DR.TOOMAS TEIN

SA TÜK traumatoloogia-ortopeedia kliinik päevakirurgia erakliinik MEDEX 2015

Approxmately how many patients can be expected to return to their previous level of performance following ACL reconstruction? their ability to return to their previous level sport, participate at the same level, the same amount of time, same amount of weekends

Given how young many of these patients are,what can these patients expect to see over their lifetime?

What proportion of patients require ACL surgery on either the same knee or on the opposite knee?

It seems that outcomes data for ACL surgery call into question the technique that surgeons have been using for ACL repair

Is this a technical issue? What alternative surgical approach might ameliorate this situation?

What are the take-home message for the surgeon performing ACL repair?



Evidence-Based ACL Reconstruction—

These topics are the following: 1) Bone-patellar tendon-bone reconstruction (BPTB-R) or hamstring reconstruction (H-R); 2) Double bundle or single bundle; 3) Allograft or autograft; 4) Early or late reconstruction; 5) Rate of return to sports after ACL reconstruction; 6) Rate of osteoarthritis after ACL reconstruction.

In conclusion, BPTB-R and H-R yield similar functional results. However, BPTB-R results in better knee stability but also in a higher rate of postoperative complications. Double-bundle and single-bundle reconstructions yield similar functional results. Autograft yield better results than allograft. Most patients (82%) can return to sport activities, although 28% of them present radiological signs of knee osteoarthritis with a follow-up of minimum 10 years

E. Carlos Rodriguez-Merchan, MD, PhD Arch Bone Jt Surg. 2015 Jan; 3(1): 9–12.

Outcomes of ACL reconstruction Patellar tendon versus hamstring tendon autograft for anterior cruciate ligament rupture

Cochrane Database Syst Rev. 2011 Sep

Nicholas GH Mohtadi

This review included 19 studies reporting the outcomes of ACL reconstruction with patellar tendon versus hamstring tendon grafts in a total of 1597 young to middle-aged adults. Many trials used flawed methods that might have affected their results. This review aimed to find out if one graft was better than the other.

There is **insufficient** evidence to draw conclusions on differences between the two grafts for long-term functional outcome. While PT reconstructions are more likely to result in statically stable knees, they are also associated with more anterior knee problems

Cortical Button vs. Transfemoral Suspensory Fixation Systematic Review

Maristella F. Saccomanno 2015 AAOS Knee- ACL (Primary, Revision, Complications) (Sports Med/Arthro)

METHODS: This systematic review was conducted following the Cochrane Handbook guidelines and PROSPERO registration. Only level I and II randomized controlled trials comparing cortical button and transfemoral suspensory fixation in hamstring ACL reconstruction were included

RESULTS: Five studies involving 317 patients were included. The mean follow up was 21.7 + 7.0 months (range, 12 to 38 months). The mean age of participants was 26.7 + 1.89 years (range, 16 and 48 years). Lysholm Score, Tegner Activity Score, and International Knee Documentation Committee (IKDC) score were compiled. Clinical assessment was performed via Lachman testing, side-to-side differences in KT-1000 testing, measurements of thigh atrophy; and imaging (x-ray and CT) to assess for femoral tunnel widening. Pooled statistical analysis was possible only for postoperative IKDC and Lysholm scores

CONCLUSION: The present evidence suggests that there are no short to medium-term differences in knee specific outcome measures between patients treated with cortical button femoral graft fixation and those with suspensory transfemoral fixation when undergoing ACL reconstruction. Additionally, radiological evidence of tunnel widening does not seem to affect short to medium-term clinical outcomes.

Double-bundle versus single-bundle reconstruction for anterior cruciate ligament rupture in adults

<u>Cochrane Database Syst Rev.</u> 2012 Nov <u>Tiamklang T</u>1, <u>Sumanont S</u>,

We searched the Cochrane Bone, Joint and Muscle Trauma Group Specialised Register (to February 2012), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2012, Issue 2), MEDLINE (1966 to February week 3 2012) and EMBASE (1980 to 2012 Week 8). We also searched trial registers, conference proceedings, and contacted authors where necessary.

