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Treatment with and without initial stabilising surgery for primary traumatic patellar dislocation: a prospective randomised study.
PJ Sillanpää, VM Matilla, H Mäenpää, M Kiuru, T Visuri, H Pihlajamäki.
J Bone Joint Surg [Am] 2009;91-A:263-73.

Review

Methods

Originality

The authors describe only one previous similar study in the literature but felt their paper was original as this previous paper had a large number of skeletally immature and female patients.

Aims and Hypotheses

The aims of this study were fairly clearly stated however no specific hypotheses were stated.
The aims were to compare clinical outcomes in terms of redislocation and subjective instability following either operative or non operative treatment of first time traumatic patella dislocation. They also wished to evaluate development of articular cartilage lesions in the patellofemoral joint and to assess injuries to the medial patellar restraint.
Assumptions were made that the surgical group would have a better outcome and the preliminary statistics were based on 50% redislocation in the non operative group vs 10% in the operative group.
Preliminary power calculation and sample sizes were performed and based on operative outcome and subjective end points (Kujala scores)

Subject Recruitment and criteria

Ethical approval was obtained for this study and 40 young adult patients were randomly allocated using sealed envelope to operative (2 types) or non operative intervention.
This was a prospective randomised (Level 1) study. There were no differences between 2 groups and all were treated in the same manner at presentation. Table 1 presents the demographics and initial findings clearly.

Standardised imaging (x-rays & MRI) were obtained at randomisation and follow up (7years).
The authors identified various radiological parameters to assess anatomical abnormalities i.e trochlear dysplasia; however omitted to discuss certain observations which are now standard amongst knee surgeons and crucial in identifying such abnormalities, i.e cross over sign on plain films or TTTG on CT and MRI.
This study stated clear inclusion and exclusion criteria and subject recruitment however this established a very narrow population of patients. This group of patients was predominantly male and military recruits. It may be likely, despite obligatory service in Finland that this group is highly motivated to rehabilitate and not representative of other patient groups who sustain a similar injury.
Figure 1 describing the criteria and outcomes of the study was clear and concise.
Surgical intervention included two procedures based on surgeon preference. This was either medial reefing of the medial patellofemoral ligament and superficial retinaculum or a Roux Goldthwaite reconstruction. This patella realignment procedure in the absence of dysplastic features, which none of the patients were felt to have is clearly not the desired surgery for this type of injury. In addition the two very different surgical procedures have been analysed together but should probably be treated as two separate groups.

Results

Follow up and completeness of data

The follow up of 7 years is reasonable although perhaps not long enough to fully evaluate degenerative changes in the patellofemoral joint. Only two patients were lost to follow up; however only 76% of patients consented to follow up MRI.

Outcome Measures and presentation of Results

There was found to be no difference in scores between groups or within 2 groups in operative group. Kujala (function and pain swelling) and Tegner and Lysholm (physical activity levels) scoring demonstrated no clinical improvement in scores in the surgical group.
Table 2 and 3 present the results clearly; however studying table 3 shows the non-operative group has less pain in all activities. The authors explanation for this is that the non operative group may be better than expected at follow up because they had undergone stabilising procedures during the 7 years. If this is true then the two groups should be similar in their outcomes.
Table 4 and 5 highlight the radiographic measurements associated with abnormal patellofemoral anatomy and demonstrate that there were no predisposing features to dislocation in any of these patients.
In both patients there was a sub group of patients who underwent arthroscopic removal of an osteochondral fragment in addition to their treatment group. It is not clear from the results if the patients who had osteochondral lesions initially were the patients who appeared to have a poorer outcome. Should these patients be analysed as a separate subset?

Measurements were made on follow up radiographs because the authors felt the initial effusion may give abnormal results; however they state that all patients had an aspiration of the haemarthrosis at presentation. It is possible that patellar femoral angle and patellar displacement may have been altered by surgery?
There were no difference in radiographic measurements between dislocators and non dislocators. (Table 5) The authors show the Blackburne-Peel index was higher in redislocators but was essentially still within normal limits 1.06 vs 1.08

Statistics

The statistics in the paper seem sound and make use of parametric and non parametric tests. The redislocation rate between the two groups is statistically significant (p=0.02); however the authors then combine redislocation and subjective instability to give another statistical result (p=0.02).
Subjective instability alone between the two groups was not significantly different and this combination of outcome measures seems to be an attempt to demonstrate a result (operative group did better) that does not in fact exist.

Conclusions and Discussion

Aims fulfilled/Hypotheses answered

These were answered in that the surgical group had no redislocations; however the scores did not seem to be expected. The study did address the development of articular cartilage degenerative changes in the patellofemoral joint and the extent of injuries seen in the medial structures and they report broadly similar results to other authors.

Conclusions justified?

The authors conclude that patellar stability is good following surgery and should be considered in high demand patients; however the results do not appear to support this statement.
They have only applied the results to a very narrow subset of patients and not the population in general. In addition this method of treatment is markedly different from current practice amongst specialist knee surgeons in this country in which operative stabilisation would not be the treatment of choice for a first time dislocation.
They conclude that the operative treatment of choice should be repair of medial structures and not distal realignment but nowhere in the results do they conclude that the R-G did worse than the medial reefing group. They state that if there was patella alta or excess Q angle that it might be useful to use a distal realignment but they have nothing in their study on which to base this, having already stated that the knees were normal.
The authors state they “cannot conclude if initial stabilising surgery is better for men than women” There is no comment in this paper as to whether they had redislocations in their few female patients.
They attribute redislocations to lack of medial restraints as they have failed to find any anatomical factors to predispose to redislocation.

Insight into shortcomings

The authors criticise one of the references (Nikku et al) for having a narrow patient group saying that females may have a higher tendency to dislocate and therefore this paper's results should be treated with caution results. If this is the case then this study should have had more females to address this question and ascertain if there is a gender difference. They do however acknowledge their patient group is also limited.

Future work

The authors do conclude that no long term subjective benefits have been found and further studies are needed to better define the role of surgery.