different from conservative treatment in patients with osteoarthritis.

3. Complications. In line with the systematic review by Brignardello-Petersen et al. (2017), the working group chose to report the outcomes “venous thromboembolism” (VTE) and “infections” as potential complications. The difference in proportion of patients with a VTE between arthroscopy versus nonoperative management was 5 per 1,000 patients (CI 2–10). Arthroscopy may have a small risk for VTE. For infections, the difference between arthroscopy versus nonoperative management was 2 per 1,000 patients (CI 1–4). Arthroscopy may have a very small risk for infection.

Level of evidence

Pain: The level of evidence for the outcome “pain” (both short and long term) was downgraded by 1 level due to serious risk of bias (4 out of 5 trials did not blind the participants, care providers, or outcome assessors).

Function: The level of evidence for the outcome “function” (both short and long term) was downgraded by 1 level due to serious risk of bias (4 out of 5 trials did not blind the participants, care providers, or outcome assessors).

Complications: The level of evidence for the outcomes VTE and infections were both downgraded by 2 levels due to serious risk of bias (data was used not collected for the study) and serious inconsistency. There was no evidence of publication bias.

Question 3

The literature search resulted in 364 hits. Studies were selected based on the following criteria: systematic reviews and randomized controlled trials (RCTs) that compared arthroscopy with nonoperative treatment in patients with (recurrent) patellar dislocation. 1 or more of the following outcomes had to have been studied: pain, self-reported knee function, or quality of life. Self-reported knee function had to have been measured with either the KOOS, Kujala, or IKDC questionnaire. In addition, studies with patients aged ≥ 16 years were eligible for inclusion.

21 articles were initially selected based on title and abstract. After reading the full text all 21 articles were excluded.

Question 4

The literature search resulted in 369 hits. Studies were selected based on the following criteria: systematic reviews and randomized controlled trials (RCTs) that compared arthroscopy and fixation with arthroscopy without fixation in case of patients with (osteo)chondral fractures; systematic reviews and RCTs that compared arthroscopy and fixation with nonoperative treatment in case of patients with osteochondritis dissecans.

1 or more of the following outcomes had to be studied: arthrosis, quality of life (IKDC, KOOS), physical activity (Tegner score), or response to treatment (WOMAC). In addition, studies with patients aged ≥ 16 years were eligible for inclusion. 8 studies were initially selected based on title and abstract. After reading the full text, all 8 studies were excluded (reason for exclusion: 4 narrative reviews, 1 pediatric population, 3 case report or case series).

Question 5

In the search between 2010 and 2017, we could not find new literature that could be analyzed according to the GRADE criteria; therefore the old text of the guideline Knee Arthroscopy 2010 was adopted. We advise that when an acute bacterial arthritis is suspected a puncture of the knee is indicated.

If a puncture confirms the suspicion of a bacterial arthritis the knee can be lavaged, which can be done using arthroscopy. If bacterial arthritis cannot be excluded by puncture a patient must be treated as if bacterial arthritis of the knee is confirmed.

Question 6

We could not find new literature that could be analyzed according to the GRADE criteria; therefore the old text of the guideline Knee Arthroscopy 2010 was adopted. The working group concludes that an isolated ligamentous injury is not an indication for an arthroscopy, but concomitant injury can warrant an indication for an arthroscopy. In the acute phase of a suspected multiligamentous injury of the knee an MRI scan is the imaging technique of choice; if osseous injury is suspected a CT can be considered. The working group considers that patients with acute knee injuries should have access to a hospital 24 hours a day, 7 days a week. For optimal care, an orthopedic surgeon or trauma surgeon must be available for consultation.

Question 7

We could not find new literature that could be analyzed according to the GRADE criteria therefore the old text of the guideline Knee Arthroscopy 2010 was adopted. The working group considers that there is no indication for diagnostic arthroscopy for tibial plateau fractures. Arthroscopy may be of added value in the treatment of unicondylar tibial plateau fractures.

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