Seventeen trials were included. These involved 1433 people, mostly young physically active adults

Results

There is insufficient evidence to determine the relative effectiveness of double-bundle and single-bundle reconstruction for anterior cruciate ligament rupture in adults, although there is limited evidence that double-bundle ACL reconstruction has some superior results in objective measurements of knee stability and protection against repeat ACL rupture or a new meniscal injury

Graft Tensioning in Anterior Cruciate Ligament Reconstruction: A Systematic Review of Randomized Controlled Trials

Sharlinder.Arneja Feb 2009 Arthroscopy

Purpose

The purposes of this study were to (1) perform a systematic review of randomized controlled trials evaluating graft tensioning in anterior cruciate ligament (ACL) reconstruction, and (2) determine the scientific quality of published randomized controlled trials evaluating graft tensioning in ACL reconstruction.

Methods

The search strategy included a computerized literature search, a citation search, and a manual search of key journals and conference proceedings. Eligible studies were randomized controlled trials evaluating the effect of graft tensioning on the outcomes of ACL reconstruction. Two reviewers independently performed the literature searches. The validity of the trials was scored using the Detsky quality scale. Consensus was achieved by a study committee of 3 investigators.

Results

Five randomized controlled trials met the inclusion criteria. The mean standardized Detsky score was 61.3 ± 15.2%. Only 2 of the studies scored ≥75%. All trials consisted of autogenous graft sources, with 3 involving a bone– patellar tendon–bone graft, 1 involving a 5-strand semitendinosus–polyester (5STP) graft, and 1 involving a semitendinosus–gracilis–polyester (STGP) graft.

Conclusions

Based on the evidence in this systematic review, there is a trend that suggests that 80 N of tension is the most effective amount of tension to apply during ACL reconstruction using hamstring–polyester graft sources. For ACL reconstruction using semitendinosus–gracilis or patellar tendon graft sources, there is no clear trend in terms of statistically significant or clinically relevant differences in terms of the amount of applied tension to apply to the graft during graft fixation. We are unable to provide recommendations as to the amount of tension to apply to 4strand semitendinosus–gracilis autografts without polyester augmentation because there has been no randomized clinical trial conducted to determine the most effective amount of tension to apply when using this graft source.

Long-term follow-up of patellar tendon grafts or hamstring tendon grafts in endoscopic ACL reconstructions

T.Gifstad Knee Surgery, Sports Traumatology, Arthroscopy march 2013

Purpose

Several studies compare the short- and long-term results of anterior cruciate ligament (ACL) reconstruction using bone-patellar tendon-bone (BPTB) graft or double-looped semitendinosus and gracilis (DLSG) graft. However, no studies evaluate the long-term results of BPTB grafts fixed with metal interference screws and DLSG grafts fixed with the Bone Mulch Screw and the Washer Loc. This prospective randomized multicentre study has the null hypothesis that there is no difference in long-term outcome between the two procedures. **Methods**

A total of 114 patients with a symptomatic ACL rupture were randomized to reconstruction with either a BPTB graft (N = 58) or a DLSG graft (N = 56). Follow-up was conducted after one, two and seven years. At the seven-year follow-up, 102 of the 114 patients (89%) were available for evaluation; however, 16 of these by telephone-interview only.

Results

Ten patients in the BPTB group and 19 patients in the DLSG group underwent additional knee surgery (P = 0.048), two and three, respectively, of these were ACL revisions (n.s.). The total flexion work was lower in the DLSG group (P = 0.001). The mean peak flexion torque and extension work, however, showed no difference between the groups. No significant differences were found between the groups regarding the Tegner activity score, the Lysholm functional score, the Knee injury and osteoarthritis outcome score (KOOS), subjective knee function, anterior knee pain or mobility. There was no significant difference in laxity between the groups on the Lachman test or the KT-1,000 maximum manual force test.

Conclusions

Both grafts and fixation methods resulted in satisfactory subjective outcome and objective stability. Both these methods can therefore be considered as suitable alternatives for ACL reconstructions.

Is There a Higher Failure Rate of Allografts Compared With Autografts in Anterior Cruciate Ligament Reconstruction: A Systematic Review of Overlapping Metaanalyses

Randy Masceranhas et all Arthroscopy 2015 ,February

Purpose

Multiple meta-analyses of randomized controlled trials (RCTs), the highest available level of evidence, have been conducted to determine whether autograft or allograft tissue provides superior clinical outcomes and structural healing in anterior cruciate ligament reconstruction (ACLR); however, results are discordant. The purpose of this study was to conduct a systematic review of meta-analyses comparing ACLR with autografts and allografts to elucidate the cause of discordance and to determine which meta-analyses provide the current best available evidence.

Methods

In this study we evaluated available scientific support for autograft versus allograft use in ACLR by systematically reviewing the literature for published meta-analyses. Data regarding patient outcomes and structural healing were extracted from these meta-analyses. Meta-analysis quality was assessed using the Oxman-Guyatt and Quality of Reporting of Meta-analyses (QUOROM) systems. The Jadad algorithm was then applied to determine which meta-analyses provided the highest level of evidence.

Results

Eight meta-analyses containing a total of 15,819 patients met the eligibility criteria, 2 of which included Level II evidence and 6 of which included Level III/IV evidence. Four meta-analyses found no differences between autografts and allografts for patient outcomes, whereas 4 found autografts superior in one or more respects. Four meta-analyses reported higher graft rupture rates in the allograft group, and 2 found superior hop test performance in autograft-treated patients. Six meta-analyses had low Oxman-Guyatt scores (<4) indicative of major flaws.

Conclusions

According to this systematic review of overlapping meta-analyses comparing autografts and allografts for ACLR, the current best available evidence suggests no differences in rupture rates and clinical outcomes. Lower quality meta-analyses indicate that autografts may provide a lower rerupture rate, better hop test performance, and better objective knee stability than do allografts

Long-Term Failure of Anterior Cruciate Ligament Reconstruction

S.Nicholas Crawford et all Arthroscopy 2013, sept

Purpose

The aim of this study was to review and describe the cumulative incidence of anterior cruciate ligament (ACL) graft rupture and/or clinical objective failures at greater than 10 years after ACL reconstruction.

Methods

A PubMed search was performed to identify and systematically evaluate all studies performed between 1980 and 2012 with clinical outcomes after intra-articular, non-artificial ACL reconstruction and minimum 10-year follow-up. Studies reporting standardized surgical technique, ACL graft rupture, and objective International Knee Documentation Committee (IKDC) grade or ligament stability examination were included for analysis. After we first identified patients with graft rupture, clinical failure was further identified as 1 or more of the following: overall IKDC objective score of C or D, IKDC grade C or D pivot shift (i.e., >2+ or pivot shift), IKDC grade C or D Lachman examination, and/or abnormal KT arthrometer (MEDmetric, San Diego, CA) measurement (i.e., >5 mm). For this study, cumulative ACL failure rates were defined as the sum of both clinical failures and ACL graft ruptures.

Results

After review and exclusion of 625 references, 14 studies were identified for subsequent review. At longer than 10 years' clinical follow-up, the reported ACL graft rupture rate was 6.2% (173 of 2,782) (range, 0% to 13.4%) and clinical failure occurred in approximately 10.3% (158 of 1,532) (range, 1.9% to 25.6%). The overall cumulative ACL failure rate was 11.9% (range, 3.2% to 27%). Conclusions

At least 1 in 9 patients undergoing ACL reconstruction will have rerupture or clinical failure at long-term follow-up.

ACL surgery may significantly improve physical health and function for at least six years in younger patients JBJS 2015,april

Outcomes most patients who underwent surgery to repair and rebuild an anterior cruciate ligament (ACL) tear, showed significant improvement in physical function at two years, which continued for at least six years following surgery. Younger patient age, lower body mass index (BMI), and having the remnants of the torn ACL completely excised during surgery, were among the strongest predictors of positive, long-term outcome for active patients with lower body mass In this study, researchers reviewed and evaluated the outcomes of 1,411 patients (44 percent female; average patient age at enrollment, 23) who underwent ACL surgery between 2002 and 2004 at four major medical centers. Each patient completed questionnaires—assessing health, well-being and function—prior to surgery, and again at two and six years after surgery

Specifically, the average physical health score was 41.9 and the mean mental health score was 51.7 at baseline. At two years after surgery, the physical and mental health scores were stable at 53.6 and 52 points, respectively, and 54 and 52.4 at year six. Among the other findings:

- ACL reconstruction resulted in large improvements in the physical function scores, with a mean improvement of 12 points (out of 100) at two years and six years following surgery.
- At six years following ACL surgery, patients gained a mean 5.3 quality-adjusted life years (QALYs). One QALY represents one year of perfect health; .5 QALY, six months.
- Baseline activity level was a significant predictor of mental health scores, but not physical function scores.
- Predictors of worse postoperative outcomes were a shorter follow-up time following surgery, revision ACL reconstruction, smoking at baseline, fewer years of education, and damage to the cartilage under the knee cap (chondromalacia patella)

Mental health scores over the six-year period did not significantly change, but scores consistently remained above the population norm of 50 points.

ACL reconstruction is the best, most cost-effective option to repair a partial or complete ACL tear. Surgery is especially beneficial when the patient is active, such as a high school or college-age athlete interested in returning to their sport and active lifestyle following treatment



marrow mesenchymal stem cells

When subchondral bone is injured regeneration of articular cartilage partially depends on the age as the ratio between marrow mesenchymal stem cells to other marrow cells in newborns is 1:10 000, in adolescents - 1: 100 000, in 50-year olds - 1: 400 000, and in 80-year olds - 1: 2 000 000.

Zanasi S. Clinics, repair and reconstruction of cartilage tissue: an introductive overview [] Basic science, clinical repair and reconstruction of articular cartilage defects: current statue and prospects [Ed. S. Zanasi, M. Brittberg, M. Marcacci. – 2006. – V cl. 1 – P. 35– 49.

Long-term results of anterior cruciate ligament reconstruction using bone-patellar tendon-bone: an analysis of the factors affecting the development of osteoarthritis

Ahn JH Arthroscopy 2012 aug

PURPOSE:

To evaluate the clinical outcomes and incidence of knee osteoarthritis (OA) and the factors associated with the onset of OA in the 3 compartments of the knee joint separately after anterior cruciate ligament (ACL) reconstruction with bone-patellar tendon-bone autograft.

METHODS:

Clinical and radiologic assessments were obtained from 117 patients (80.1%). At follow-up, knee function was evaluated with the Lysholm score, Hospital for Special Surgery (HSS) score, Tegner score, and International Knee Documentation Committee (IKDC) 2000 forms. We also evaluated stability and donor-site morbidity. On the follow-up radiographs, OA was assessed by IKDC grading. The factors affecting the onset of OA in the 3 compartments of the knee joint were evaluated.

The mean follow-up period was 10.3 ± 1.0 years. The mean Lysholm and HSS scores significantly increased at final follow-up (P < .001). The mean IKDC subjective score was 90.6, and 93.9% of patients had grade A or grade B knees on the objective evaluation. The mean side-to-side difference measured by KT-2000 arthrometer (MEDmetric, San Diego, CA) was 1.6 ± 1.7 mm, with 82.0% of patients showing a difference of less than 3 mm. Discomfort from knee walking on hard ground and skin numbness were reported by 38.4% and 37.6% of patients, respectively. OA developed in the medial, lateral, and patellofemoral compartments in 30.7%, 9.3%, and 7.6% of patients, respectively. The onset of OA was associated with partial meniscectomy (odds ratio [OR], 20.73; P = .005) or sagittal tibial tunnel position (OR, 1.18; P = .02) in the medial compartment and body mass index (BMI) (OR, 1.56; P = .02) in the lateral compartment.

ACL reconstruction with bone-patellar tendon-bone autograft showed satisfactory clinical results after a mean of 10.3 years. However, pain when walking on hard ground (38.4%) and numbness of the skin (37.6%) were reported. Moreover, the onset of OA appeared in over 40% of the patients. The onset of OA in the medial compartment was correlated with partial meniscectomy and sagittal tibial tunnel position, and the onset of OA in the lateral compartment was correlated with higher BMI.

Arthroscopically Assisted Reconstruction of the Anterior Cruciate Ligament A Follow-up Report

Daniel B. O'Neill, MD J Bone Joint Surg Am, 2001 Sep; 83 (9): 1329 -1332

Background: The purpose of this study was to further delineate the outcome of arthroscopically assisted anterior cruciate ligament reconstruction in 125 patients who had previously been followed for two to five years. One of the original 125 patients was excluded from the present study because of insufficient follow-up, and an additional group of 101 patients was added. All 225 patients in the present study were followed for a minimum of six years.

Methods: Patients were randomly assigned to reconstruction with a double-stranded semitendinosus-gracilis graft with use of a two-incision technique (group I), reconstruction with a patellar ligament graft with use of a two-incision technique (group II), or reconstruction with a patellar ligament graft with use of a single-incision endoscopic technique (group III). The groups were compared with regard to the rate of graft failure, the amount of instability, knee strength, radiographic signs of degenerative changes, and functional outcome.

Resulte: There was no significant difference among the three groups with regard to the rate of graft failure, the amount of knee instability, or the functional outcome. A normal or nearly normal functional outcome was recorded for 208 (92%) of the 225 patients. There were significant differences among the groups with regard to quadriceps muscle-strength deficits: group I had fewer patients with deficits than group III, and groups I and III both had fewer patients with deficits than group II (p = 0.04). There also were significant differences among the groups with regard to hamstring muscle-strength deficits: group II had fewer patients with deficits than group II, and group II had fewer patients with deficits than group II, and group II had fewer patients with deficits than group II, and group II had fewer patients with deficits than group II, and group II had fewer patients with deficits than group II, and group II had fewer patients with deficits than group II, and group II had fewer patients with deficits than group II, and group II had fewer patients with deficits than group II (p < 0.01). Twelve knees (16%) in group I, six knees (8%) in group II, and eight knees (11%) in group III showed radiographic evidence of progressive degenerative changes, but the differences among the three groups were not significant.

Conclusion: Although 11.6% of the 225 knees had radiographic evidence of degenerative arthritis at a minimum of six years after arthroscopically assisted reconstruction of the anterior cruciate ligament, the choice of graft and the technique of reconstruction did not seem to affect the rate of development of these changes

Increased Risk of Osteoarthritis After Anterior Cruciate Ligament Reconstruction A 14-Year Follow-up Study of a Randomized Controlled Trial Björn Barenius, MD Am J Sports Med May 2014

Background: The reported prevalence of radiological osteoarthritis (OA) after anterior cruciate ligament (ACL) reconstruction varies from 10% to 90%.

Purpose/Hypothesis: To report the prevalence of OA after ACL reconstruction and to compare the OA prevalence between quadrupled semitendinosus tendon (ST) and bone–patellar tendon–bone (BPTB) grafts. The hypothesis was that there would be no difference in OA prevalence between the graft types. The secondary aim was to study whether patient characteristics and additional injuries were associated with long-term outcomes. **Study Design:** Randomized controlled trial; Level of evidence, 1.

Methods: Radiological examination results, Tegner activity levels, and Knee injury and Osteoarthritis Outcome Score (KOOS) values were determined in 135 (82%) of 164 patients at a mean of 14 years after ACL reconstruction randomized to an ST or a BPTB graft. Osteoarthritis was defined according to a consensus by at least 2 of 3 radiologists of Kellgren-Lawrence grade ≥ 2 . Using regression analysis, graft type, sex, age, overweight, time between injury and reconstruction, additional meniscus injury, and a number of other variables were assessed as risk factors for OA 14 years after ACL reconstruction.

Results: Osteoarthritis of the medial compartment was most frequent, with 57% of OA cases in the ACL-reconstructed knee and 18% of OA cases in the contralateral knee (P < .001). There was no difference between the graft types: 49% of OA of the medial compartment for BPTB grafts and 65% for ST grafts (P = .073). The KOOS results were lower for patients with OA in all subscales, indicating that OA was symptomatic. No difference in the KOOS between the graft types was found. Meniscus resection was a strong risk factor for OA of the medial compartment (odds ratio, 3.6; 95% CI, 1.4-9.3) in the multivariable logistic regression analysis.

Conclusion: A 3-fold increased prevalence of OA was found after an ACL injury treated with reconstruction compared with the contralateral healthy knee. No differences in the prevalence of OA between the BPTB and quadrupled ST reconstructions were found. An initial meniscus resection was a strong risk factor for OA; the time between injury and reconstruction was not.

Long-term Clinical and Radiographic Results After Delayed Anterior Cruciate Ligament Reconstruction in Adolescents

Månsson O, Sernert N, Rostgard-Christensen L, Kartus J

Background: The risk of further intra-articular damage associated with nonoperative or delayed anterior cruciate ligament (ACL) reconstruction must be considered against the risk of growth disturbance with early reconstruction and transphyseal drilling. Long-term follow-ups after the surgical treatment of ACL injuries in adolescents are rare.

Purpose: To evaluate results 10 to 20 years after ACL reconstruction in terms of the radiographic presence of osteoarthritis, clinical assessments, and health-related quality of life in patients who were adolescents at the time of surgery

Methods: Thirty-two adolescents (mean age, 15.2 years [range, 12–16 years]; 11 boys, 21 girls), with a symptomatic unilateral ACL rupture, underwent reconstruction using bone-patellar tendon-bone (n = 10) or hamstring tendon (n = 22) autografts at an almost skeletally mature age according to Tanner stage 4. Twenty-nine patients (91%) underwent clinical, radiographic, and health-related quality of life assessments after 10 to 20 years (mean, 175 months)

Conclusion: In the long term, patients who were adolescents at the time of ACL reconstruction revealed significantly more radiographically visible osteoarthritic changes in their operated knee than in their noninvolved contralateral knee. Clinical outcomes and health-related quality of life are comparable with those of healthy controls

No Differences in Prevalence of Osteoarthritis or Function After Open Versus Endoscopic Technique for Anterior Cruciate Ligament Reconstruction 12-Year Follow-up Report of a Randomized Controlled Trial Inger holm et all Am J Sports Med November 2012 vol. 40 no. 11 2492-2498

Hypothesis: There are no differences in knee function or prevalence of knee osteoarthritis (OA) in patients who have undergone the open versus endoscopic technique for ACL reconstruction using the patellar tendon autograft.

Study Design: Randomized controlled trial; Level of evidence, 2. Methods: Sixty-seven patients with subacute or chronic rupture of the ACL were randomly assigned to open (OPEN) (n = 33) or endoscopic (ENDO) (n = 34) reconstruction. Function was evaluated by the Cincinnati knee score, single-legged hop tests, and isokinetic muscle strength tests. The radiographs were classified according to the Kellgren and Lawrence (KL) classification system

Results: Mean age at inclusion and at the 12-year follow-up evaluation was 27.9 \pm 8.6 and 39.8 \pm 8.6 years, respectively. At 12-year follow-up, 53 patients (79%) were eligible for evaluation. There were no significant differences between the 2 surgical procedures with respect to the pain, function, muscle strength, hop tests, patellar height, or the prevalence of OA. The prevalence of OA was high in the tibiofemoral joint on the operated side, 79% and 80% in the OPEN and ENDO groups, respectively. For the uninvolved knee, the corresponding numbers were 36% and 21%.

Conclusion: This study suggests that the open procedure does not produce more functional problems or osteoarthritis compared with the endoscopic technique up to 12 years postoperatively.

Increased incidence of osteoarthritis of knee joint after ACL reconstruction with bone-patellar tendon-bone autografts than hamstring autografts: a meta-analysis of 1,443 patients at a minimum of 5 years Xiabo XIE European Journal of Orthopaedic Surgery & Traumatology 2015

Purpose

The objective of this study was to evaluate the effectiveness of BPTB autografts versus HT autografts at a minimum of 5 years after anterior cruciate ligament (ACL) reconstruction.

Methods

A systematical search of literature was performed in PubMed, Embase and the Cochrane library to identify published randomized controlled trials (RCT) or prospective cohort studies (PCS) relevant to ACL reconstruction comparing BPTB and HT autografts. The results of the eligible studies were analysed in terms of objective International Knee Documentation Committee (IKDC) scores, return to preinjury activity level, KT-1000, Lachman test, pivot shift test, anterior knee pain, kneeling pain, extension loss, and flexion loss, graft failure and radiographic outcomes.

Results

Twelve RCTs, two PCS including 1,443 patients comparing hamstring and patellar tendon autografts were identified. The results of the meta-analysis showed that there were no significant differences between BPTB and HT in terms of objective IKDC score (P = 0.83), return to preinjury activity (P = 0.69), KT-1000 (P = 0.12), Lachman test (P = 0.76), pivot shift test (P = 0.11), extension deficit (P = 0.09), flexion deficit (P = 0.71) and graft failure (P = 0.22). However, outcomes in favour of HT autografts were found in terms of anterior knee pain (P = 0.0001) and kneeling pain (P = 0.001). Radiographic evidence of osteoarthritis (OA) showed that incidence of OA was significantly higher in BPTB groups compared with HT groups based on IKDC system. These findings were still robust during the sensitivity analysis.

Conclusion

Meta-analysis of prospective trials did not detect any significant differences in clinical results, as evidenced by the objective IKDC score, return to preinjury activity level, KT-1000, Lachman test, pivot shift test, extension loss, flexion loss and graft failure. However, the meta-analysis revealed that ACL reconstruction with BPTB autografts resulted in increased anterior knee pain and kneeling pain compared with hamstring autografts. Increased incidence of OA was found after ACL reconstruction at a minimum of 5 years in BPTB group compared with HT autografts. This result should be cautiously interpreted. More high-quality RCT with strictly specified inclusion criteria are highly required before drawing a reliable conclusion

Treatment of Anterior Cruciate Ligament Injuries With Special Reference to Surgical Technique and Rehabilitation: An Assessment of Randomized Controlled Trials

Daniel Andersson, M.D et all Arthroscopy ,2009,jJune

Purpose

The primary aim was to investigate and assess the current evidence of randomized controlled trials (RCTs) on anterior cruciate ligament (ACL) injuries, with special reference to the choice of surgical techniques and aspects of rehabilitation. A secondary aim was to clarify relative strengths and weaknesses of the selected studies, resolve literature conflicts, and finally, evaluate the need for further studies.

Methods

A PubMed database search using the key words "anterior cruciate ligament" was performed. The search was limited to only RCTs published in English during the period of January 1995 to March 2009. Articles concerning surgical technique and rehabilitation were obtained. After initial screening and subsequent quality appraisal based on the CONSORT (Consolidated Standards of Reporting Trials) Statement, a total of 70 articles were included in this review.

Results

Initial graft tension and the use of a ligament augmentation device do not affect clinical outcome. Bioabsorbable screws and titanium screws produced equal clinical outcome, regardless of graft type. Radiographic signs of osteoarthritis develop in 50% of ACL-injured patients, regardless of treatment. Meniscectomy further increases the risk. Furthermore, the use of a postoperative knee brace does not affect the clinical outcome after ACL reconstruction. Closed kinetic chain exercises produced less pain and laxity while promoting better subjective outcome than open kinetic chain exercises after patellar tendon reconstruction.

Conclusions

In terms of quality assessment, several weaknesses pertaining to study design were discovered among the included RCTs, which intelligibly stress the need for further high-quality studies. Level of Evidence Level II, systematic review of RCTs

Treatment of Anterior Cruciate Ligament Injuries With Special Reference to Surgical Technique and Rehabilitation: An Assessment of Randomized Controlled Trials

Daniel Andersson, M.D et all Arthroscopy ,2009,jJune Surgical Technique

Initial graft tension does not affect clinical outcome.

Bioabsorbable screws and titanium screws produce equal clinical results on both BPTB and HT grafts.
Cross-pin and interference screws are comparable means of fixating the HT graft and possibly the BPTB graft.
A well-designed randomized trial is needed to show the transcondylar screw's place in modern ACL reconstruction.

•A more rigid HT graft complex generates less tunnel widening. However, there is no significant correlation between tunnel widening and clinical outcome.

•There is no clinical advantage of using an LAD.

•Radiographic signs of osteoarthritis develop in 50% of ACL-injured patients, regardless of treatment. Meniscectomy further increases the risk. Muscle strength might not be correlated with ACL reconstruction, but this remains to be proven in further studies.

Rehabilitation

•Further studies are needed to determine any differences between early and delayed reconstruction.

•A postoperative knee brace does not affect clinical outcome and does not reduce the risk of subsequent intraarticular injury after ACL reconstruction. There is only one study that has used the HT graft.

•To prove the existence of any differences between early and delayed start of rehabilitation after ACL

reconstruction, a well-designed RCT with a follow-up of at least 1 year or preferably more is needed.

•It remains to be clarified whether there is a difference between an accelerated rehabilitation program and a nonaccelerated rehabilitation program.

•Current findings are inconclusive as to whether home-based and supervised clinic-based rehabilitation programs produce equal clinical outcomes. Further study is required.

•CKC exercises produce less pain and laxity and better subjective outcomes than OKC exercises after PT reconstruction. OKC exercises produce greater quadriceps femoris muscle strength without further compromising knee laxity than CKC exercises in ACL-deficient patients. There are no trials that have used the HT graft.

•Eccentric resistance training might yield better muscle function in key muscles, but this is yet to be proven in further studies.

Strength of Included Articles by Recommendation

High Strength
 Moderate Strength

h Low Strength

Very Low Strength





Does Knee Cartilage Get Better or Worse Following ACL Surgery Recovery?

ACL Recovery and Long Term Effects on Cartilage

Family of Stem Cell and Blood Platelet Procedures

There are about 100,000 knee ACL tears each year in the United States and many of them get a new surgically implanted ACL knee ligament followed by a long ACL surgery recovery. As I've discussed, the new knee ACL ligament isn't like the old equipment, in that it goes in at too steep an angle. Even worse, some studies show that knee ACL replacement surgery is no better than physicial therapy. Now a new study shows that the cartilage in the knee isn't well protected by the new surgically replaced knee ACL. In this new research they took 15 post ACL surgery patients and imaged them with a 3.0T research grade MRI at 1 and 2 years post procedure. They measured important MRI values that indicate good and healthy cartilage. What did they find? Well, regrettably, most of the cartilage in the ACL reconstructed knees was worse off after 2 years compared to healthy patients. HadHowever, the fact that almost all areas measured were worse indicates that something else is going on. What? My personal opinion is that the abnormal motion of the knee due to the common wrong angled ACL replacement is causing excessive forces on the cartilage leading to breakdown. The upshot? Avoid ACL replacement and ACL surgery recovery where possible!

We've had good luck with fixing partially torn and non-retracted complete tears through a needle with stem cells.

Some studies show that physical therapy may work just as well as surgery in the short to medium term.

The future of treating ACL tears: Less invasive surgery About 400,000 people a year tear their knee ligament. Dr. Martha Murray has an idea for a lessinvasive repair.



AITÄH TÄNAN KUULAMAST